

SN08 OSS Guide (ATM)

Advance Feature Guide

SN08 Standard 01.05 November 2005

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Publication History

November 2005

Re-release of the Standard version of this document, 01.05, to remove references to the M3UA tool which was discontinued in SN07.

June 2005

Re-release of the Standard version of this document, 01.04, for SN08 FVS release. The following sections have been updated since the previous Standard version:

- IEMS Functionality
- Performance Measurements

March 2005

Re-release of the Standard version of this document, 01.03, for SN08 due to churn. The following features or CRs have been added since the previous Standard version, and multiple others have been updated:

- A00007213--MG9000 5/30 minutes OMs
- A00007243--Prevent Outage when CEM flash has not been erased
- A00007244--GIC and GIAC Support on CICM and MG9K
- A00007253--MADN Ring Forward Support for CICM and MG9K
- A00007271--TOPS EOL for SN08
- A00007415--MG9K EM Internodal ES

January 2005

Standard release of this document, 01.02, for SN08. The following ACTIDs or CRs have been added since the Preliminary release:

- A00007135--GWC DPT Audits and Counter Drift Prevention
- A00007243--Prevent Outage when CEM flash has not been erased
- A00007709--MCS CD Phase 2 Support
- A00007752--Universal Billing Correlation ID
- Q00720293--Change in SWREL value
- A00006906--SN08 Clock Sync Enhancements
- A00007000--GIGE Network Interface EM Portion
- A00007213--MG9000 5/30 minutes OMs
- A00008387--GLC-32 AB Card Support

The following ACTIDs have been removed since the Preliminary release:

- A00006271--CEPT Act/Deact and Interrogation for ETSI BRI CFK, CFB/CFD K (International only)
- A00006660--DDRM Node Definition and Provisioning (International only)
- A00007464--SBA PacketCable Event Messaging (Applicable to Cable Packet networks only)

December 2004

Preliminary release of this document, 01.01, for SN08. The following sections are updated for this release:

- Mapping tables (ACTID-to-solutions; ACTID-to-OAM&P impacts)
- New or changed per release
- Feature deltas by product/network element
- Baseline information for Logs/Faults
- Baseline information for OMs/PMs

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Appendix F: Ethernet Routing Switch 8600 Trap List and Raise/Clear Mapping

Appendix G: SNMP-based PM Poller

Appendix H: IEMS Fault Transparency with SDM/CBM



About this document

When to use this document

This document supports the SN08 release. It provides SN08 design documents that contain Operations Support Systems (OSS) information. It also provides information on what is new and changed in SN08, related to the following areas:

- Logs/faults
- Data schema tables
- Office parameters
- Alarms
- User interface/man-machine interface
- Operational/performance measurements (OMs/PMs)
- Service orders
- AMA/billing
- Software optionality control (SOC)

In addition, it provides a baseline of the Logs/Alarms and Operational Measurements (OMs)/Performance Measurements (PMs) that are available in Succession, organized by network element.

Information in this document is believed to be accurate at the time of publication, but it is subject to change. Use of this document should be restricted to resource planning and estimating for SN08. **Do not use this document to make changes to existing software.**

How this document is organized

This document is divided into the following sections:

- Mapping tables
 - Mapping network elements to ACTIDs to solutions
 - Mapping network elements to ACTIDs to OAM&P documentation elements
- New/changed information for SN08
 - Logs and faults
 - Data Schema/MIBs
 - Commands/User Interface
 - Service Order
 - Office Parameters
 - Operational Measurements/Performance Measurements
 - AMA/Billing
 - Software Optionality Control (SOC)
- SN08 features, organized by network element
- Succession Baseline information
 - Logs/faults available in Succession, organized by network element
 - OMs/PMs available in Succession, organized by network element
- Appendix A: Ethernet Routing Switch 8600 Performance Metrics
- Appendix B: MG9000 MIB OMs/PMs
- Appendix C: Media Gateway 15000 and MDM Alarm Log Summary
- Appendix D: USP OMs/PMs
- Appendix E: MG9000 Alarms, Event Logs, Audit Logs
- Appendix F: Ethernet Routing Switch 8600 Trap List
- Appendix G: SNMP-based PM Poller
- Appendix H: IEMS Fault Transparency with SDM/CBM

Audience

This document is intended for Nortel Networks personnel, third-party OSS vendors, and customers who need to plan resources and estimate network impacts for this release.

How to check the version and issue of this document

The document release information on the title page and the footers of this document indicate the version and issue, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the next software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time a document is revised but re-released in the same software release cycle. For example, the second release of a document in the same software release cycle would be 01.02.

Writing conventions

Descriptions of commands, parameters, and responses in this document use the following conventions:

Input prompt

An input prompt (> or #) indicates that the information that follows is a command:

>LIST

Commands and fixed parameters

Commands and fixed parameters that are entered at the MAP terminal are shown in uppercase letters:

>LIST ALL

Variables

Variables that are entered at a MAP terminal are shown in lowercase letters:

>TABLE table_name

References in this document

This document may refer to the following Nortel Networks publications:

- 297-8001-840, *NA DMS-100 Log Report Reference Manual*
- 297-2621-840, *DMS-250 Logs Reference Manual*
- 297-5051-840, *SDM Log Report Reference Manual*
- NN10021-111, *cCS 2000 Product and Technology Fundamentals*
- NN10408-900, *ATM/IP Solution-level Fault Management*
- NN10409-500, *ATM/IP Solution-level Configuration Management*

- NN10401-700, *ATM/IP Solution-level Performance Management*
- NN10081-911, *SDM Fault Management*
- NN10103-511, *SDM Configuration Management*
- NN10147-711, *SDM Performance Management*
- NN10334-911, *Integrated EMS Fault Management*
- NN10330-511, *Integrated EMS Configuration Management*
- NN10327-711, *Integrated EMS Performance Management*
- NN10324-509, *Carrier Voice over IP Operational Configuration: Data Schema Reference*
- NN10264-709, *Carrier VoIP Performance Management Operational Measurements Reference*
- NN10025-111, *SAM21 Product and Technology Fundamentals*
- NN10089-911, *SAM21 Fault Management*
- NN10111-511, *SAM21 Configuration Management*
- NN10155-711, *SAM21 Performance Management*
- NN10083-911, *CS 2000 Fault Management*
- NN10188-511, *CS 2000 Configuration Management*
- NN10149-711, *CS 2000 Performance Management*
- NN10275-909, *Carrier Voice over IP Fault Management: Logs Reference*
- NN10090-911, *GWC Fault Management*
- NN10012-111, *SPM Product and Technology Fundamentals*
- NN10075-911, *SPM Fault Management*
- NN10097-511, *SPM Configuration Management*
- NN10141-711, *SPM Performance Management*
- NN10079-911, *DPT-SPM (IP) Fault Management*
- NN10078-911, *IW-SPM (IP) Fault Management*
- NN10073-911, *UAS Fault Management*
- NN10085-911, *cCS 2000 Fault Management*
- NN10082-911, *CS 2000 Core Manager Fault Management*
- NN10104-511, *CS 2000 Core Manager Configuration Management*
- NN10148-711, *CS 2000 Core Manager Performance Management*
- NN10300-100, *CS 2000 Management Tools IP Solutions Basics*
- NN10325-900, *CS 2000 Management Tools ATM/IP Fault Management*

- NN10276-500, *CS 2000 Management Tools ATM/IP Configuration Management*
- NN10149-711, *CS 2000 Performance*
- NN10088-911, *STORM Fault Management*
- NN10110-511, *STORM Configuration Management*
- NN10154-711, *STORM Performance Management*
- NN10074-911, *MG 9000 Fault Management*
- NN10096-511, *MG 9000 Configuration Management*
- NN10140-711, *MG 9000 Performance Management*
- NN10087-911, *Call Agent Fault Management*
- NN10109-511, *Call Agent Configuration Management*
- NN10153-711, *Call Agent Performance Management*
- NN10202-911, *Gateway Controller Fault Management*
- NN10205-511, *Gateway Controller Configuration Management*
- NN10208-711, *Gateway Controller Performance Management*
- NN10145-711, *DPT-SPM (IP) Performance*
- NN10144-711, *IW-SPM (IP) Performance*
- NN10137-711, *USP Performance*

In order to find information about the Multiserver Data Manager (MDM), refer to the following documents:

- 241-6001-011, *MDM Fault Management User Guide*
- 241-6001-501, *MDM Proxy Alarms Reference Guide*
- 241-6001-801, *MDM Overview*



SN08 Mapping Tables

Introduction

This document contains advance information about differences in operations, administration, maintenance, and provisioning (OAM&P) for Release SN08. The purpose of this document is to provide early information about new, modified or deleted items related to the following areas:

- Faults, including logs and alarms
- Data schema tables
- Office parameters
- User interface/human-machine interface
- Operational/performance measurements
- Software optionality control (SOC)
- Service orders
- AMA/billing

Table: Network elements-to-ACTID-to-documentation elements mapping

This table illustrates mapping from the network elements to their related ACTIDs to documentation elements (logs/faults, data schema, office parameters, servord, alarms, user interface/HMI, OMs/PMs, AMA/billing, and SOC (Software Optionality Control).

PRODUCT or APPLICATION	ACTID	Documentation Elements							
		Logs/Faults	Data Schema	Office Parms	Service Orders	Commands/User Interf/HMI	OMs/PMs	AMA/Billing	Optionality
CS 2000	A00006226		X			X			
CS 2000	A00006693					X	X		
CS 2000	A00006731		X		X				
CS 2000	A00006780			X		X	X		
CS 2000	A00006979	X				X			
CS 2000	A00007024					X			
CS 2000	A00007121	X				X			
CS 2000	A00007135						X		
CS2000	A00007243	X				X			
CS 2000	A00007250		X						
CS 2000	A00007277		X						
CS 2000	A00007300					X			
CS 2000	A00007383		X						X
CS 2000	A00007404					X			
CS 2000	A00007417	X							
CS 20000	A00007424	X							
CS 20000	A00007464		X			X			
CS 20000	A00007465	X				X	X		
CS 2000	A00007483					X			
CS 2000	A00007489	X				X			
CS 2000	A00007491	X							
CS 2000	A00007492					X			
CS 2000	A00007602	X				X			
CS 2000	A00007635	X							
CS 2000	A00007709								X
CS 2000	A00007752		X						
CS 2000	A00007790		X						
CS 2000	A00007927					X			
CS 2000	A00007934		X						X
CS 2000	A00008350						X		

SN08 Solutions		Documentation Elements							
PRODUCT or APPLICATION	ACTID	Logs/Faults	Data Schema	Office Parms	Service Orders	Commands/User Inter/HMI	OMs/PMs	AMA/Billing	Optionality
CS 2000	A00008902	X							
CS 2000	A59039138		X						
CS 2000	Q00720293			X					
CS 2000-TOPS	A00007271	X	X	X			X		
CS 2000-TOPS	A00007713	X				X			
IEMS	A00007302					X			
IEMS	A00007304	X				X			
IEMS	A00007341					X			
IEMS	A00007785					X			
MG 9000	A00005561	X				X			
MG 9000	A00005646	X				X			
MG 9000	A00006450					X			
MG 9000	A00006894					X			
MG 9000	A00006906	X							
MG 9000	A00007000	X				X	X		
MG 9000	A00007140A	X				X			
MG 9000	A00007140B					X			
MG 9000	A00007213	X				X			
MG 9000	A00007244				X				
MG 9000	A00007253				X				
MG 9000	A00007415	X	X			X			
MG 9000	A00008387					X			
Network Patch Mgr.	A00006901	X				X			

Table: Network elements-to-ACTID-to-solution mapping

This table illustrates mapping connections between the network elements, their related ACTIDs, and the applicable solutions.

	SN08 Solutions			
PRODUCT or APPLICATION	ACTID	PT-AAL1	UA-AAL1	DMS
CS 2000	A00006226			X
CS 2000	A00006693			X
CS 2000	A00006731			X
CS 2000	A00006780		X	
CS 2000	A00006979		X	
CS 2000	A00007024		X	
CS 2000	A00007121	X	X	
CS 2000	A00007135		X	
CS 2000	A00007243	X		
CS 2000	A00007250			X
CS 2000	A00007277			X
CS 2000	A00007300		X	
CS 2000	A00007383			X
CS 2000	A00007404		X	
CS 2000	A00007417			X
CS 20000	A00007424	X		
CS 20000	A00007464			X
CS 20000	A00007465			X
CS 2000	A00007483			X
CS 2000	A00007489			X
CS 2000	A00007491			X
CS 2000	A00007492			X
CS 2000	A00007602			X
CS 2000	A00007635			X
CS 2000	A00007709			X
CS 2000	A00007752			X
CS 2000	A00007790	X		
CS 2000	A00007927		X	
CS 2000	A00007934			X
CS 2000	A00008350	X	X	
CS 2000	A00008902		X	
CS 2000	A59039138			X
CS 2000	Q00720293	X	X	X
CS 2000-TOPS	A00007271	X		
CS 2000-TOPS	A00007713	X		X
IEMS	A00007302		X	

	SN08 Solutions			
PRODUCT or APPLICATION	ACTID	PT-AAL1	UA-AAL1	DMS
IEMS	A00007304		X	
IEMS	A00007341		X	
IEMS	A00007785		X	
MG 9000	A00005561		X	
MG 9000	A00005646		X	
MG 9000	A00006450		X	
MG 9000	A00006894		X	
MG 9000	A00006906		X	
MG 9000	A00007000		X	
MG 9000	A00007140A		X	
MG 9000	A00007140B		X	
MG 9000	A00007213		X	
MG 9000	A00007244		X	
MG 9000	A00007253		X	
MG 9000	A00007415		X	
MG 9000	A00008387		X	
Network Patch Mgr.	A00006901		X	



New or changed per release

New or changed for SN08

This section of the document describes the feature-based changes occurring in the SN08 release for the following categories:

- Logs/alarms
- Data schema and MIBs
- Commands
- Service order
- Office parameters
- Operational measurements (OMs) and Performance Measurements (PMs)
- AMA/Billing
- Software Optionality Control (SOC)

SSH Compatibility statement

Access to some functions requires the use of SSH compatible client software for access to secure telnet and ftp services (via the SSH standard). SSH clients are supplied bundled with some operating systems, but may need to be obtained separately. Sources for SSH clients include (but are not limited to):

- PUTTY - freeware
- OpenSSH - freeware
- SSH Inc. - commercial
- Secure CRT - commercial
- WinSCP - freeware

Nortel does not supply or recommend a particular supplier.

Logs/faults changes overview

The following logs/faults are new or changed for SN08. They also appear in the logs-by-product tables in the Baseline section of this document with

descriptions/cause for generation. More complete descriptions appear in the Feature Deltas section of this document.

Summary of new or changed Logs/Faults for SN08

Log/Fault Type	Log/Fault Name	New/Modified/Deleted, ACTID and Solution
Product = Call Server 2000		
BKM logs (new)	BKM600 BKM601 class_security.ver01	Feature A00006979 (UA-AAL1) creates the following logs. - BKM600 is generated if a system backup is successful - BKM601 is generated if a system backup fails. - class_security.ver01 is generated when a user attempts to invoke the Backup Manager and does not have the correct permissions.
IWBM logs (new)	IWBM502 IWBM503 IWBM504 IWBM505	Feature A00007121 (UA-AAL1, PT-AAL1) introduces the following logs: - IWBM502 indicates that a BSY command is being requested for a set of IW SPM bridge terminals. - IWBM503 indicates that an RTS command is being requested for a set of IW SPM bridge terminals. - IWBM504 indicates that an OFFL command is being requested for a set of IW SPM bridge terminals. - IWBM505 indicates that a FRLS command is being requested for a set of IW SPM bridge terminals.
MGEM log (new)	MGEM714	Feature A00007140 (UA-AAL1) introduces this log which is raised each time the MG9K Upgrade Tool is executed.
SPM log (changed)	SPM313	Feature A00007243 (PT-AAL1) modifies this log to add new Reason "MAC address mismatch." The log reports a difference between the MAC address datafilled in table MNCKTPAK and the actual MAC address of the physical card. This feature is applicable only for the MG4K SPMs.

Summary of new or changed Logs/Faults for SN08

Log/Fault Type	Log/Fault Name	New/Modified/Deleted, ACTID and Solution
ESA304 (nnEsaCoiFault) ESA312 (ESA Provis Fault)		Feature A00007415 (UA-AAL1) introduces the following logs: • ESA304 (Major) is generated by the EM in response to a trap from the MG9000 (nnEsaCoiFault). The MG9000 sends this trap when it detects communication problems to other nodes in the same community of interest. • ESA312 (Major) is generated by the EM when a failure occurs while trying to provision internodal community of interest data for a given NE.
CAP log (Changed)	CAP101	Feature A00007417 (DMS) changes the CMICOVLD field to IOOVRLD to indicate both the CMIC and Ethernet link overloading condition.
SAM21 alarms (new)	UnderlyingResourceUnavailable (2) BootServerUnavailable NFSMountsDown	Feature A00007424 (PT-AAL1) introduces the following alarms: • UnderlyingResourceUnavailable is a minor alarm when it indicates that an application card is locked and is not available. • UnderlyingResourceUnavailable is a major alarm when it indicates that an application card is being autorecovered. • BootServerUnavailable indicates that the boot server cannot be reached. Severity may vary. • NFSMountsDown is raised for any mounts that remain down after the check and attempt to re-mount.

Summary of new or changed Logs/Faults for SN08

Log/Fault Type	Log/Fault Name	New/Modified/Deleted, ACTID and Solution
IAA logs (new)	IAA314	Feature A00007465 (DMS) introduces the following logs:
	IAA342	IAA314 is generated whenever an IAA module fails to initialize. The reason text field may contain one of 7 possible strings.
	IAA343	IAA342 is generated whenever an IAA module cannot communicate with other IAA modules, i.e., EMDA.
	IAA344	IAA343 is generated when a PCEM processing error occurs. The reason text field may contain one of 6 possible strings.
	IAA345	IAA344 is generated when an IAA module cannot create an audit entry.
	IAA346	IAA345 is generated when an IAA module detects a configuration problem. The reason text field may contain one of 2 possible strings.
	IAA347	IAA346 is generated when an IAA cannot communicate to the downstream RKS pair or DF. The reason text field may contain one of 4 possible strings.
	IAA641	IAA347 is generated when an IAA module detects a problem when trying to manage its filesystem storage.
	IAA646	IAA641 is generated when an IAA module goes into service.
	IAA701	- IAA646 is generated when communications between the IAA and the downstream RKS pair or DF has been restored. - IAA701 is generated when the data being process by the IAA is corrupted.
SDM security log (new)	Authentication succeeded or failed	Feature A00007489 (DMS) introduces the SN08 Authentication and Authorization Security Syslog, generated when a security event occurs on a SDM.
SDM file integrity audit (new)	N/A	Feature A00007491 (DMS) monitors the files on the SDM and records file change events to log files. File change events will be logged to one of two log files, auditlog, and securitylog. File changes resulting from regular configuration changes will be recorded in the auditlog file. File changes which are abnormal will be recorded in the securitylog file.

Summary of new or changed Logs/Faults for SN08

Log/Fault Type	Log/Fault Name	New/Modified/Deleted, ACTID and Solution
SDM patch check alarm (new)	N/A	Feature A00007602 (DMS) introduces a new minor alarm generated under the "sdmmtc sys" level, raised upon a patch signature check failure.
SDM security logs (new)	SDM337 SDM637	Feature A00007602 (DMS) introduces security logs generated to report patch signature check failures and manual alarm clearing. - SDM337 indicates that the patch failed signature checking. - SDM637 indicates that the patch check status is cleared by the user.
CBM upgrade log (new)	N/A	Feature A00007635 (DMS) introduces a CBM upgrade log that is generated for any CBM upgrade failure.
SAM21 logs (changed)	SCUxxx IPOAxxx SM21xxx	Feature A00008902 (UA-AAL1) modifies SAM21 logs to add two lines for alarm detail. The 3 digits of the alarm ID use the first digit for the alarm category and the last two digits for the alarm's cause. Using a mapping table, the items of Category and Cause are added to the end of the alarm detail.
SDM logs (changed)	SDM314 SDM330 SDM334 SDM335 SDM336 SDM614 SDM633 SDM634 SDM635 SDM636	Per CRs Q00990600 and Q01019345, these logs are modified for Event Type and Event Label clean up, and a format change of the DS512 link enumeration within the log where applicable.
Product = CS 2000 TOPS		
TEOL log (changed)	TEOL100	Feature A00007271 (PT-AAL1) modifies this log to add OSSAIN MIS to the list of values.
TOPS log (new)	TOPS615	Feature A00007713 (DMS) creates this INFO log to indicate the operator teams and the number of positions in each team with auto-compression turned on.
Product = IEMS		
IEMS supported logs		Feature A00007302 (UA-AAL1) lists IEMS-supported logs in its Appendix A.

Summary of new or changed Logs/Faults for SN08

Log/Fault Type	Log/Fault Name	New/Modified/Deleted, ACTID and Solution
Data Server process logs		Feature A00007304 (UA-AAL1) lists 12 Data Server process logs which can be seen in the /var/adm/custlog file on the SDM/CBM.
NLClient and NLServer logs		Feature A00007304 (UA-AAL1) lists 42 logs generated by the NLServer and nISafServer which can be seen in the /var/adm/custlog file on the SDM/CBM.
logNormalizer and logNormSAF logs		Feature A00007304 (UA-AAL1) lists 22 logs generated by these two processes. Messages can be seen in the /opt/nortel/logs/coreEMS/custlog file on the CEM server.
CEM SAF logs	TMN 300-399 TMN 600-699	Feature A00007304 (UA-AAL1) describes the logs generated by the Core Element Manager (CEM) Store and Forward (SAF) framework. Trouble logs are in the range TMN 300-399, and Info logs are in the range TMN 600-699. Examples: • TMN301: Application error • TMN302: System error • TMN303: Communication error • TMN309: Data Server error • TMN311: Fatal error • TMN600: Information only • TMN601: File IO info • TMN604: Application status • TMN630: DataServer OK
Product = MG 9000		
MG9K security alarms (new)	(see description)	Feature A00005561 (UA-AAL1) introduces the following Security Alarms at the EM and the LCI: • Non-responsive RADIUS Server • Expired Links to Security Peers • Replayed Packet threshold • Packet Discard threshold

Summary of new or changed Logs/Faults for SN08

Log/Fault Type	Log/Fault Name	New/Modified/Deleted, ACTID and Solution
MG9K security events logs (new)	(see description)	Feature A00005561 (UA-AAL1) introduces the following Security events logs at the EM: • IKE negotiation errors • IP packet authentication failures • Packet discard • Replayed packets
IPSec Syslog messages (new)		Feature A00005561 (UA-AAL1) documents the wide variety of IKE failure messages generated to syslog.
MG9K logs (new)	(see description)	Feature A00005646 (UA-AAL1) introduces the following logs as thresholds. When the threshold is crossed, an alarm will be generated. • Logging Event — Sequence_Number_Overflow — Life_Time_Expired, Type = SoftlHard • Security Policy Database — SAD_Discard_Policy:- Direction (in/outbound) — SAD_Lookup_Fail, info needed:- Direction (in/out bound):- Sub-info field invalid SPI, Replayed packet • IKE — IKE_Main_Mode-Failed, Mismatched PSK — IKE_Quick_Mode-Failed, Proposal mismatch, NULL ESP & authentication = null, en/decryption failures — IKE_Packet Discarded, decryption errors, Auth errors • IPsec Security Association — SA_Decryption_Error — SA_Authentication_Error

Summary of new or changed Logs/Faults for SN08

Log/Fault Type	Log/Fault Name	New/Modified/Deleted, ACTID and Solution
MG9K alarms (new)	(see description)	Feature A00005646 (UA-AAL1) introduces the following alarms: • Unable to communicate with RADIUS Server • Secure link Down w GWC • Packet Discard (depends on the threshold set) • Overload Controls--these alarms will now also apply to the ABI & ITP Card as well as the DCC Card.
DACV alarms (new)	DACV at Rail DACV Out of Range	Feature A00006906 (UA-AAL1) introduces the following alarms. • DACV at Rail is a Major alarm to indicate the ITP clock circuitry has attempted to acquire sync and has traversed the frequency range to the extreme end of its capture range. It typically indicates that the incoming clock reference is not synchronized to a good reference and is out of the MG9K's acceptable frequency range. • DACV Out of Range is a Major alarm to indicate that the ITP 's DACV clock circuitry is in an invalid condition and the values are out of range.

Summary of new or changed Logs/Faults for SN08

Log/Fault Type	Log/Fault Name	New/Modified/Deleted, ACTID and Solution
GIGE alarms	New	Feature A00007000 (UA-AAL1) adds new GIGE alarms.
	301 LOS	• 301 LOS, Loss of Signal, Critical
	302 RFI	• 302 RFI, Remote Failure Indication, Critical
	304 TEM	• 304 TEM, Temperature Threshold Exceeded, Critical
	305 POW	• 305 POW, Low power indicated, Critical
	306 RxSD	• 306 RxSD, Receive Signal Degraded, Critical
	307 RxEED	• 307 RxEED, Receive Excessive Error Ratio, Critical
	308 TBC	• 308 TBC, Transmit Bias Current, Critical
	309 LINT	• 309 LINT, Link Initialization, Critical
	310 OPT	• 310 OPT, Transmit Optical Power, Critical
	311 OPR	• 311 OPR, Receive Optical Power, Critical
	312 GARP	• 312 GARP, GARP Failure, Critical
	313 LKINT	• 313 LKINT, Link Integrity Failure, Critical
	314	• 314 AUTONEG, Auto Negotiation Failure, Critical
	AUTONEG	• 315 NONPREFLINK, Non-preferred Link is active, Critical
	315 NON	
	PREFLINK	

Summary of new or changed Logs/Faults for SN08

Log/Fault Type	Log/Fault Name	New/Modified/Deleted, ACTID and Solution
GIGE Logs (new)	GIGE301	Feature A00007000 (UA-AAL1) adds new logs related to GIGE alarms.
	GIGE302	GIGE301 indicates a Communications Subsystem Failure, loss of signal.
	GIGE303	GIGE302 indicates a Communications Subsystem Failure, remote failure.
	GIGE304	GIGE303 indicates a Communications Subsystem Failure, transmit failure.
	GIGE306	GIGE304 indicates a Communications Subsystem Failure, temperature threshold exceeded.
	GIGE307	GIGE306 indicates a Communications Subsystem Failure, low power indicated.
	GIGE308	GIGE307 indicates a Communications Subsystem Failure, transmit excessive error ratio.
	GIGE309	GIGE308 indicates a Communications Subsystem Failure, transmit bias current.
	GIGE310	GIGE309 indicates a Communications Subsystem Failure, link initialization.
	GIGE311	GIGE310 indicates a Communications Subsystem Failure, transmit optical power.
	GIGE312	GIGE311 indicates a Communications Subsystem Failure, receive optical power.
	GIGE313	GIGE312 indicates a Communications Subsystem Failure, GARP failure.
	GIGE314	GIGE313 indicates a Communications Subsystem Failure, link integrity failure.
	GIGE315	GIGE314 indicates a Communications Subsystem Failure, autonegotiation failure.
		GIGE315 indicates a Communications Subsystem Failure, non-preferred link is active.

Summary of new or changed Logs/Faults for SN08

Log/Fault Type	Log/Fault Name	New/Modified/Deleted, ACTID and Solution
OMC log (new)	OMC300	Feature A00007213 (UA-AAL1) introduces the following log: OMC300 indicates that the OM Collector failed to collect OM files from the MG9K during a particular collection interval. OMC300 also indicates that the OM Collector is able to restart collecting OM files from the MG9K.
NE logs (changed)	NE501 NE601 NE602 NE608	Per CR 1040410, these logs have been modified to add the Card load name and serial number of the affected card to the log content.
SNMP logs (changed)	SNMP300 SNMP600	Per CR 1010546, log SNMP300 is changed to SNMP600. SNMP300 no longer exists.
Product = Network Patch Manager (NPM)		
	(see description)	Feature A00006901 (UA-AAL1) introduces the following 3 alarms: - REL_GEN_NOT_APP, a Major alarm raised when a released patch has not been applied. Relates to log NPM360. - PFRSGETPATCH, a Major alarm raised when the PFRS GENREPORT task has failed. Relates to log NPM360. - PFRSGENREPORT, a Major alarm raised when the PFRS GETPATCH task has failed. Relates to log NPM360.

Data Schema tables/MIBs changes overview

The following Data Schema tables or MIBs are new or changed for SN08. More complete descriptions appear in the Feature Deltas section of this document.

Summary of new/changed Data Schema information for SN08

Table name	New or changed	Description
Product = Call Server 2000		
NTPOLL	New	Feature A00006226 (DMS) creates new table NTPOLL which contains a visual representation of the poll steps to be done during the next polling, as well as the ability to modify, add, or delete poll steps at the user's discretion via Table Control.
IBNLINES	Changed	Feature A00006731(DMS) modifies IBNLINES by adding line option EOF to the OPTLIST subfield under field RESULT.
ACDMISPL	Changed	Feature A00007250 (DMS) modifies ACDMISPL to define the relationship between the ACDMIS pool and the transport type, X.25 or TCP/IP by adding new field LINKSEL. This field will serve a dual purpose of defining which remote IP addresses are allowed access to the DMS-100/CS2K as well as defining the relationship between the pool and session link.
(See description column)	Deleted	Feature A00007271 (PT-AAL1) verifies that tables ARUIBMRT, DUAQOPT, DQMODEM, and HOBICDEV were deleted in SN08, and that tables OPRDAT and SAQSIZE were deleted in SN08

Summary of new/changed Data Schema information for SN08

Table name	New or changed	Description
OCGRP TOPSPOS OCHOSTQ TQMSFCQA	Changed	Feature A00007271 (PT-AAL1) modifies these tables as follows: - OCGRP--All tuples with a DLSEL (within the DLOVRLAY field) of LAPD will be removed as of SN08. - TOPSPOS--All tuples with a DATATYPE (within the DATAPATH field) of TMS will be removed as of SN08. - OCHOSTQ--all tuples which have a REROUTESEL of Y will have VLTHROTL removed from their REASONS set (if it is present) as of SN08. - TQMSFCQA--All tuples with an ASSTTYPE (within the ASSTAREA field) of SA cannot be added as of SN08.
LOGTHROT	New	Feature A00007277 (DMS) creates table LOGTHROT to implement LOGs throttling functionality for XA-Core, thus allowing the customer to specify on Time Units and Thresholds per Report Name. Only core logs can be throttled.
ISERVOPT	Changed	Feature A00007383 (DMS) modifies ISERVOPT as follows: - Entry DNH_OPTS is added to field SOPTSKEY - Entry DNH_OPTS is added to field SOPTSVAR/OPTION - New subfields PILOT_CHARGE and PILOT_DISPLAY are added to entry DNH_OPTS in field SOPTSVAR/OPTION.
nnCommunityOfInterest	New	Feature A00007415 (UA-AAL1) creates this MIB to support groupings of MG nodes into "communities of interest" (COI).
SDMBILL	Changed	Feature A00007464 (DMS) modifies this table to include additional field EXPEDITE to provide delivery of PacketCable Event Messages (billing data) to CBM.
AMAOPTS	Changed	Feature A00007752 (DMS) modifies this table by adding option CORRID to capture the Universal Billing Correlation ID for BC AMA format.

Summary of new/changed Data Schema information for SN08

Table name	New or changed	Description
CDRTMPLT	Changed	Feature A00007752 (DMS) modifies this table by adding parameter CORRID to the list of parameters which can be datafilled in table CDRTMPLT, thus allowing the capture and recording of the Universal Billing Correlation ID for CDR.
KSETINV	Changed	Feature A00007790 (PT-AAL1, DMS) modifies this table to increase the maximum table size from 31,743 to 150,000.
NSCPMAP	New	Feature A00007934 (DMS) introduces table NSCPMAP to provide a mapping from the originator's STDPRT name to a new STDPRT name for use by the E800 Response translation.
NSCDEFS	Changed	Feature A00007934 (DMS) modifies table NSCDEFS to add new option PRETRANMAP as a provisioning trigger for activating a lookup in new table NSCPMAP. It also provides equivalent functionality to the existing NSCDEF's option PRETRAN.
IBNFEAT	Changed	Feature A59039138 (DMS) adds the new announcement field MWT_ANNOUNCEMENT to the MWT feature in table IBNFEAT.
Product = MG 9000		
NORTEL-UEM G-PERFMON- MIB	Changed	Feature A00005646 (UA-AAL1) modifies this MIB so the simple names of the items for Thresholds and Overload no longer reference the DCC.
OFFICE_WIDE _DEFAULTS	Changed	Feature A00007213 (UA-AAL1) modifies this table as follows: one more entry is made in this existing database table to store Collection intervals.

Commands and User Interface changes overview

The following Commands and/or User Interface are new or changed for SN08. More complete descriptions appear in the Feature Deltas section of this document.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name		Command/User Interface Description
Product = CS 2000		
POLL CI command (changed)		Feature A00006226 (DMS) adds three new options to the POLL CI command: • POLL RESTORE_DEFAULTS allows the user to return the state of Table NTPOLL to its system default. • POLL DOSTEP xx allows the user to execute a single step from Table NTPOLL. • POLL DOSTEP xx allows the user to execute a single step from Table NTPOLL. • POLL PUSH (ON/OFF) allows the user to specify FTP storing of files on a remote system.
TL1 interface in CS2M (new)		Feature A00006450 (UA-AAL1) introduces a TL1 interface in the CS2M that provides a common point of access for MG9K line test. TL1 provides an accepted, standards-based interface for this purpose. This feature adds a standards-based command set as an overlay to pre-existing line test functionality on the MG9K.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
CAPACITY MAPCI (changed)	Feature A00006693 (DMS) modifies the existing CAPACITY MAPCI level to provide a new IOCAP MAPCI level in XA-Core only. The new IOCAP level will provide IO utilization and IO messaging throughput information for HCMIC and HIOP IO cards. It includes the following new commands: • IOCAP--This new IOCAP MAPCI level will be giving the IO utilization values and messaging throughput information for each IO service type (CMIC, ETHR and AMDI). The information on this new MAPCI level will be updated once every minute. • QUIT--This new IOCAP QUIT command is available in XA-Core only and allows the usr to exit IOCAP MAPCI. • IOMAX--This command displays the hourly high watermark value captured for each IO service type (CMIC, ETHR or AMDI). The value is captured every hour of day for the last 31 days. The data survives all types of restarts (warm, cold and reload). • IOAVG--This command displays the hourly average value captured for each IO service type (CMIC, ETHR or AMDI). The value is captured every hour of day for the last 31 days. The data survives all types of restarts (warm, cold and reload). • DISP--This command displays the utilization and messaging throughput values of each IO service type of the last 60 minutes with option CURR (for example, when a command is issued at 2:35, displayed data is from 1:34 to 2:34) or previous full hour with option PREV (for example when a command is issued at 2:35, displayed data is from 1:00 to 2:00). This information survives all types of restarts (warm, cold and reload). • STATUS--This command displays all status information including current version of IOCAPCI tool, timestamp in terms of hour and minute, the current IO utilization values of all IO services (CMIC, ETHR, AMDI), the current value of the IO_WARNING_THRESHOLD office parm.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
QDN, QLT, QLEN	Feature A00006780 (UA-AAL1) modifies these commands:
QDNWRK	• Line Query Commands QDN, QLT, and QLEN to add new field BEARER_NETWORK to the Command Output.
QLENWRK	• Line Query Commands QDNWRK, QLENWRK, and QHASU are enhanced to include a mandatory query parameter called BEARER_NETWORK. Also modified to display the BEARER_NETWORK in the Command Output.
QHASU	
QGRP	
QCUST commands	• Line Query Command QGRP output is enhanced to display against each Group member the information about the Bearer Network to which the member belongs.
POST at the PMLEVEL	• Line Query Command QCUST output is enhanced to display the corresponding Bearer Network against each of the LENSs. A new field BEARER_NETWORK (record number 22) is now in the QCUST command output against each LEN.
POSTCLS at SPM level	• POST command at PMLEVEL of MAPCI introduces the Bearer Network (BN) parameter to create a posted set of PMs associated with a specific Bearer Network.
POST at the TTP level of MAPCI	• POSTCLS at SPM level of MAPCI is introduced to enable the craftsperson to post the SPMs by the node class type (such as DMSCP, SMG4, IWDPT, IWBRG). For an IW Bridge SPM (IWBRG), an optional parameter is provided to allow specifying the Network Bridge CLLI name. This command is not a MENU command option.
QUERYPM for Posted PMs	• POST command in the TTP MAP directory introduces new parameter, BN, to refine posted set of the trunks by a specified bearer network. This command can be used only on a already created post-set using any of the existing post commands. This enables the craftsperson to use maintenance commands available at the TTP level on the trunk members of a specific bearer network.
SPM MAP display	• The QUERYPM command is modified to include display of the Bearer Network information for the Posted PM.
Display LTP level of MAPCI	• The MAP display for a posted SPM is modified to display the Bearer Network information for the SPM. For an IW Bridge SPM, the name of the Network Bridge is displayed. For an SMG4, DMSCP or DPT SPM, the Bearer Network is displayed.
	• The display at the LTP level of MAPCI is enhanced to display the Bearer Network information associated with a posted line. "N/A" is displayed for Not Attached ISDN agents.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
(continued) QOSSVER	(continued) Feature A00006780 (UA-AAL1) modifies these commands: The QOSSVER command is provided to allow the craftsperson to identify which OSS interface impacting features in the current XACORE load will be activated by modifying the parameter, OSS_PROV_VERSION. An optional parameter, specifying the Succession Networks release, to identify the features associated with a particular release. Refer to the Office Parameters section for more information.
Notes for Modified Commands in A00006780	Feature A00006780 (UA-AAL1) has these notes for the modified commands: NOTE 1: For QDN, QLT, QGRP and QCUST commands, BEARER_NETWORK will not be displayed for LTIDs which are not attached to a LEN. NOTE 2: For Query Commands and MAP displays, the DISPLAY field of the table BEARNETS is used to show the Bearer Network associated with the queried/posted agent. NOTE 3: For MAP displays for IW Bridge SPMs, the DISPLAY field of table NETBRIDGE is used to show the Network Bridge CLLI associated with the Posted SPM.
InterNodal Emergency Stand Alone for MG9K (new)	Feature A00006894 (UA-AAL1) provides the ability to make calls while in ESA for MG9K nodes. Telcos are also given the ability to provision a "Community of Interest" to define which MG9K nodes can make ESA calls between one another.
DCC and ITP cards	Feature A00006906 (UA-AAL1) introduces the capability for the NY45FA GiGE DCC circuit pack to connect to an International standard Synchronization Supply Unit (SSU) using 2048kHz interfaces. The NY45FA can use an SSU or BITS signal as a timing reference.
IEMS System Backup Command Rejection Error Dialog (new)	Feature A00006979 (UA-AAL1) creates this new GUI which presents the user with a general error dialog when the user attempts to perform actions which are incompatible with Synchronous Backup Restore Manager activity.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
CLUI for Synchronous Backup Restore Manager	Feature A00006979 (UA-AAL1) creates this CLUI to invoke the Synchronous Backup Restore Manager. Once the user has entered the CLUI, only Synchronous Backup Restore Manager Commands are available to the user.
Core Element Manager (CEM) patching (changed)	Feature A00007024 (UA-AAL1) modifies the patchid for CEM patches from 8 characters up to 32 alpha-numeric characters. It also modifies the patch file format to implement the incremental cumulative nature of CEM patching.
Core Element Manager (CEM) patching (changed)	Feature A00007121 (UA-AAL1) creates a new MAPCI level, BRGTMCE, which allows the craftsperson to post the information for the IW bridges associated with a specific SPM. The user view dynamic usage/state and can perform maintenance functions on these bridges such as BSY and RTS.
MG9K EM GUI (changed)	Feature A00007140 (UA-AAL1) modifies the “MG Upgrade Wizard” portion of this GUI during a nodal upgrade as follows: • The wizard asks the user if the EM should perform a “prep download” or a “complete upgrade”. • “XDSL Cards” and “MTA Cards” are added as choices in the “Card Type Selection” panel.
GWC Upgrade Tool GUI (new) CallServer Upgrade Tool (new)	Feature A00007140 (UA-AAL1) creates a new GWC Upgrade Tool GUI and a new CallServer Upgrade Tool GUI. The tools provide a pure CLI for the customer or upper-level coordinator to invoke upgrade functionalities, plus an interactive CLUI for easy use of the tools.
SPMDIR, CEMDIR command responses (changed)	Feature A00007243 (PT-AAL1) modifies certain command responses in the SPMDIR and CEMDIR directories: • In SPMDIR, the QUERYPM FLT REASON command response will now include MAC address mismatch information. • In CEMDIR, the RTS command response will now include MAC address mismatch information.
CS2K Mgmt Tools GUI (changed)	Feature A00007300 (UA-AAL1) modifies this GUI so the IPSec provisioning tab is now available for all GWC profiles.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
New Platform Type value	Feature A00007404 (UA-AAL1) introduces a new platform type value of SCTY which can be queried as part of report generation from the NPM GUI or CLUI.
Internodal ESA Configuration (new)	Feature A00007415 (UA-AAL1) creates this GUI to allow the customer to configure communities of interest. Internodal ESA allows groupings of MG nodes into "communities of interest" (COI). All nodes in a community can communicate with each other during ESA, allowing calls to complete inside the community during ESA.
IAA modules GUIs (new)	Feature A00007465 (DMS) creates the following GUIs: • Scheduler • RKS Output Destination--used to configure the downstream RKS pairs which the EMDA sends event messages as well as the protocol to use. • DF Output Destination--used to configure the downstream DF which the EMDA sends LI event messages as well as the protocol to use. • Global System Parameters--used to configure the NE providing the Accounting messages.
GR70 functionality (changed)	Feature A00007483 (DMS) provides a new means of securing GR740 TCP/IP connections between the OSS and the CBM.
SDM Config level (changed)	Feature A00007489 (DMS) creates a new SecuConf level under the Admin level and also modifies the SDM Config level by presenting a new configuration screen for selecting security servers. It also creates the following new commands: • enableIEMSUser, so the administrator can allow an IEMS user to logon to an SDM • disableIEMSUser, so the administrator can disallow an IEMS user to logon to an SDM
SDM maintenance (changed)	Feature A00007492 (DMS) eliminates the requirement to be the <i>root</i> user in order to do SDM maintenance procedures. Two new user groups are created to enable increased authorization granularity: emsadm for system administration and secadm for security administration.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
SDM maintenance user level (changed)	Feature A00007492 (DMS) adds two new commands and modifies others as follows: • Dispuser (new) enables the operator to display all the users on the system or information about a specific user. • Dispgrp (new) allows the operator to display all the role groups, the user in a specific role group and the actions that a specific role group can do. • Add and change commands are modified to now prompt the user for each piece of information needed to create a user. The information asked for include primary groups, groups, shell and password.
VERIFYLOAD command (new)	Feature A00007602 (DMS) introduces this command to perform a signature check on the ESD load. The command is packaged within the ESD load and is invoked manually from the command line.
SAM21 EM GUI (changed)	Feature A00007927 (UA-AAL1) modifies this GUI as follows: • change the label of “Administrative” to “Card Status” in every card view on SAM21 EM GUI • change the behavior of the EM on pulling/inserting the NSS card: if a Locked/Disabled NSS card is pulled, when it is re-inserted, the card will come back in Locked/Disabled status. However, if an Unlocked/Enabled NSS card is pulled, when it is re-inserted, SAM21 EM will automatically unlock this card.
Line Coefficient View (changed)	Feature A00008387 (UA-IP) modifies this GUI to display the Line Coefficient information in a table format. It also adds 8 new fields: PEC, Country Info, CRAM, Vinetic version, Loop Info, Metering, Service Type, and Default.
Bulk Provisioning Service Types View (new)	Feature A00008387 (UA-IP) creates this GUI to bulk provision all the line circuits on a GLC card to the same service type. This GUI is only enabled when the card is deprovisioned.
Product = CS 2000 TOPS	

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
TOPSPOS POST command (changed)	Feature A00007713 (PT-AAL1, DMS) modifies POST command under TOPSPOS to add parameter AC which creates a post set of all in-service IP positions with voice auto-compression turned on. The listset command is then used to display the position list.
Product = IEMS	
CEM integrated to IEMS (changed)	Feature A00007304 (UA-AAL1) covers the installation of the CEM server onto the IEMS server and installation of the CEM components on the SDM and CBM.
MS2000 CLUI (changed)	Feature A00007341 (UA-AAL1) migrates the existing functionality of the MS2000 CLUI to reside on the IEMS platform. The following is newly added for SN08: • The MS2000 EM will make use of the existing IEMS audit logging functionality to provide a log of what user issued a command against an MS2000 node. • The MS2000 EM will make use of the existing IEMS alarming system to generate an alarm against the EM whenever a configuration of maintenance action by the EM has an unrecoverable failure.
MFT Backend Security Add Group Wizard (changed)	Feature A00007785 (UA-AAL1) enhances the MFT Backend Security Add Group Wizard as follows: • The administrator may manually provide a GID for the newly created group. If a value is not provided in the GID field, IEMS will pick a value from the range specified in the configuration file. • Only members of the “secadm” group have access to IEMS Security Client GUI. This applies to JWS Client and the HTML Client. SN07 users who are present in emsadm group will be automatically be provisioned in secadm group in SN08 during the upgrade process. In SN08 all group names must be 8 characters or less and consist of lowercase letters or numeric digits only.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
MFT Backend Security (changed)	Feature A00007785 (UA-AAL1) adds a new authorization group, secadm, whose members can perform the following Security Administration functions: • Adding/Deleting/Users. • Adding/Deleting/Modifying Groups • Modifying user profiles • Modifying IEMS system security settings
MFT Backend Security Add User Wizard (changed)	Feature A00007785 (UA-AAL1) enhances the MFT Backend Security Add User Wizard as follows: • In the second screen the account expiry is now an absolute date, not number of days from user creation. Also, the password expiry field now indicates how often (number of days) the user password will expire and not how soon the next password expiry will occur. • In the Advanced properties screen (from the “Advanced” button on the third screen) the following additional user attributes are now present: — UID is a read-only UID value for existing accounts. — GID is selected from a drop-down menu. The default primary GID is “succssn” for all users added. — GECOS can accept any information, such as the actual full name of the user. — LoginShell allows the administrator to select “no-access” or “restricted” options for each user. — Home Directory depends on the Login Shell selected. — MIIN is the minimum number of days required between password changes. — Password Expiry Date is a read-only field which will indicate the absolute date on which the current password for the user expires — LastChange shows the absolute date on which the password was most recently changed.
Product = MG 9000	

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
MG9K security (changed)	Feature A00005561 (UA-AAL1) implements IP security and user authentication capabilities on the MG9K to ensure that all users are validated before access is granted, and that all IP traffic between the MG9K and a remote peer (Element Manager or Gateway Controller) is authenticated through a RADIUS client/server network. The MG9K Security parameters can be configured from the LCI at initial commissioning or from the Element Manager.
IPSec for MG9K EM (changed)	Feature A00005646 (UA-AAL1) implements IPSec for MG9000 Element Manager to MG9000 Line Gateway OAMP communications. The craftsman will be able to independently manage IPSec parameters for all OAM&P communications to and from MG9000 network elements.
Security View GUI for MG9K EM (new) Office Wide Defaults View GUI for MG9K EM (changed) SLOA GUI SSPFS Security web page	Feature A00005646 (UA-AAL1) creates a new Security View GUI available from the MG9000 EM subnet. This GUI will manage the IPSec (and Internet Key Exchange) configuration file(s) that are used to setup security associations, keys, and protection mechanisms. This feature also modifies the Office Wide Defaults View to support IPSec. This will enable the customer to configure one set of IPSec parameters and have them applied to all, or a subset of, the provisioned MG9000s. The three parameters are Security OFF/ON, IKE preshared key, IKE time to live. The SLOA GUI is used to define security parameters to be used in securing the call control link between the VMG and the gateway controller. Added to the GW Controller Config tab will be a section for Security with parameters of Security OFF/ON or OfficeWide Default, IKE preshared key, IKE time to live. The SSPFS Security web page is used to define security parameters to secure communications into and out from this SSPFS Machine. This includes MG9000 Element Manager to MG9000 OAM&P communications.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
GIGE GUIs (new)	Feature A00007000 (UA-AAL1) introduces the following GUIs:. • GigECardView--Each SCG card has four ports. The card view can be opened from the shelf view. The card view shows totally four ilog graphics for the ports. Clicking on each of them opens the GigePortView. • GigePortView--The GigePortView will be opened when the user double clicks on the SCG card's port icon in the card view. The port view displays port/link attributes and its provisioning information. • GigELinkProtection--The Link protection can be invoked from the shelfview. The user will be able to specify the protection group number, protection group type, working (preferred) link and protected (non-preferred) link. In SN08, only one protection group of type 1:1 is supported. • BandWidthManager--. The bandwidth manager panel can be viewed from the Services submenu. The following network interface bandwidth data will be monitored: current ITP voice usage, current ABI voice usage and Overall network interface utilization. The data will be displayed in bits/second for GIGE systems. Bandwidth partitioning will also be supported in GIGE. • VLAN--VLAN provisioning data is accessed from the 'VLAN provisioning' view in the shelf view. There are a total of four VLAN IDs in SN08 release. • LinkIntegrityView--The Link Integrity test can be invoked from the shelfview Maintenance submenu 'Link Integrity View'. The link integrity test will be run on a protection group.
GIGE GUIs (changed)	Feature A00007000 (UA-AAL1) modifies the Performance Browser GUI to introduce Generic OM, Ethernet OM, RMON and PM data. The SMON data related to the VLAN is also displayed in the performance browser.
Configure Collection Interval (new)	Feature A00007213 (UA-AAL1) introduces this GUI to configure Sample and Summary intervals uniformly for all the MG9Ks in a Subnet.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
Performance Statistics Browser (changed)	Feature A00007213 (UA-AAL1) modifies this GUI so that the two date range fields also show dates in steps of 5 minutes, in addition to the existing displays of 15 minutes and 1 day.
Performance Measurements (changed)	Feature A00007213 (UA-AAL1) modifies the following information elements in SN08: • Collection Interval: Periodic collection interval may be configured to a combination of Sample and Summary intervals. In SN08, "5/30 Minutes" and "15 Minutes" are supported. • OSS delivery (and interface) or Local only: OM Collector sends appropriate CORBA notification whenever it succeeds or fails to generate CSV file. • OSS Collection Interval: As and when CSV file is generated, OM Collector sends a CORBA notification. OSS can use appropriate mechanism to collect CSV file as and when it receives this notification. • File Name: Directory wherein CSV are generated, are configurable in SN08.

Summary of new and changed Commands or User Interface for SN08

Command/User Interface Name	Command/User Interface Description
Product = Network Patch Manager (NPM)	
PFRS configuration (changed)	Feature A00006901 (UA-AAL1) makes the following changes:
NPM GUI and CLUI (changed)	• Moves PFRS configuration from the CLI tool into the NPM GUI and CLUI. • The user may now set up the PFRS drop box information via a preferences window in the NPM GUI and via a preferences command in the NPM CLUI. • The user may also execute a PFRS GENREPORT and a PFRS GETPATCH on demand through the NPM. • The user may also execute a PFRS GENREPORT and a PFRS GETPATCH on demand through the NPM. • This feature also provides new functionality for the PFRS user. The user can now decide if they would like the NPM to “clean up” or delete patches from the drop box that have been transferred to the NPM after the PFRSGETPATCH task has been executed. • The NPM GUI has been modified to include a new “View” button on specific NPM GUI panels and a new PatchFile Retrieval Preferences tab as part of the Preferences GUI. • System defined information in the NPM GUI can now only be viewed and cannot be edited. • A new refine or filter button will be available on the NPM GUI which will allow the user to quickly determine which patch(es) are applicable to which device(s) and vice versa. • A process monitor has been added to the NPM GUI which will provide a visual indicator to the user that a submitted request is in progress. This monitor will be specific to each instance of the NPM GUI and will not indicate activity of multiple GUIs. • The CM CLLI will appear on each NPM GUI window. This will provide clarification when the user is performing patching operations on multiple offices.

Servord changes overview

The following Service Order items are new or changed for SN08. More complete descriptions appear in the Feature Deltas section of this document.

Area	New or changed	ServOrd Description
Product = CS 2000		
OPTION	New prompt	Per feature A00006731 (DMS), new line option EOF can be assigned to an LCC of IBN, enabling the subscriber on the assigned line to exit on flash.
	New prompt	Feature A000059039138 (DMS) creates a new SERVORD prompt called MWT_ANNOUNCEMENT.
ADO command	Changed	Feature A00007244 (UA-AAL1) allows the assignment of options GIC (group intercom) and/or GIAC (group intercom all call) to a Meridian Business Set (MBS) using the ADO command.
ADO command	Changed	Feature A00007253 (UA-AAL1) allows the addition of MADN Ring Forward to an existing SCA MADN line using the ADO command. The system prompts the end user for the MRF_RING option to assign special ringing to the MADN group member.

Office Parameter changes overview

The following office parameters are new or changed for SN08. More complete descriptions appear in the Feature Deltas section of this document.

Summary of new/changed Office Parameters for SN08

New or Change	Parameter Name	Description
Product = CS 2000		
New	IO_WARNING_THRESHOLD	Feature A00006693 (DMS) creates this parameter in Table OFCENG to define a utilization warning threshold for all IO service types (CMIC, ETHR, AMDI) in the system. The IOCAP monitoring toolset uses the value of this parameter to peg the IOTHRESH register of the IOCAP OM whenever the IO utilization level of any IO service has exceeded this threshold on the switch.

Summary of new/changed Office Parameters for SN08

New or Change	Parameter Name	Description
New	OSS_PROV_VERSION	Feature A00006780 (UA-AAL1) creates this parameter in Table OFCVAR to enable/disable the Line Query Commands enhancements. The default value is always SN07, which ensures that the user needs to explicitly change the value from SN07 to any other value in the permitted range of values, to get access to functionality provided by feature code which enhances Line Query Commands. In the process, the Warning messages the user gets will ensure that the new functionality is enabled, only after upgrading the OSS software for the switch to be in sync with the command enhancements. NOTE: The QOSSVER command is provided to allow the craftsperson to identify which OSS interface impacting features in the current XACORE load will be activated by modifying the parameter, OSS_PROV_VERSION.
Deleted	(See description column)	Feature A00007271 (PT-AAL1) verifies that office parameters LANG_ERROR_SCREEN_DISPLAY, ADAS_ENABLE, and DA_BP_HOTEL_ROOM_REQUIRED were deleted in SN08, and that office parameters OPR_0PLUS_3RD_DISPLAY, OPR_0PLUS_COL_DISPLAY, OPR_0PLUS_3RDCON_DISPLAY, OPR_0PLUS_CLDCON_DISPLAY, TOPSACD_DASERV_INSTANCE, and TOPSACD_INTCSEV_INSTANCE were deleted in SN08.
Changed	SITELABEL	Per CR Q00720293, SITELABEL in Table OFCVAR now obtains the SWREL value from the actual product load of the switch. This value is not transferred with an ONP. The NCSxx/UCSxx names are no longer used for the actual load names. They are now all SNxx. The value can be observed by using the command IMAGENAME.

OM/PM changes overview

The following OMs/PMs are new or changed for SN08. They also appear in the OMs/PMs-by-product tables later in this document with lists of registers

and descriptions. More complete descriptions appear in the Feature Deltas section of this document.

Summary of new or changed OMs/PMs for SN08

OM Group or PM name	New or Changed	Description
Product = Call Server 2000		
IOCAP	New	Feature A00006693 (DMS) creates OM group IOCAP to provide information on IO capacity such as utilization and utilization high watermark and IO throughput information on a per IO service type (CMIC, ETHR and AMDI).
TRK2NET1 TRK2NET2	Changed	Feature A00006780 (UA-AAL1) enhances OM groups TRK2NET1 and TRK2NET2 so that tuples are allocated for all bearer networks provisioned in table BEARNETS for each Trunk Group datafilled in table TRKGRP, even if there are no Trunk Members against the Trunk Group in a bearer network. This results in pegging attempts to access a trunk member of a bearer type which is not provisioned in order to assist in engineering of multi-bearer trunk groups.
DPTOFC DPTNODE	Changed	Feature A00007135 (UA-AAL1) enhances OM groups DPTOFC and DPTNODE as follows: - For registers DPTNODE::DPTGTAT and DPTOFC::DPGTAT/DPGTAT2, the pegging is changed such that both the nodal level and the office level are counted at the same point (except in cases where the attempt fails prior to identifying a specific node). - The DPTOFC::DPGTFLO/DPGTFLO2 registers & DPTNODE::DPTGTFLO registers will be changed such that failed optimized attempts on nodes "not DPT-enabled" are not pegged against these registers.
TRK	Changed	Feature A00007135 (UA-AAL1) clarifies the use of register MAXBU in DPT trunk groups. Register MAXBU is effectively disabled for DPT trunk groups. The value of the MAXBU register for a DPT trunk group will always be equal to zero. The MAXBU register was designed to be used with non-DPT trunks. The DPTOFC and DPTNODE usage registers and high water registers are directly applicable to DPT trunks and should be used in the place of the MAXBU register.

Summary of new or changed OMs/PMs for SN08

OM Group or PM name	New or Changed	Description
(See Description column)	Deleted	Feature A00007271 (PT-AAL1) verifies that OM groups DUAQ and DUAQMOD were deleted in SN08, and that OM group TOPSPSZ is deleted in SN08.
TOPSALT TOPSOC	Changed	Feature A00007271 (PT-AAL1) modifies TOPSALT by removing the ALTVL register and modifies TOPSOC by removing the OCMCCS register.
IAA modules OMs	New	Feature A00007465 (DMS) creates the following OMs: • Records In • Records Out • Channel Type (EMDA Module Only) • Channel ID (EMDA Module Only) • Events Sent (EMDA Module Only) • Acknowledgements Received (EMDA Module Only) • Events Retransmitted (EMDA Module only) • Events Written to File (EMDA Module only) • Events Rejected (EMDA Module Only) • Last Event Message Header Sequence Number (EMDA Module Only)
TRK	Changed	Feature A00008350 (PT-AAL1, UA-AAL1) adds new register MIDFAIL to provide established bearer path failure counts on a per-trunk group basis.
TRNK2	Changed	Feature A00008350 (PT-AAL1, UA-AAL1) adds new register MIDFAIL2 as an extension register of MIDFAIL.
TRK2NET1	Changed	Feature A00008350 (PT-AAL1, UA-AAL1) adds new register MIDFAIL3 to provide established bearer path failure counts on a per-bearer network per-trunk group basis.
TRK2NET2	Changed	Feature A00008350 (PT-AAL1, UA-AAL1) adds new register MIDFAIL4 as an extension register of MIDFAIL3.
Product = MG 9000		

Summary of new or changed OMs/PMs for SN08

OM Group or PM name	New or Changed	Description
Ethernet OM	New	Feature A00007000 (UA-AAL1) adds the following performance measurements for the Ethernet OM: • Number of Alignment Errors • Number of FCS Errors • Number of Internal MAC Receive Errors • Number of Frame Too Longs • Number of Internal MAC TX Errors • Number of Symbol Errors • Number of Inpause Frames • Number of Outpause Frames • Number of Drop Events • Number of Broadcast Packets • Number of Multicast Packets • Number of CRC Alignment Errors • Number of Undersize Packets • Number of Oversize Packets • Number of Fragments • Number of Jabbers • Number of Collisions
MG9K EM performance statistics	Changed	Feature A00007000 (UA-AAL1) adds the following new performance parameters: • Errored Seconds • Severely Errored Seconds • Unavailable Seconds • Optical Power Transmit • Optical Power Receive • Transmit Bias Current • Temperature • Voltage

Summary of new or changed OMs/PMs for SN08

OM Group or PM name	New or Changed	Description
SMON Priority Statistics	New	Feature A00007000 (UA-AAL1) adds the following performance measurements for the SMON Statistics: • Total number Packets • Total Number of overflow Packets • Total number of HC packets • Total Number of Octets • Total Number of overflow Octets • Total number of HC octets
RMON HC Statistics	New	Feature A00007000 (UA-AAL1) adds the following performance measurements for the RMON HC Statistics: • Number of HC overflow packets • Number of packets received • Number of overflow octets • Number of octets of data received
SMON Statistics	New	Feature A00007000 (UA-AAL1) adds the following performance measurements for the SMON Statistics: • VLAN ID • Total number Packets • Total Number of HC Packets • Create time • Total Number of Octets • Total Number of HC Octets • Total number of non unicast packets • Total number of non unicast HC octets • Total number of non unicast octets • Total number of non unicast overflow octets
Product = IEMS		
IEMS supported OMs		Feature A00007302 (UA-AAL1) lists IEMS-supported OMs in its Appendix B.

AMA/Billing changes overview

There is no AMA/Billing information that is new or changed for SN08.

Summary of new or changed AMA/billing

AMA/billing item	New or Changed	Description

SOC Optionality Control (SOC) changes

The following SOC information is new or changed for SN08. More complete descriptions appear in the Feature Deltas section of this document.

Summary of new or changed SOC information for SN08

SOC code	New or Changed	Description
Product = CS 2000		
SVBI0035	New	Feature A00007383 (DMS) creates tracked SOC DNH Pilot Enhancement to track the DNH Pilot Number for CLI and Billing.
MCD00002	New	Feature A00007709 (DMS) creates this SOC to provide the presence-indication and call logging services for non-MCS (i.e., switch-based) subscribers. It does so by adding incremental AIN support for CONTINUE response to the AIN 0.1 Off Hook Delay (OHD) trigger query message. The SOC option MCD00002 is dependent on AIN Essentials software; order code AIN00006. It may only be enabled and used in conjunction with MCS Converged Desktop and is not supported for any other application.
NTS00030	New	Feature A00007934 (DMS) creates this SOC, "E800 Pretran Mapping." This SOC is always at ON state and does not control the feature functionality. This SOC has an RTU of A/P (Always Present) and the state cannot be changed to IDLE. SOC NTS00030 requires SOC NTS00005, "E800-US".



Integrated EMS Functionality

Integrated EMS Northbound Interfaces

General Information

The Integrated EMS provides a consolidated location to manage the Fault, Configuration, Performance Collection and Security account domains for devices (Network Elements, Element Managers, Management Applications and Platforms) in a CS 2000 central office. A brief description of its capabilities include the following:

- **Topology:** The Integrated EMS provides a graphical representation of the managed devices in a central office. The IEMS client comes with default views (Network Elements, Element Managers, Applications and Platforms) of the managed network and provides flexible interfaces that allow a craftsperson to create customized views of the network. The alarm state of each of the managed devices in the Integrated EMS topology is dynamically depicted by the associated background color (Red= Critical, Red=Major, Amber=Minor, Yellow=Warning, Green=Clear) of the managed device.
- **Fault:** The Integrated EMS aggregates the event streams received from the various EMSs, NEs, applications, and platforms that it manages. It normalizes the events received from these streams and forwards the events over its northbound interfaces (such as SCC2, NTSTD, SNMP, and SYSLOG). The Integrated EMS alarm and event browsers provide a consolidated real-time and historical view of the events that have occurred in a CS 2000 central office. It provides tools to view and page through the events and alarms in a common graphical interface. The Alarm and event browsers provide a wide range of features to manage, sort, filter and view events in a single centralized location. For detailed information on the IEMS fault management features please refer to the Integrated EMS Fault Management document (NN10334-911).
- **Performance:** The Integrated EMS provides a centralized location for collecting, storing and forwarding performance data in a CS 2000 central office. Its performance collection sub-system provides some basic tools for viewing and graphing the collected performance attributes. In addition, it does provide interfaces to configure the generation of threshold alarms for

the collected Operation Measurement data. For detailed information on the IEMS performance management features please refer to the Integrated EMS Performance Management document (NN10327-711).

- **Configuration:** The Integrated EMS provides a centralized location to launch the various Succession Configuration management interfaces. For detailed information on the IEMS performance management features please refer to the Integrated EMS Configuration Management document (NN10330-511).
- **Security:** The Integrated EMS provides a centralized graphical interface to configure and manage the user accounts in a Succession Central Office. The Integrated EMS Security subsystem provides centralized authentication and authorization server for many of its managed devices. It also provides centralized security logging for successful and failed authentications. In addition it provides Single Sign-on support enabling a user to log in to the IEMS client once and access multiple Succession Management interfaces without requiring the user to re-enter a userid and password. For detailed information on the IEMS Security management features please refer to the Integrated EMS Security and Administration document (NN10336-611).

IEMS Northbound Fault Interface

User Setup, Administration, and Customization of Views

For information on initial setup and customization of the Northbound fault feed from IEMS see:

- IEMS Fault Management Guide - NN10334-911

Device Fault Mapping References for Northbound Interface

The following table shows the log identification criteria for each device, manager, and application supported by IEMS. Log references for table entries defined in *italics* can be found in:

NN10275-909 - Succession Fault Management Logs Reference (volumes 1-3)

See the table below for additional fault documentation

Fault Correlation for SN08 Devices

	NB format -> Device/EM	Documentation Log Key	Document Reference
1	<i>“Audio Provisioning Server (APS)”</i>	Specific Problem	NN10328-911 MS 2000 Series Fault Management

	NB format -> Device/EM	Documentation Log Key	Document Reference
2	“Call Agent Core”	log name and log number	see “ Fault documentation for Call Agent Core :”
3	“Call Agent Platform”	Log name and number	NN10087-911 Call Agent Fault Management
4	CBM See “CS2000 Core Manager”	log name and number	See “CS2000 Core Manager”
5	CEM	log name and number	NN10334-911- I Integrated EMS Fault Management
6	“CS2000 Core Manager”	log name and number	NN10082-911 CS 2000 Core Manager Fault Management
7	“Gateway Controller (GWC)”	Log name and number	NN10090911 GWC Fault Management
8	“GWC Manager”	log name and number	PLN-08AT OSS SN08 OSS Guide (ATM) PLN-08IP OSS SN08 OSS Guide (IP)
9	IEMS	log name and number	NN10275-909v3: Succession Fault Management Logs Reference Volume 3
10	“Media Application Server (MAS)”	Event Id	NN10303-111 MCP 2.0 MAS Meetme Basics NN10297-111 MCP 2.0 MAS Adhoc Basics
11	“Multimedia Communication Server (MCS)”	log name and log number	NN10247-111 Multimedia Communication Server 5200 System Management Console User Guide

	NB format -> Device/EM	Documentation Log Key	Document Reference
12	“Multi-Service Data Manager (MDM)”	log name and number	NN10092-911 Passport 15000 and MDM in Succession Networks Fault Management (PT-AAL1/UA-AAL1)
13	MDM for BSC see “Multi-Service Data Manager (MDM)”	log name and number	see “Multi-Service Data Manager (MDM)”
14	MDM - carrier see “Multi-Service Data Manager (MDM)”	log name and number	see “Multi-Service Data Manager (MDM)”
15	MDM Client-Server see “Multi-Service Data Manager (MDM)”	log name and number	see “Multi-Service Data Manager (MDM)”
16	“MultiService Switch 7400, 15000, 20000”	log name and number	NN10092-911 Passport 15000 and MDM in Succession Networks Fault Management (PT-AAL1/UA-AAL1)
17	<i>“Media Gateway 9000 (MG9000)”</i>	Logname and number	NN10325-900 ATM/IP Fault Management
18	<i>“MG9000 Manager”</i>	logname and number	NN10074-911 MG9000 Fault Management
19	“MS2000 Series Node”	logname and number	NN10328-911 MS2000 Fault Management
20	<i>“Network Patch Manager (NPM)”</i>	logname and number	N10084911 CS2000 Management Tools Fault Management
21	“Ethernet Routing Switch 8600 (previously Passport 8600)”	logname and number	241-6003-110 ERS 8600 Device Integration Cartridge User Guide
22	<i>“SAM21 Element Manager”</i>	logname and number	NN10089-911 SAM21 Shelf Controller Fault Management
23	<i>“SAM21 Shelf Controller”</i>	logname and number	NN10089-911 SAM21 Shelf Controller Fault Management

	NB format -> Device/EM	Documentation Log Key	Document Reference
24	“SDM Platform”	logname and number	NN10081-911 SDM Fault Management
25	“Session Server Manager”	logname and number	NN10332-911 Session Server Fault Management
26	“Succession Server Platform Foundation Software (SSPFS)”	logname and number	NN10440-450 Upgrading a Carrier VoIP Network
27	“Storage Manager (STORM)”	logname and number	NN10088-911 Storm Fault Management
28	“Universal Audio Server (UAS)”	logname and number	NN10275-909 v3 Succession Fault Management Logs Reference NN10073-911 UAS Fault Management
29	“Universal Signaling Point (USP)”	Specific Problem: Log Group=<text> & Log Number=<number> Note: Log GroupID is not used	NN10071911 USP Fault Management
30	“XACore”	Logname and number	297-8991-510 XA-Core Maintenance Manual

IEMS Northbound Fault Specifications

Fault events are available from any of four Northbound interfaces. Log formats supported in this release are: NTSTD, SCC2, Syslog, and SNMP. A description of each of these interfaces is given in the sections that follow.

OSS clients can receive faults in **SCC2** and **NTSTD** formats from IEMS by initiating a TCP socket connection to designated ports on the IEMS server. When a connection attempt is made by a remote host, the IEMS validates the connecting OSS as an authorized client. It then forwards all logs that satisfy the configured filter criteria to the OSS. The port numbers and remote clients eligible to connect to these log streams are configured by the administrator.

Note: In legacy environments, the **ECORE** option was used to include the originating node name in the log header for **SCC2** and **NTSTD** formats. This option is **NOT** supported with Nortel

Networks Carrier VoIP solution. All references to ECORE in the following sections will assume this option is disabled.

Faults can be delivered to hosts via **SNMP** by configuring the IP address and port of the remote management application.

Note 1: By default, the following attribute values are used for configuring SNMP northbound fault feed. The administrator can change the above attribute values. Refer to the “Changing SNMP attributes for SNMP fault feeds” section to modify these values.

Note 2: • **SNMP port: 8001**

Note 3: • **read community: public**

Note 4: • **write community: public**

Note 5: • **SNMP version: v2c**

The standard **Syslog** interface can also be configured as a fault stream for remote management systems.

The following table summarizes the characteristics of the four Northbound fault feeds from IEMS.

IEMS Northbound Fault Stream Characteristics

Fault format	Port	OSS Connection	Stream type	IEMS Config required
NTSTD	8555	Incoming. IEMS waits for connection by remote host	ACSII stream over TCP, push	OSS IP address or hostname
SCC2	8556	Incoming. IEMS waits for connection by remote host	ACSII stream over TCP, push	OSS IP address or hostname

Fault format	Port	OSS Connection	Stream type	IEMS Config required
SNMP	user-defined on remote listener	IEMS forwards SNMP faults as SNMP traps to OSS. OSS can also query IEMS for active alarm data. By default, the following attribute values are used for configuring SNMP northbound fault feed. The administrator can change the attribute values. Default Settings: SNMP port: 8001 read community: public write community: public SNMP version: v2c	SNMP trap events (UDP), push	IP address and port of listener on OSS
Syslog	designated port for Syslog service (514)	IEMS forwards log events to remote host	ACSII data over UDP, push	syslog.conf requires forwarding entry for log facility Fault: local7.notice Audit: local0.notice Security: local3.notice

Each fault interface is discussed in the sections that follow.

Northbound SCC2 Specification

SCC2 is an ACSII stream delivered to a Northbound receiving application. The stream is delivered over a TCP socket and is configured by the administrator.

This section provides a detailed description of the SCC2 log format delivered by IEMS.

SCC2 Format Summary:

```
<Alarm Severity><Minute Indicator><Log Name><Log
Number><Threshold>< Sequence Number><Event Type><Event
Label><Equipment Identifier><Body Text>
```

SCC2 Header Formats

SCC2 Header format:

```

12345678901234567890123456789012345678901234567890123456789012
3456789
-----|-----|-----|-----|-----|-----|
aabb\ccccdddeffff\gggg\h.../i.../j...
-----|-----|-----|-----|-----|-----|
-----

```

- 1 The backslash sign (\) signifies a space.
- 2 The forward slash sign (/) signifies a space that only appears if the preceding optional field exists.
- 3 The periods (...) signify variable length data.
- 4 The 'greater than' sign followed by periods (>...) signifies variable length indentation determined by the application.
- 5 The vertical lines do not appear on the actual report, they are used for presentation purposes in the above figure.
- 6 This notation only represents the header and does not include the application data area (i.e. the rest of the log report).

An example of a SCC2 log header is given below. It is also used in explaining the individual fields in the log header.

SCC2 Log Header Example:

```

* 03 PM 128+0417 TBL ISTB LIU7 348
      ISTb      From InSv

```

SCC2 Field Descriptions

Fld	Name	Description	Example
a	Alarm Severity	The severity level of the log report. This is a 2 character field left justified and padded with blanks. Possible values are: '*C' = critical alarm, '***' = major alarm, '* ' = minor alarm, ' ' = no alarm.	'*C'
b	Minute Indicator	This value represents the minutes after the hour. It consists of 2 numeric characters, right justified and padded with zeroes. It ranges from 00 to 59.	'03'
c	Log Name	This value can be 2 to 4 non blank characters. Within this fixed 4 characters, it is left justified and padded with blanks.	'PM '

Fld	Name	Description	Example
d	Log Number	This value is always 3 digits ranging from 000 to 999. It is right justified and padded with zeroes. For PROTOLOGs (i.e. TRAP, SWERR, INIT, INFO, and LOCK logs) it is a string of 3 spaces.	'128'
e	Threshold	Indicates whether a threshold was set for the given log report. A threshold can be temporarily set by using LOGUTIL. Thresholding will survive any restart by turning on the office parameter threshold_is_sampling in table OFCVAR and datafilling threshold value for individual log report in table LOGCLASS and RLOGCLAS on the CallServer. If THRESHOLD_IS_SAMPLING is on (Y), a log report is generated for every n-th instance of the log report generated. If threshold_is_sampling is off (N), every log report after the n-th report is generated. Possible values are: '+' = a threshold was set, '' = no threshold was set.	'+'
f	Sequence Number	This field defines the unique sequence for each log report. It is right justified and padded with zeroes. It represents 4 numeric characters ranging from 0000 to 9999.	'0417'
g	Event Type	Log report event type which is a string of 4 uppercase characters, left justified and padded with blanks. This field is defined by the applications that generate the log report. Possible values include: ' ', 'CBSY', 'EXC ', 'FAIL', 'FLT ', 'INFO', 'INIT', 'LO ', 'MANB', 'OFFL', 'PASS', 'PBSY', 'RTS ', 'SUMM', 'SYSB', 'TBL ', 'TRAN', 'TRAP', 'UNEQ'.	'TBL '
h	Event Label	A variable length character string that represents application event description. It is an optional field.	'ISTB'
		<i>The following fields are defined by the applications that generate the log report. These fields are optional and independent of each other.</i>	
i	Equipment Identifier	A conditional equipment identifier determined by the application. It is a variable length character string.	'LIU7348'

Fld	Name	Description	Example
j	Body Text	Application specific log body text starts here. This may contain several lines. Each new line is indented by eight spaces. Most log bodies start with a carriage return character so that none of it appears on the header line.	'ISTb From InSv'

Examples of Logs with SCC2 Header

The sample logs below are shown for example only. They are syntactically correct but field contents may vary.

1 Gateway Controller example

****14 GWC 307 7250 TBL GWC Fault**

Location: GWC-2-UNIT-0

NotificationID: 4

State: Raise

Category: Communications

Cause: Communications subsystem failure

Time: Jan 23 15:15:59 2004

Component Id: GWC=GWC-2-UNIT-0;Version=PGC92BA;Unit=unit_0;Software=NODE MTC

Specific Problem: EM not responding, provisioned data loaded from local Flash

Description: Element Manager communication failure.

2 Call Server example:

56 LINE138 3778 INFO TRMT

SLOA 21 1 02 01 DN 2145202111

TREATMENT SET = BUSY CALLED NO = 5202111

CALLID= 01BE 036D

Northbound NTSTD

NTSTD is an ACSII stream delivered to a Northbound receiving application. The stream is delivered over a TCP socket and is configured by the administrator.

This section provides a detailed description of the NTSTD log format delivered by IEMS.

NTSTD Format Summary:

<Office Identifier><Alarm Severity><Threshold><Log Name><Log
Number><Time MMMMDD hh:mm:ss>< Sequence Number><Event
Type><Event Label><Equipment Identifier><Body Text>

Standard Header Formats

ECORE Format OFF:

```
-----
-----
123456789012345678901234567890123456789012345678901234567890123456789012
3456789
----- | ----- | ----- | ----- | ----- | ----- | --
-----
a...#cccdeeeefff\ggghh\ii:jj:kk\llll\nnnn\o.../p.../q...
----- | ----- | ----- | ----- | ----- | ----- | --
-----
```

Notes:

- 1 The placeholder represented by the pound sign (#) is non-existent if both office parameter log_office_id and ecore_format in table OFCVAR are turned off. The pound sign (#) represents a space in other cases (i.e. log_office_id is datafilled and ecore_format is turned off; and whenever ecore_format is turned on regardless of log_office_id).
- 2 The backslash sign (\) signifies a space.
- 3 The forward slash sign (/) signifies a space that only appears if the preceding optional field exists.
- 4 The periods (...) signify variable length data.
- 5 The vertical lines do not appear on the actual report, they are used for presentation purposes in the above figure.
- 6 This notation only represents the header and does not include the application data area (i.e. the rest of the log report).

An example of a standard log header is given below. It is also used in explaining the individual fields in the log header.

Standard log header example:

```
SCP2B *+ PM128 OCT20 10:03:42 0417 TBL ISTB LIU7 348
          ISTb      From InSv
```

NTSTD format field descriptions

FId	Name	Description	Example
a	Office Identifier	Identifies the switch generating the Identifier log. This is an optional field. It is output if the office parameter log_office_id in table OFCVAR on the CallServer is datafilled. It has variable length from 0 up to 12 characters.	'SCP2B'
b	Ecore Node Name	Originating node name where this log Node Name report is generated. It is an eight character field, its contents are left justified and padded with blanks. It is contained in the header if the office parameter ecore_format in table OFCVAR is turned on. As of SN07, this option is not supported	'CM'
c	Alarm Severity	The severity level of the log report. This is a 3 character field right justified and padded with blanks. Possible values are: '***' = critical alarm, ' **' = major alarm, ' *' = minor alarm, ' ' = no alarm.	' *'
d	Threshold	Indicates whether a threshold was set for the given log report. A threshold can be temporarily set by using LOGUTIL. Thresholding will survive any restart by turning on the office parameter threshold_is_sampling in table OFCVAR and datafilling threshold value for individual log report in table LOGCLASS and RLOGCLAS on the CallServer. If threshold_is_sampling is on (Y), a log report is generated for every n-th instance of the log report generated. If threshold_is_sampling is off (N), every log report after the n-th report is generated. Possible values are: '+' = a threshold was set, ' ' = no threshold was set.	'+'
e	Log Name	This value can be 2 to 4 non blank characters. Within this fixed 4 characters, it is right justified and padded with blanks.	' PM'
f	Log Number	This value is always 3 digits ranging from 000 to 999. It is right justified and padded with zeroes. For PROTOLOGs, (i.e. TRAP, SWERR, INIT, INFO and LOCK logs) it is a string of 3 spaces.	'128'

Fld	Name	Description	Example
g	Month Indicator	Consists of 3 uppercase characters ranging from 'JAN' to 'DEC' that represent the month.	'OCT'
h	Day Indicator	Consists of 2 numeric characters ranging from 01 to 31 that represent the day of the month	'20'
i	Hour Indicator	Consists of 2 numeric characters ranging from 00 to 23 that represent the hour of the day.	'10'
j	Minute Indicator	Consists of 2 numeric characters ranging from 00 to 59 that represent the minute of the hour.	'03'
k	Second Indicator	Consists of 2 numeric characters ranging from 00 to 59 that represent the second of the minute.	'42'
l	Sequence Number	This field defines the unique sequence for each log report. It is right justified and padded left with zeroes. Represents 4 numeric characters ranging from 0000 to 9999.	'0417'
n	Event Type	Log report event type which is a string of 4 uppercase characters, left justified and padded with blanks. This field is defined by the applications that generate the log report. Possible values include: ' ', 'CBSY', 'EXC ', 'FAIL', 'FLT ', 'INFO', 'INIT', 'LO ', 'MANB', 'OFFL', 'PASS', 'PBSY', 'RTS ', 'SUMM', 'SYSB', 'TBL ', 'TRAN', 'TRAP', 'UNEQ'.	'TBL'
o	Event Label	A variable length character string that represents application event description. This field is optional.	'ISTB'
		<i>The following fields are defined by the applications that generate the log report. These fields are optional and independent of each other.</i>	
p	Equipment Identifier	A conditional equipment identifier determined by the application. It is a variable length character string.	'LIU7348'
q	Body Text	Application specific log body text starts here. This may contain several lines. Each new line is indented by eight spaces. Most log bodies start with a carriage return character so that none of it appears on the header line.	'ISTb From InSv'

Examples of Logs with Standard Header

The sample logs below are shown for example only. They are syntactically correct but field contents may vary.

1 Gateway Controller example:

```
RTPU07BU  **  GWC307 Jan23 20:14:38 7250 TBL  GWC Fault
Location: GWC-2-UNIT-0
NotificationID: 4
State: Raise
Category: Communications
Cause: Communications subsystem failure
Time: Jan 23 15:15:59 2004
Component Id: GWC=GWC-2-UNIT-0;Version=PGC92BA;Unit=unit_0;Software=NODEMTC
Specific Problem: EM not responding, provisioned data loaded from local
Flash
Description: Element Manager communication failure.
```

2 Call Server example:

```
RTPU07BR      LINE138 Jan23 16:56:30 3778 INFO TRMT
SLOA 21 1 02 01    DN 2145202111
TREATMENT SET = BUSY   CALLED NO =          5202111
CALLID= 01BE 036D
```

Northbound Syslog

Syslog is a standardized UDP protocol defined by the IETF working group:
Syslog Protocol (RFC 3164): <http://www.ietf.org/rfc/rfc3164.txt>

This ACSII fault stream is delivered to a Northbound receiving Syslog host over the local 7 facility. On the IEMS server, Syslog routing is configured through the SSPFS command line interface. This interface manages any required changes to syslog.conf.

This section covers the vendor-specific information on the format and content of Syslog messages not covered under RFC3164.

The following shows a breakdown of the components of the MSG portion of a Syslog message provided by the IEMS Northbound interface:

```
<Time> <Host> IEMS:
_V2_~I=<NodeId>~H=<Host>~A=<ApplicationName>~S=<Seq.Number>
```

```
~~ <LogName><LogNumber> <AlarmSeverity> <EventType> <Label> ^M
<LogBody>
```

The following Syslog message will be used to discuss the structure of Syslog messages from IEMS:

```
Feb 23 12:38:54 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=4317~~
MGEM302 NONE TBL MG9K InvalidEMIPAddress^M Location: MG9k EM
Comm Network^M Notification Id: 17180020453^M State:
Cleared^M Category: communications^M Cause: Communications
Subsystem Failure^M Invalid EM IP Address - An invalid EM IP
address has been set on the GW^M Component Id: MG9k EM Comm
Network^M specificProblem: Invalid EM IP Address - An invalid
EM IP address has be^M en set on the GW^M Description:
An invalid EM IP address has been set on the GW
```

Note: See “MG9000 Manager” for comparison of this log in all IEMS Northbound formats.

RFC3164 MSG Fields

Each Syslog message is prefixed by a timestamp and hostname. These fields are shown in *italics* in the example above. Section 4.1.2 of RFC3164 defines these fields as follows:

The **TIMESTAMP** field is the local time and is in the format of “Mmm dd:hh:mm:ss” (without the quote marks) where:

Mmm is the English language abbreviation for the month of the year with the first character in uppercase and the other two characters in lowercase. The following are the only acceptable values:

Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec

dd is the day of the month. If the day of the month is less than 10, then it **MUST** be represented as a space and then the number. For example, the 7th day of August would be represented as “Aug 7”, with two spaces between the “g” and the “7”.

hh:mm:ss is the local time. The hour (hh) is represented in a 24-hour format. Valid entries are between 00 and 23, inclusive. The minute (mm) and second (ss) entries are between 00 and 59 inclusive.

A single space character MUST follow the TIMESTAMP field.

The **HOSTNAME** field will contain only the hostname, the IPv4 address,

or the IPv6 address of the originator of the message. The preferred value is the hostname. If the hostname is used, the HOSTNAME field MUST contain the hostname of the device as specified in STD 13 [4].

It should be noted that this MUST NOT contain any embedded spaces.

The Domain Name MUST NOT be included in the HOSTNAME field. If the IPv4 address is used, it MUST be shown as the dotted decimal notation as used in STD 13 [5]. If an IPv6 address is used, any valid representation used in RFC 2373 [6] MAY be used.

A single space character MUST also follow the HOSTNAME field.

IEMS Header

After the timestamp and hostnames fields, the following constants can be found in the next two fields - separated by a space:

IEMS: Indicates the start of fault-specific information

V2 - Syslog format version

Immediately following this tag are several attributes specified as name-value pairs (NVPs). NVP tags are prefixed by a tilde '~' <tag>=<value> for easy identification by downstream parsers.

NVPs for IEMS Syslog message

Tag name	Description	example
~I	Node Identifier	~I=
~H	Host name of	~H=znc0s0jh
~A	Reporting Application name	~A=IEMS
~S	Log Sequence number	~S=4317
~~	Indicates start of formatted log header from originator. **Note: This indicator is NOT actually an NVP. It is followed by a single space character	~~ MGEM302 NONE TBL MG9K InvalidEMI PAddress

Parsing Conventions for Formatted Log Data:

The format of the log header and body follow a number of conventions to facilitate parsing by downstream applications:

- 1 Line feeds in message text are identified by the ^M character sequence (this denotes a sequence of the two printable characters: caret and upper case M).
- 2 The log header start can be identified by the ~~ sequence followed by a space. The header is delimited by the line feed indicator (discussed in the previous bullet).
- 3 The log body is separated into lines using ^M sequences defined in bullet 1. Each line is prefixed with eight (8) space characters.
- 4 Line length (including leading spaces) will not exceed 80 characters . See example log above.
- 5 All text in the log header and body will consist of printable ACSII characters.
- 6 Blank lines are not allowed in the formatted log message. This includes both header and body components.

Log Header

The log header consists of the following fields. These fields map to the corresponding fields defined in both SCC2 and NTSTD.

A typical log header will appear in the following format (' ' indicates a space character):

```
~~\<logname>\<lognumber>\<AlarmSeverity>\<EventType>\<Label>^M<LogBody>
```

Log Header fields in Syslog message

Name	Description	Example
Log Name	This value can be 2 to 4 non blank characters. Within this fixed 4 characters, it is right justified and padded with blanks.	' MGEM'
Log Number	This value is always 3 digits ranging from 000 to 999. It is right justified and padded with zeroes. For PROTOLOGs, (ie. TRAP, SWERR, INIT, INFO and LOCK logs) it is a string of 3 spaces.	'302'

Name	Description	Example
Alarm Severity	This field defines the alarm severity and consists of one of the following text strings: NONE, MINOR, MAJOR, CRIT	'NONE'
Event Type	Log report event type which is a string of 4 uppercase characters, left justified and padded with blanks. This field is defined by the applications that generate the log report. Possible values include: ' ', 'CBSY', 'EXC', 'FAIL', 'FLT ', 'INFO', 'INIT', 'LO ', 'MANB', 'OFFL', 'PASS', 'PBSY', 'RTS ', 'SUMM', 'SYSB', 'TBL ', 'TRAN', 'TRAP', 'UNEQ'.	'TBL '
Label	A variable length character string that represents application event description. This field is optional.	'MG9K InvalidEMIPAddress'
Log Body	Application specific log body text starts here. This may contain several lines. Each new line is indented by eight spaces and delimited by the ^M (caret-M) character sequence.	' Location: MG9k EMCommNetwork^M Notification Id: 17180020453^M State: Cleared^M Category: communications^M Cause: Communications SubsystemFailure^M Invalid EM IP Address - An invalid EM IP address has been set on the GW^M Component Id: MG9k EMCommNetwork^M specificProblem: Invalid EM IP Address - An invalid EM IP address has be^M en set on the GW^M Description: An invalid EM IP address has been set on the GW'

Notes on Log Body Text

The remainder of the message consists of the log body. The message text in this portion of the message is defined by the originating source. The presentation of this text is constrained only by the rules outlined in [“Parsing Conventions for Formatted Log Data:” on page 67.](#)

Note: See Syslog Protocol (RFC 3164):
<http://www.ietf.org/rfc/rfc3164.txt> for full details on this specification.

Security and Audit logs

IEMS Security and Audit logs are managed through Syslog and can be forwarded to a remote Syslog host in the same way as fault events. Note that some Solaris applications forward security logs to authlog (/varlog/authlog). Sample content of each follow:

Audit log sample (/var/log/auditlog):

```
Jan 16 10:37:55 sspfs_svr ID[SUNWcluster.pmf.1020]: "CorbaNotification" requeued
Jan 16 10:38:06 sspfs_svr ID[SUNWcluster.pmf.1018]: "CorbaNotification" Failed to stay up.
Jan 16 10:38:06 sspfs_svr ID[SUNWcluster.pmf.1019]: "CorbaNotification" restarting too often ... sleeping 30 seconds.
Jan 16 10:38:36 sspfs_svr ID[SUNWcluster.pmf.1020]: "CorbaNotification" requeued
Jan 16 10:38:46 sspfs_svr ID[SUNWcluster.pmf.1018]: "CorbaNotification" Failed to stay up.
Jan 16 10:38:46 sspfs_svr ID[SUNWcluster.pmf.1019]: "CorbaNotification" restarting too often ... sleeping 30 seconds.
Jan 16 10:39:16 sspfs_svr ID[SUNWcluster.pmf.1020]: "CorbaNotification" requeued
Jan 16 10:41:42 sspfs_svr ID[SUNWcluster.pmf.1018]: "snmpp" Failed to stay up.
Jan 16 10:42:16 sspfs_svr ID[SUNWcluster.pmf.1018]: "ompush" Failed to stay up.
Jan 16 10:42:41 sspfs_svr ID[SUNWcluster.pmf.1018]: "CorbaNotification" Failed to stay up.
Jan 16 10:42:41 sspfs_svr ID[SUNWcluster.pmf.1020]: "CorbaNotification" requeued
Jan 16 10:42:49 sspfs_svr ID[SUNWcluster.pmf.1018]: "PropServer" Failed to stay up.
```

Security log sample (/var/log/securitylog):

```
Feb  6 22:03:16 wnc0s0qh IEMS: IEMS class_security.ver01 STAT=SUCCESS SRC.USR=root
EVNT.TYPE =Authentication
Feb  6 22:03:16 wnc0s0qh last message repeated 1 time
Feb  9 14:34:33 wnc0s0qh IEMS: IEMS class_security.ver01 STAT=SUCCESS SRC.USR=root
EVNT.TYPE =Authentication
Feb  9 14:34:33 wnc0s0qh last message repeated 1 time
Feb  9 15:36:20 wnc0s0qh IEMS: IEMS class_security.ver01 STAT=SUCCESS SRC.USR=root
EVNT.TYPE =Authentication
Feb  9 15:36:20 wnc0s0qh last message repeated 1 time
```

```
Feb 11 10:15:53 wnc0s0qh IEMS: IEMS class_security.ver01 STAT=SUCCESS SRC.USR=root
EVNT.TYPE =Authentication
Feb 11 10:15:53 wnc0s0qh last message repeated 1 time
```

Security log sample (/var/log/securitylog):

```
Dec 15 06:48:37 comp5iems su: 'su oracle' succeeded for root on /dev/???
Dec 15 06:48:56 comp5iems sshd[12755]: Accepted publickey for root from 192.168.47.2 port 64329
ssh2
Dec 15 08:42:36 comp5iems su[1200]: 'su root' failed for maint on /dev/pts/4
Dec 15 08:42:53 comp5iems su[2685]: 'su root' succeeded for maint on /dev/pts/4
```

The following table shows a summary of all Syslog facilities used by IEMS.

Note: Only *Fault*, *Audit*, and *Security* streams are supported for use by downstream systems. Shaded entries are intended for support purposes only.

IEMS Northbound Syslog Facilities

Log Stream	Log file location on IEMS Server	Syslog facility
Fault	/var/log/iemsCustomerlog	local7
Audit	/var/log/auditlog	local0
Security	/var/log/securitylog /var/log/authlog/, auth (facility)	local3
Customer log	/var/log/customerlog	local1
Debug	/var/log/debuglog	local2
SSPFS	/var/log/sspfslog	local4
NPM	/var/log/npm_designlog	local5

Northbound SNMP - IETF MIB specification

IEMS provides an SNMP interface that forwards faults in trap messages and responds to SNMP requests.

The SNMP Northbound interface is based on the IETF RFC 3877 standard which includes features such as alarm synchronization not available with NTSTD or SCC2.

This section provides a high-level description of how to support the IETF Alarm MIB draft defined in the DISMAN working group of the IETF. See the

MIBs on the server in the locations specified in the table below. In this document, IEMS is the agent implementing the MIBs for the manager at the OSS level.

MIB Loading Sequence

The MIB loading sequence for a manager application is as follows:

These MIBs are available on the IEMS server in the locations noted in the following table.

MIB Loading Sequence

Load Order	MIB Name	IEMS Server File location
1	SNMPv2-CONF	(Not required by the IEMS server)
2	SNMPv2-SMI	/opt/nortel/iems/current/mibs
3	SNMPv2-TC	/opt/nortel/iems/current/mibs
4	SNMPv2-MIB	/opt/nortel/iems/current/mibs SNMPv2-MIB.txt
5	SNMP-FRAMEWORK-MIB	/opt/net-snmp/share/snmp/mibs/ SNMP-FRAMEWORK-MIB.txt
6	INET-ADDRESS-MIB	/opt/net-snmp/share/snmp/mibs/ INET-ADDRESS-MIB.txt
7	RFC1212	(Not required by the IEMS server)
8	RFC1155-SMI	/opt/nortel/iems/current/mibs
9	RFC1213-MIB	/opt/nortel/iems/current/mibs RFC1213-MIB.txt
10	RMON-MIB	/opt/nortel/iems/current/mibs/cicm RMON-MIB.txt
11	TOKEN-RING-RMON-MIB	/opt/nortel/iems/current/mibs/cicm TOKEN-RING-RMON-MIB.txt
12	RMON2-MIB	/opt/nortel/iems/current/mibs/cicm RMON2-MIB.txt
13	ALARM-MIB	/opt/nortel/iems/current/mibs/usp/ ALARM-MIB-disman-18.txt

Load Order	MIB Name	IEMS Server File location
14	IANA-ITU-ALARM-TC	/opt/nortel/iems/current/mibs/usp/ IANA-ITU-ALARM-TC-disman-18.txt
15	ITU-ALARM-TC	/opt/nortel/iems/current/mibs/usp/ ITU-ALARM-TC-disman-18.txt
16	ITU-ALARM-MIB	/opt/nortel/iems/current/mibs/usp/ ITU-ALARM-MIB-disman-18.txt
17	ITU-IANA-ALARM-TC	/opt/nortel/iems/current/mibs/usp/ ITU-IANA-ALARM-TC-disman-04.txt
18	NOTIFICATION-LOG-MIB	/opt/nortel/iems/current/mibs/usp/ NOTIFICATION-LOG-MIB-rfc3014.txt
19	NORTEL-MIB	/opt/nortel/iems/current/mibs/usp/nortel.mib
20	NORTEL-GENERIC-MIB	/opt/nortel/iems/current/mibs/usp/ nortelGenericMIBs-smi2.mib
21	ENTITY-MIB	/opt/nortel/iems/current/mibs/usp/ ENTITY-MIB-entmib-03.txt
22	ENTITY-STATE-MIB	/opt/nortel/iems/current/mibs/usp/ ENTITY-STATE-MIB-entmib-01.txt
23	NORTEL-ALARM-EXT-MIB	/opt/nortel/iems/current/mibs/usp/ nortel_alarm_ext_smi.txt
24	NORTEL-NMI-MIB	/opt/nortel/iems/current/mibs/usp/ nortelNMI-smi2.smi
25	NORTEL-NMI-ALARM-CLEAR-MIB	/opt/nortel/iems/current/mibs/usp/ nortelNMIalarmClear_smi.txt

Support for the IETF Alarm MIB is new to IETF. The MIBs defined by the DISMAN working group of IETF are designed to allow surveillance of network elements. We have used this set of MIBs to present the state of our

softswitch. The ALARM MIB presents a set of tables that contain the current alarm information for the device. The alarm MIB does not prescribe the notifications used to set and clear alarms on the device.

Nortel has provided an extension MIB to allow a manager to monitor the system alarm changes through SNMP notifications. These notifications are the primary interface for monitoring faults in the Succession node.

Nortel Alarm Extension MIB

This MIB defines notifications used for alarm asserts and clears in addition to data type definitions and tables related to notifications that can be sent.

A complete listing and description of our fault management MIB may be found in “IEMS Appendix 2: Nortel Alarm Extension MIB”.

TABLE SUPPORT IN NORTEL ALARM EXTENSION MIB

The table `nnExtAlarmActiveTable` along with the `AlarmActiveTable` contains all the information required to resynchronize the northbound SNMP agent and to give the OSS a complete view of the active alarms within the scope of the Integrated EMS.

The `nnExtAlarmStateTable` is not supported at this time.

NOTIFICATION SUPPORT IN NORTEL ALARM EXTENSION MIB

All notifications defined in this MIB are supported. All OIDs defined within the notifications are also populated. The alarm notifications include sequence numbers so the SNMP manager can determine if a message is missed. Specific formats are supported as described in the following table.

Alarm Notifications Varbinds

Variable name	Format	OID
<code>alarmActiveResourceId</code>	OID	.1.3.6.1.2.1.118.1.2.2.1.10
<code>alarmActiveDateAndTime</code>	DateandTime	.1.3.6.1.2.1.118.1.2.2.1.2
<code>alarmActiveDescription</code>	Human readable string	1.3.6.1.2.1.118.1.2.2.1.11
<code>nnExtAlarmActiveEventType</code>	Enum	.1.3.6.1.4.1.562.29.6.1.1.1.1
<code>nnExtAlarmActiveProbableCause</code>	Enum	.1.3.6.1.4.1.562.29.6.1.1.1.2
<code>nnExtAlarmActiveAdditionalText</code>	String	.1.3.6.1.4.1.562.29.6.1.1.1.3
<code>nnExtAlarmActiveDocumentation Pointer</code>	String: up to 4 chars + 3 digits	.1.3.6.1.4.1.562.29.6.1.1.1.4

Variable name	Format	OID
nnExtAlarmActiveResourceDescription	compType=compname; subcompType=subcompName; for as many levels of hierarchy is required to identify the alarmed entity	.1.3.6.1.4.1.562.29.6.1.1.1.5
nnExtAlarmActiveManualClear	enum	.1.3.6.1.4.1.562.29.6.1.1.1.6
nnExtAlarmActiveSequenceNumber	Numeric	.1.3.6.1.4.1.562.29.6.1.1.1.7

These varbinds are included in all 5 of the alarm notifications supported by the Integrated EMS. As defined all notifications in SNMP, *sysUpTime* and the OID of the notification are included in the varbinds for all notification types (see the following table). Each of the notifications signifies a different severity of the specified alarm. Notifications are defined for critical, major, minor, warning and cleared alarms. The notifications are defined in the table below.

Trap OIDs and Alarm Severity

Trap OID	Severity
.1.3.6.1.4.1.562.29.6.1.0.306	nnExtAlarmMessage
.1.3.6.1.4.1.562.29.6.1.0.305	nnExtAlarmCritical
.1.3.6.1.4.1.562.29.6.1.0.304	nnExtAlarmMajor
.1.3.6.1.4.1.562.29.6.1.0.303	nnExtAlarmMinor
.1.3.6.1.4.1.562.29.6.1.0.302	nnExtAlarmWarning
.1.3.6.1.4.1.562.29.6.1.0.301	nnExtAlarmClear

The nnExtAlarmMessage notifications can be used to send informational messages from IEMS. Because these notifications are information, reliability is not addressed. As illustrated in the table below, we populate with information in the message header and bodytext of our NTSTD and CUSTLOG feeds.

Message Notification Varbinds

Variable name	Format	OID
nnExtAlarmMessageResource	OID	.1.3.6.1.4.1.562.29.6.1.3.1.1

Variable name	Format	OID
nnExtAlarmMessageResourceDescription	String	.1.3.6.1.4.1.562.29.6.1.3.1.2
nnExtAlarmMessageDateAndTime	DateAndTime	.1.3.6.1.4.1.562.29.6.1.3.1.3
nnExtAlarmMessageDocumentationPointer	String	.1.3.6.1.4.1.562.29.6.1.3.1.4
nnExtAlarmMessageInfo	String	.1.3.6.1.4.1.562.29.6.1.3.1.5
nnExtAlarmMessageResource	OID	.1.3.6.1.4.1.562.29.6.1.3.1.1

OTHER DEFINITIONS IN THIS MIB

This MIB also defines OSI state variables that are not defined in the IETF Entity State MIB. These variables and tables are not supported at this time.

IETF RFC 3877 MIB Tables

There are several tables introduced by the IETF Alarm MIB Model. This document will discuss each table and intended use.

ALARM MODEL TABLE

This table defines the notifications used by IEMS to express alarm events. Notifications to communicate alarm asserts and clears have been defined by NortelNetworks in a separate MIB. These new notifications are defined in "Nortel Alarm Extension MIB" on page 73.

This table is not currently supported. This table is a static table and we will look to support this in some future release. This table provides model documentation to OSSes.

ALARM ACTIVE TABLE

This table contains a list of active alarms on IEMS and is supported. It, along with 2 other tables - the alarm active variable table and the Nortel Alarm Extension Table - provide a complete view of the active alarms within the scope of the Integrated EMS.

Indexes into this table are: *alarmListName*, *alarmActiveDateAndTime*, *alarmActiveIndex*. *alarmListName* matches the index *nmlLogName* for *nmlLogTable* from RFC3014 (Notification Log MIB). For our Succession IEMS table we use the string "Nortel_fault".

The following table describes expected values for entries in this table.

IETF Alarm Active Entry

Sequence Field	Default Value
alarmListName	Nortel_fault
alarmActiveDateAndTime	none
alarmActiveIndex	Numerical index defined by agent, unique in table
alarmActiveEngineID	IEMS agent engine ID in SNMPv3; empty string in SNMPv2
alarmActiveEngineAddressType	Inet address type (IPv4)
alarmActiveEngineAddress	IPv4 address of active IEMS agent
alarmActiveContextName	""
alarmActiveVariables	12 = number of fields in our alarm set notifications + 2 mandatory entries per alarm
alarmActiveNotificationID	OID of notification sent for this alarm set
alarmActiveResourceID	OID that describes this entry in the Active Alarm Table
alarmActiveDescription	none
alarmActiveLogPointer	not implemented - default = 0.0
alarmActiveModelPointer	not implemented - default = 0.0
alarmActiveSpecificPointer	not implemented - default = 0.0

ALARM ACTIVE VARIABLE TABLE

Alarm Active variable table contains the varbinds for all the active alarm notifications. The indexes to the table are: *alarmListName*, *alarmActiveIndex*, *alarmVariableIndex*. For each alarm in the alarm active table there will be 12 entries in the alarm active variable table. The index *alarmVariableIndex* will be from 1 to 12 (also from 1 to *alarmActiveVariables* in the *alarmActiveTableEntry*). The notifications contain some varbinds that are not in the standard table so the OSS can index into this table to get the additional data. (Similarly, the OSS can index into the Nortel Extension Active Alarm Table for the additional information as well.)

Fields in this table for each alarm are as follows:

Alarm Active Variable Table

Alarm Active Variable Entry	Notification Varbind	Default Value
alarmActiveVariableIndex 1	sysUpTime	sysUpTime

Alarm Active Variable Entry	Notification Varbind	Default Value
alarmActiveVariableIndex 2	snmpTrapOID	snmpTrapOID
alarmActiveVariableIndex 3	alarmActiveResourceId	OID that describes this entry in the Active Alarm Table
alarmActiveVariableIndex 4	alarmActiveDescription	none
alarmActiveVariableIndex 5	alarmActiveDateAndTime	none
alarmActiveVariableIndex 6	nnExtAlarmActiveEventType	none
alarmActiveVariableIndex 7	nnExtAlarmActiveProbableCause	none
alarmActiveVariableIndex 8	nnExtAlarmActiveAdditionalText	none
alarmActiveVariableIndex 9	nnExtAlarmActiveDocumentationPointer	This is often logname & number
alarmActiveVariableIndex 10	nnExtAlarmActiveResourceDescription	none
alarmActiveVariableIndex 11	nnExtAlarmActiveManualClear	none
alarmActiveVariableIndex 12	nnExtAlarmActiveSequenceNumber	none

ALARM CLEAR TABLE

This table provides an interface for SNMP managers to clear alarms on devices which support this operation. Manual clears are performed with SNMP SET operations using the alarmActiveIndex of the alarm to be cleared. See section “Manual Clear” on page 87 for details.

ACTIVE ALARM STATS TABLE

Not supported.

ITU ALARM ACTIVE TABLE

Not supported.

ITU ALARM ACTIVE VARIABLE TABLE

Not supported.

ITU ALARM ACTIVE STATS TABLE

Supported.

NLM LOG TABLE (RFC 3014)

NLM Log Table is defined in IETF RFC 3014. Implementation of the MIB is provided to support incremental resynchronization of the OSS. The OSS SNMP managers can reach into the `nmlLogTable` to get missed events. See [Notification Log MIB \(RFC 3014\)](http://www.ietf.org/rfc/rfc3014.txt?number=3014):
<http://www.ietf.org/rfc/rfc3014.txt?number=3014>.

The Notification Log MIB has 3 different MIB groups:

- configuration parameters dealing with log storage and reporting
- statistics of log reporting
- the actual history of notifications

Configuration

Configuration defines the size and the aging criteria of the *nmlLogTable*. Table *nmlConfigLogTable* also defines the named log entries supported in the `nmlLogTable`. We use a specific named log entry for allowing fault resync. This table also defines filtering of these logs.

Each entry in the config log table contains: *nmlLogName*, *nmlConfigLogFilterName*, *nmlConfigLogEntryLimit*, *nmlConfigLogAdminStatus*. This table enables Alarm notification resynchronization. The first and only entry in this table has an *nmlLogName* that matches the *alarmListName* index for the active alarm tables above. This index is "Nortel_fault."

nmlConfigLogFilterName is defined as "default". We do not support the correlation of this value to any specific data in the *snmpNotifyFilterTable* in the SNMP Notification MIB.

nmlConfigLogEntryLimit defines the size of the log table. This defines the number of alarm events that are available to the SNMP manager through the SNMP agent. Since there is only one entry in this table for Nortel_fault, this value is over-ridden by *nmlConfigGlobalEntryLimit*.

Note: It is recommended that *nmlConfigGlobalEntryLimit* be set to a minimum value as it maintains this history in memory. Do **not** set this value to zero. Setting this value to zero will lead to unlimited entries being saved and lead to potential resource issues in the system.

nmlConfigLogAdminStatus is set to enabled (1).

nmlConfigLogOperStatus is set to noFilter (3).

nmlConfigLogStorageType is a storageType OID. Data associated with this entry is considered volatile and will be lost when the agent is restarted.

SNMP sets for the configuration items in this table are not supported.

Statistics

The statistics group contains two scalars and a table. The table is required for the resync algorithm. The table *nlmStatsLogTable* augments the *nlmConfigLogTable* and has only two values in each entry:

nlmStatsLogNotificationsLogged and *nlmStatsLogNotificationsBumped*.

Because this table augments the *nlmConfigLogTable*, the index for these notifications uses the same key - "Nortel_fault"

nlmStatsLogNotifications for the named logs in Nortel_fault is the sequence number (*nnExtAlarmActiveSequenceNumber*) sent in Integrated EMS notifications of the faults. This also provides the secondary index into the *nlmLogTable* for notifications that have been missed - as detected through sequence numbers in those notifications.

It is the responsibility of the SNMP agent sending fault notifications to increment the *nlmStatsLogNotificationsLogged* and include the value in the varbinds of that notification as documented.

nlmStatsGlobalNotificationsBumped defines the number of logs that have been removed or "bumped" from the log table due to the limits imposed by the *nlmConfigGlobalEntryLimit* setting.

Log Table

The *nlmLogTable* contains the history of notifications sent to the manager. The indices are: *nlmLogName* and *nlmLogIndex*. *nlmLogName* is "Nortel_fault" and the *nlmLogIndex* is the sequence number in the proprietary notifications.

This section defines two tables: *nlmLogTable* and *nlmLogVariableTable*. The first provides the indices for retrieving missed notifications, and the second contains the varbinds for the notifications. We have 2 different size alarm notifications (in terms of number of varbinds)- alarm assert notifications are all the same size, and alarm clear notifications are slightly smaller (1 varbind). Only alarm notifications are stored in the log table, message notifications are not logged in this table.

The structure and implementation of the *nlmLogVariableTable* is the same as that of the *alarmActiveVariableTable* and is not described further.

Connecting to the NB feed:

The default SNMP Port in which the agent is listening is 8001. This port is configurable through the IEMS client. User can also disable the SNMP agent if he wishes. OSS has to register its SNMP manager host and port to which the traps are to be sent.

Connection Reliability

There are several scenarios which must be considered by an SNMP manager to ensure that the alarms presented at the OSS layer will be in sync with the actual alarms maintained on the device. Resynchronization will be required when either the OSS or the IEMS system goes through a restart, or when a lost trap is detected. See section “ Message Sequences and Manager Operations” on page 85 for details on resynchronization of active alarms.

Lost Traps

If the OSS detects a lost trap via an out-of-order sequence number, the OSS must either try to recover the lost sequence numbers from the notification log table or re-synchronize from the the active alarm table. The notification log MIB will contain the last 25 traps sent. If the sequence number delta is within this range, the notification log table can be used to obtain missed traps. Otherwise, a read of the active alarm table must be used to determine the active alarms in the system.

Additionally, OSS can poll the sequence number of the last alarm or clear sent from the agent. The sequence number of last notification sent will be in the *nlmStatsLogNotifications* table in the *nlmStatsLogNotificationsLogged* variable in the “Nortel_fault” entry as described above.

Note: Since there is only one entry in this table, the scalar *nlmStatsGlobalNotificationsLogged* can also be used to obtain this value.

SNMP Alarm Events & Correlation

The *alarmActiveResourceID* uniquely identifies an alarm occurrence in the system. To correlate a clear notification to the appropriate assert, the *alarmActiveResourceID* must be used.

Event Types and ProbableCauses

Each alarm notification and record in the alarm table includes event type and probable cause. Values for these fields are define in the IANA-ITU-ALARM-TC MIB table. These values come from both the X.7xx and M.3100 series of standards.

Alarm Event Type Format:

IANAItuEventType - Valid values for this entry are provided here for convenience.

- other (1),
- communicationsAlarm (2),
- qualityOfServiceAlarm (3),
- processingErrorAlarm (4),
- equipmentAlarm (5),

environmentalAlarm (6),
integrityViolation (7),
operationalViolation (8),
physicalViolation (9),
securityServiceOrMechanismViolation (10),
timeDomainViolation (11)

Probable Cause Format:

IANAItuProbableCause - Valid values for this entry are provided here for convenience.

aIS (1), callSetUpFailure (2), degradedSignal (3),
farEndReceiverFailure (4), framingError (5), lossOfFrame (6),
lossOfPointer (7), lossOfSignal (8), payloadTypeMismatch (9),
transmissionError (10), remoteAlarmInterface (11), excessiveBER
(12), pathTraceMismatch (13), unavailable (14), signalLabelMismatch
(15), lossOfMultiFrame (16), receiveFailure (17), transmitFailure (18),
modulationFailure (19), demodulationFailure (20),
broadcastChannelFailure (21), connectionEstablishmentError (22),
invalidMessageReceived (23), localNodeTransmissionError (24),
remoteNodeTransmissionError (25), routingFailure (26),
backplaneFailure (51), dataSetProblem (52),
equipmentIdentifierDuplication (53), externalIFDeviceProblem (54),
lineCardProblem (55), multiplexerProblem (56),
nEIdentifierDuplication (57), powerProblem (58), processorProblem
(59), protectionPathFailure (60), receiverFailure (61),
replaceableUnitMissing (62), replaceableUnitTypeMismatch (63),
synchronizationSourceMismatch (64), terminalProblem (65),
timingProblem (66), transmitterFailure (67), trunkCardProblem (68),
replaceableUnitProblem (69), realTimeClockFailure (70),
antennaFailure (71), batteryChargingFailure (72), diskFailure (73),
frequencyHoppingFailure (74), iODeviceError (75),
lossOfSynchronisation (76), lossOfRedundancy (77),
powerSupplyFailure (78), signalQualityEvaluationFailure (79),
tranceiverFailure (80), protectionMechanismFailure (81),
protectingResourceFailure (82), airCompressorFailure (101),
airConditioningFailure (102), airDryerFailure (103),
batteryDischarging (104), batteryFailure (105),
commercialPowerFailure (106), coolingFanFailure (107),
engineFailure (108), fireDetectorFailure (109), fuseFailure (110),
generatorFailure (111), lowBatteryThreshold (112), pumpFailure
(113), rectifierFailure (114), rectifierHighVoltage (115),
rectifierLowFVvoltage (116), ventilationsSystemFailure (117),
enclosureDoorOpen (118), explosiveGas (119), fire (120), flood (121),
highHumidity (122), highTemperature (123), highWind (124),

iceBuildUp (125), intrusionDetection (126), lowFuel (127), lowHumidity (128), lowCablePressure (129), lowTemperature (130), lowWater (131), smoke (132), toxicGas (133), coolingSystemFailure (134), externalEquipmentFailure (135), externalPointFailure (136), storageCapacityProblem (151), memoryMismatch (152), corruptData (153), outOfCPUCycles (154), sfwrEnvironmentProblem (155), sfwrDownloadFailure (156), lossOfRealTime (157), applicationSubsystemFailure (158), configurationOrCustomisationError (159), databaseInconsistency (160), fileError (161), outOfMemory (162), softwareError (163), timeoutExpired (164), underlyingResourceUnavailable (165), versionMismatch (166), adapterError (500), applicationSubsystemFailure (501), bandwidthReducedX733 (502), callEstablishmentError (503), communicationsProtocolError (504), communicationsSubsystemFailure (505), configurationOrCustomizationError (506), congestionX733 (507), corruptData (508), cpuCyclesLimitExceeded (509), dataSetOrModemError (510), degradedSignalX733 (511), dteDceInterfaceError (512), enclosureDoorOpenX733 (513), equipmentMalfunction (514), excessiveVibration (515), fileErrorX733 (516), fireDetected (517), framingErrorX733 (518), heatingVentCoolingSystemProblem (519), humidityUnacceptable (520), inputOutputDeviceError (521), inputDeviceError (522), lanError (523), leakDetected (524), localNodeTransmissionErrorX733 (525), lossOfFrameX733 (526), lossOfSignalX733 (527), materialSupplyExhausted (528), multiplexerProblemX733 (529), outOfMemoryX733 (530), outputDeviceError (531), performanceDegraded (532), powerProblems (533), pressureUnacceptable (534), processorProblems (535), pumpFailureX733 (536), queueSizeExceeded (537), receiveFailureX733 (538), receiverFailureX733 (539), remoteNodeTransmissionErrorX733 (540), resourceAtOrNearingCapacity (541), responseTimeExcessive (542), retransmissionRateExcessive (543), softwareErrorX733 (544), softwareProgramAbnormallyTerminated (545), softwareProgramError (546), storageCapacityProblemX733 (547), temperatureUnacceptable (548), thresholdCrossed (549), timingProblemX733 (550), toxicLeakDetected (551), transmitFailureX733 (552), transmitterFailure (553), underlyingResourceUnavailable (554), versionMismatchX733 (555), -
- The following are defined in X.736 authenticationFailure (600), breachOfConfidentiality (601), cableTamper (602), delayedInformation (603), denialOfService (604), duplicateInformation (605), informationMissing (606), informationModificationDetected (607), informationOutOfSequence (608), keyExpired (609), nonRepudiationFailure (610), outOfHoursActivity (611), outOfService (612), proceduralError (613),

unauthorizedAccessAttempt (614), unexpectedInformation (615), other (1024).

Northbound Fault Mapping

The following table shows the correlation between the fields of the supported Northbound fault feeds.

Northbound Fault Format Summary

Row#	IEMS Schema	SYSLOG	NTSTD	SCC2	SNMP
1.	Severity 1= critical 2 = major 3 = minor 4= warning 5 =clear 6 = info	Alarm Severity CRIT =1, MAJOR =2, MINOR =3, NONE =4,5,6 None	1 = '****' 2 = '*** ' 3 = '* ' 4,5,6 = ' ' 6 = ' '	1 = '*C' 2 = '***' 3 = '* ' 4,5,6 = ' ' 6 = ' '	Based on the severity the concerned alarm, appropriate notification will be sent. nnExtNotificationPrefix : .1.3.6.1.4.1.562.29.6.1.0 Alarm Events: nnExtAlarmCritical = 1 .1.3.6.1.4.1.562.29.6.1.0.30 5 nnExtAlarmMajor = 2 .1.3.6.1.4.1.562.29.6.1.0.30 4 nnExtAlarmMinor = 3 .1.3.6.1.4.1.562.29.6.1.0.30 3 nnExtAlarmWarning = 4 .1.3.6.1.4.1.562.29.6.1.0.30 2 nnExtAlarmClear = 5 .1.3.6.1.4.1.562.29.6.1.0.30 1 Non-alarm Events: nnExtAlarmMessage = 6 .1.3.6.1.4.1.562.29.6.1.0.30 6
2.	Time(long)	MMM DD hh:mm:ss -> UTC time	MMM DD hh:mm:ss UTC time	UTC -> Minute Indicator	Alarm event: alarmActiveDateAndTime .1.3.6.1.2.1.118.1.2.2.1.2 Non-alarm event: nnExtAlarmMessageDateAndTime .1.3.6.1.4.1.562.29.6.1.3.1.3

Northbound Fault Format Summary

Row#	IEMS Schema	SYSLOG	NTSTD	SCC2	SNMP
3.	LogName	Report Name	LogName	LogName	Log name&number shown in varbind Alarm event: nnExtAlarmActiveDocumentationPointer .1.3.6.1.4.1.562.29.6.1.1.1.4 Non-alarm event: nnExtAlarmMessageDocumentationPointer .1.3.6.1.4.1.562.29.6.1.3.1.4
4.	LogNumber	ReportNumber	LogNumber	LogNumber	Log name&number shown in varbind Alarm event: nnExtAlarmActiveDocumentationPointer .1.3.6.1.4.1.562.29.6.1.1.1.4 Non-alarm event: nnExtAlarmMessageDocumentationPointer .1.3.6.1.4.1.562.29.6.1.3.1.4
5.	Threshold	-	Threshold '+' set ' ' not set	Threshold '+' set ' ' not set	not supported
6.	ID(Integer)	NotificationID	NotificationID	NotificationID	last integer in the OID specified by: alarmActiveResourceID .12.78.111.114.116.101.108.95.102.97.117.108.116.25.50.48.48.52.45.49.45.56.44.51.58.50.49.58.53.55.46.49.44.43.48.53.58.51.48. 10
7.	Sequence Number	Generated Sequence Number	Global Sequence Number (generated)	Global Sequence Number (generated)	Alarm event: nnExtAlarmActiveSequenceNumber .1.3.6.1.4.1.562.29.6.1.1.1.7
8.	EventType	EventType	EventType	EventType	Alarm event: not supported
9.	EventLabel	EventLabel	EventLabel	EventLabel	not supported

Northbound Fault Format Summary

Row#	IEMS Schema	SYSLOG	NTSTD	SCC2	SNMP
10.	Equipment Identifier	Location:	Location:	Location:	Alarm event: nnExtAlarmActiveResourceDescription .1.3.6.1.4.1.562.29.6.1.1.1.5 Non-alarm event: nnExtAlarmMessageResourceDescription .1.3.6.1.4.1.562.29.6.1.3.1.2
11.	Probable Cause	Cause	Cause	Cause	Alarm event: nnExtAlarmActiveProbableCause .1.3.6.1.4.1.562.29.6.1.1.1.2
12.	Category	Category:	Category:	Category:	Alarm event: nnExtAlarmActiveEventType .1.3.6.1.4.1.562.29.6.1.1.1.1
13.	Specific Problem	Specific Problem	Specific Problem	Specific Problem	Alarm event: alarmActiveDescription: .1.3.6.1.2.1.118.1.2.2.1.11
14.	NotificationID	not sent	not sent	non sent	not sent
15.	ComponentID	ComponentID	ComponentID	ComponentID	Alarm event: nnExtAlarmActiveResourceDescription .1.3.6.1.4.1.562.29.6.1.1.1.5 Non-alarm event: nnExtAlarmMessageResourceDescription .1.3.6.1.4.1.562.29.6.1.3.1.2
16.	BodyText	BodyText	BodyText	BodyText	Alarm event: alarmActiveDescription: .1.3.6.1.2.1.111.1.2.2.1.11 Non-alarm event: nnExtAlarmMessageInfo: .1.3.6.1.4.1.562.29.6.1.3.1.5

Message Sequences and Manager Operations

Raise Alarm

This sequence applies to the following alarm event types:

- nnAlarmWarning
- nnAlarmMinor

- nnAlarmMajor
 - nnAlarmCritical
- 1 IEMS forwards alarm from device. The trap contains references to the 12 varbinds depicted in Table , “Alarm Active Variable Table,” on page 76.
 - 2 The OSS receives the alarm and notes the resource ID of the alarm event to allow correlation with a subsequent alarmClear event. IEMS adds the alarm entry to the *alarmActiveTable*, *alarmActiveVariableTable*, and *nnExtAlarmActiveTable*. The *nlmLogTable* and *nlmLogVariableTable* also maintain a rolling log of the last n alarm events received - where n is defined by the variable *nlmConfigGlobalEntryLimit*.

Clear Alarm

- 1 IEMS forwards clearAlarm event from device. The trap contains references to all varbinds listed in Please refer to “ Alarm Active Variable Table” on page 76. except for *nnExtAlarmActiveManualClear* - which is not included in this message.
- 2 The OSS receives the clear event and matches its resource ID in **alarmActiveResourceId** against the ID of its corresponding alarm event in the *alarmActiveTable*.

The corresponding alarm entry is removed from all active alarm tables:

alarmActiveTable

alarmActiveVariableTable

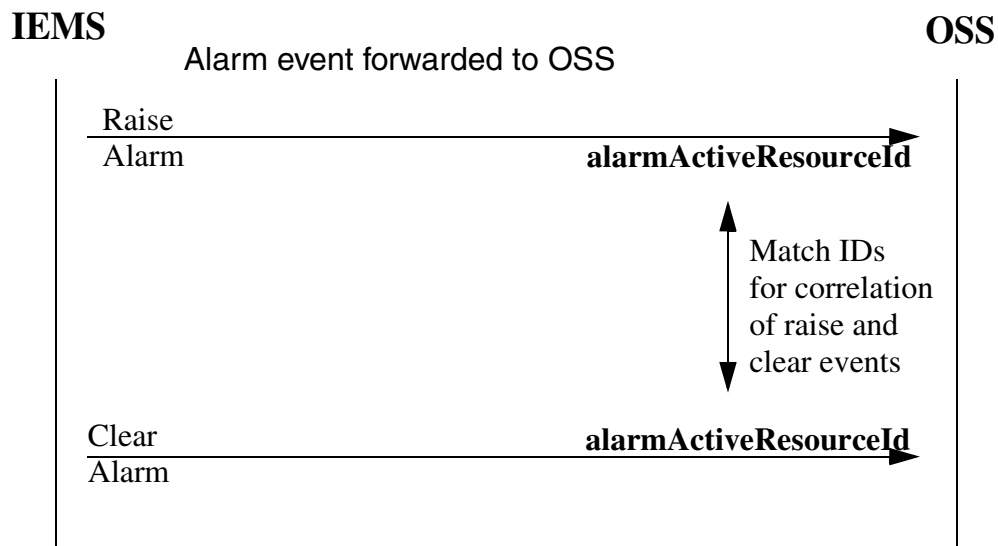
nnExtAlarmActiveTable

An entry is made in the log notification tables for the CLEAR event.

nlmLogTable

nlmLogVariableTable

Alarm Raise & Clear Correlation



Manual Clear

Each alarm event contains information that indicates whether it can be manually cleared. The value in the varbind *nnExtAlarmActiveManualClear* makes this determination and can have the following values:

- other (1),
- forbidden (2),
- required (3),
- optional (4)

Note: Alarms with a value of *forbidden* in this field cannot be manually cleared.

Eligible alarms can be manually cleared by sending a SET request to the alarm clear interface variable *nortelNMIalarmClear* (.1.3.6.1.4.1.562.29.1.8.1) in the NORTEL_NMI-ALARM-CLEAR-MIB. The alarm to be cleared can be specified by using the *alarmActiveIndex* of the target alarm. The value of the *alarmActiveIndex* is stored as the last element in the *alarmActiveResourceId*.

Example: An alarm is generated and stored in the *alarmActiveTable* with the following values:

alarmsListName: **Nortel_fault**

alarmActiveDateAndTime: 2004-1-8,3:21:57.1,+05:30

alarmActiveIndex: **10**

The resulting *alarmActiveResourceId* will be:

alarmActiveResourceId.12.78.111.114.116.101.108.95.102.97.117.108.1
 16.25.50.48.48.52.45.49.45.56.44.51.58.50.49.58.53.55.46.49.44.43.48.5
 3.58.51.48.10

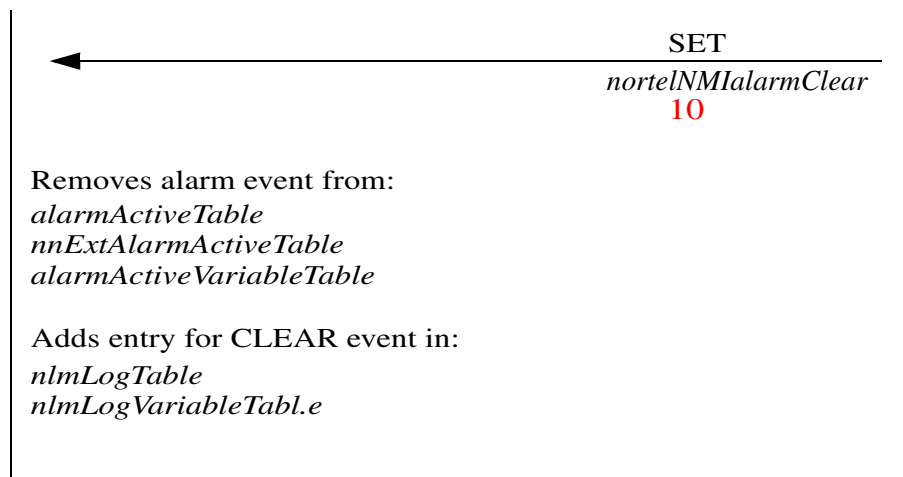
Note: *alarmActiveResourceId* is shown fully encoded.

The SET request will be sent with a value of 10. The corresponding alarm entry is removed from the *alarmActiveTable*, *alarmActiveVariableTable*, and *nnExtAlarmActiveTable*. A corresponding entry for the manual clear is then made in *nlmLogTable* and *nlmLogVariableTable*. See the following figure.

Manual Clear of Alarm Event

IEMS

OSS



Detecting System Restarts

Before an alarm event is forwarded to a downstream manager, the IEMS assigns the current system up-time of the server to the alarm contents. As discussed previously, it can be found in the *sysUpTime* varbind of the alarm. On restart of the IEMS server, this value is initialized to 0 to signal downstream systems of the event. The OSS can use *sysUptime* to monitor system restarts as follows:

Correlation with sequence numbers

Since *sysUpTime* will always increase with each sequential alarm event, restart conditions can be detected if the following condition is met:

$(sysUpTime \text{ of current event}) < (sysUpTime \text{ of previous event})$

Restart Recovery

When the OSS determines that IEMS has been restarted, it must perform a full reload of the active alarms in the system to synchronize its data with the agent. See [“Full Resync of Active Alarms” on page 89](#) for details.

Detection of Missing Logs

Each alarm event generated by IEMS contains a unique sequence number that can be used to detect lost notifications. Once an OSS identifies a missing sequence number, it can be re-queried from the IEMS server if the following condition is met:

(sequence# of latest event) - (sequence# of missing event)

$\leq nlmConfigGlobalEntryLimit$ (default = 25)

If this condition is met, then the missing log can be recovered. See “Incremental Resync of missing logs”.

Otherwise, a full resynchronization of the alarm tables will be required. See [“Full Resync of Active Alarms” on page 89](#).

Full Resync of Active Alarms

There are two scenarios for which an SNMP manager will be required to perform a complete reload of the active alarms from IEMS:

- on startup of the management application
- when missing alarm notifications are sufficiently old to have been rotated out of the *nlmLogTable*. This table maintains a snapshot of the most recent 25 alarm events. If the missing sequence number cannot be found in this table, then a reload of all active alarms is required.

Active alarm data resides in:

alarmActiveTable

nnExtAlarmActiveTable

A full table read must be performed on the varbinds in Please refer to “Required Varbinds for Active Alarm resync” on page 89. to perform the resync:

Required Varbinds for Active Alarm resync

Varbind	OID
snmpTrapOID	.1.3.6.1.6.3.1.1.4.1
alarmActiveResourceId	.1.3.6.1.2.1.118.1.2.2.1.10
alarmActiveDateAndTime	.1.3.6.1.2.1.118.1.2.2.1.2
alarmActiveDescription	.1.3.6.1.2.1.118.1.2.2.1.11

Varbind	OID
nnExtAlarmActiveEventType	.1.3.6.1.4.1.562.29.6.1.1.1.1
nnExtAlarmActiveProbableCause	.1.3.6.1.4.1.562.29.6.1.1.1.2
nnExtAlarmActiveAdditionalText	.1.3.6.1.4.1.562.29.6.1.1.1.3
nnExtAlarmActiveDocumentationPointer	.1.3.6.1.4.1.562.29.6.1.1.1.4
nnExtAlarmActiveResourceDescription	.1.3.6.1.4.1.562.29.6.1.1.1.5
nnExtAlarmActiveManualClear	.1.3.6.1.4.1.562.29.6.1.1.1.6
nnExtAlarmActiveSequenceNumber	.1.3.6.1.4.1.562.29.6.1.1.1.7

Note: These varbinds are retrieved from the *alarmActiveVariableTable*

The manager can perform a full resync with the *alarmActiveTable* in a similar way to that used when performing an incremental resync from the *nlmLogVariableTable* (see “Incremental Resync of missing logs”). As stated earlier, each alarm entry in the *alarmActive* table has a corresponding entry for all of the alarm components in the *alarmActiveVariable* table. The complete set of alarm data can be retrieved for each alarm by first retrieving the *alarmActiveIndex* of the entry in the *alarmActiveTable*, and then using this index to request its corresponding entries from the *alarmActiveVariableTable*. These steps can be summarized as follows:

- 1 Poll the IEMS server for the latest sequence number. Issue a GET request on *nlmStatsLogNotificationsLogged*. Perform steps 2 to 3 until all alarms have been retrieved from IEMS.
- 2 Derive the list of indices to the *alarmActive* table by performing a series of GETNEXT requests on any one of its columns. The *alarmActiveIndex* for entries can be parsed from this data.
- 3 For each *alarmActiveIndex* derived in step 2, determine the alarm type perform a GET request on the *alarmActiveVariableTable* all index fields for the alarm type. The specific index fields requested will be based on the alarm type specified by the *snmpTrapOID* in index 2. See “Incremental Resync of missing logs” for a description of varbinds used in the different event types. This step essentially performs repeated incremental resync operations until complete.
- 4 Based on the alarm type determined in step 3, request all varbinds (GET) in the *alarmActiveVariableTable* for the constructed index

alarmListName = Nortel_fault

alarmActiveIndex = (derived in step 2)

alarmActiveVariableIndex (1-n) - depends on alarm type found in step 3

Note: The *alarmActiveVariableTable* and *nlmLogVariableTable* contain the same indexed alarm information and are accessed in similar ways. The main difference between the two is that *alarmActiveVariableTable* uses the *alarmActiveIndex* as one of its key components, whereas the *nlmLogVariableTable* uses the sequence number.

Incremental Resync of missing logs

An OSS can monitor sequence numbers from alarm events to detect missing notifications. If a missing notification is found (as described in “Detection of Missing Logs”), then it can be queried from the *nlmLogVariableTable* using the sequence number.

- 1 OSS detects missing sequence number
- 2 Missing alarm events can be recovered from the *nlmLogVariableTable* using the sequence number. Depending on the alarm event type, different numbers of varbinds will be present in the table for the entry.

The following table shows an example of the varbinds that would be used to recover a missing RAISE event with a sequence number of “**1390**”. RAISE events include the following alarm types:

nnExtAlarmWarning (.1.3.6.1.4.1.562.29.6.1.0.302)

nnExtAlarmMinor (.1.3.6.1.4.1.562.29.6.1.0.303)

nnExtAlarmMajor (.1.3.6.1.4.1.562.29.6.1.0.304)

nnExtAlarmCritical (.1.3.6.1.4.1.562.29.6.1.0.305)

Table , “nlmLogVariableTable varbinds for recovery of lost CLEAR notification,” on page 93 shows an example of the varbinds that would be used to recover a missing CLEAR event with a sequence number of “**1390**”. CLEAR events are specified by the following OID:

nnExtAlarmClear (.1.3.6.1.4.1.562.29.6.1.0.301)

The alarm type can be determined by examining the value of the *snmpTrapOID* of the missed alarm. For both alarm types, this value is assigned index 2 of the *nlmLogVariable* table and can be queried with the OIDs shown in the following table. The alarm type will determine the mapping for the remaining fields in the notification message.

nImLogVariableTable varbinds for recovery of lost RAISE notification

nImLogVariableTable Index Variable	OID (nImLogName = "Nortel_fault" (encoded) Sequence# = 1390 Index = 1 - 12)	Notification Varbind Represented
nImLogVariableIndex 1	nImLogVariableTimeTicksVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.1	sysUpTime
nImLogVariableIndex 2	nImLogVariableOidVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.2	snmpTrapOID
nImLogVariableIndex 3	nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.3	alarmActiveResourceId
nImLogVariableIndex 4	nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.4	alarmActiveDescription
nImLogVariableIndex 5	nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.5	alarmActiveDateAndTime
nImLogVariableIndex 6	nImLogVariableInteger32Val.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.6	ituAlarmEventType
nImLogVariableIndex 7	nImLogVariableInteger32Val.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.7	ituAlarmProbableCause
nImLogVariableIndex 8	nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.8	ituAlarmAdditionalText
nImLogVariableIndex 9	nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.9	nnItuAlarmActiveDocumentationPointer
nImLogVariableIndex 10	nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.10	nnItuAlarmActiveResourceDescription

nImLogVariableTable varbinds for recovery of lost RAISE notification

nImLogVariableTable Index Variable	OID (nImLogName = "Nortel_fault" (encoded) Sequence# = 1390 Index = 1 - 12)	Notification Varbind Represented
nImLogVariableIndex 11	nImLogVariableInteger32Val .12.78.111.114.116.101.108 .95.102.97.117.108.116.139 0.11	nnItuAlarmActiveManualClear (not present in CLEAR events, see next table)
nImLogVariableIndex 12	nImLogVariableInteger32Val .12.78.111.114.116.101.108 .95.102.97.117.108.116.139 0.12	nnItuAlarmActiveSequenceNumber

nImLogVariableTable varbinds for recovery of lost CLEAR notification

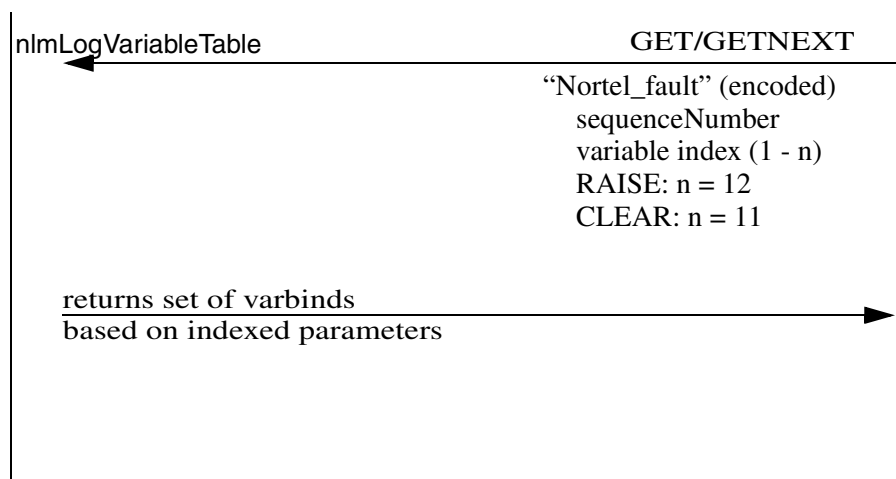
nImLogVariableTable Index Variable	OID (nImLogName = "Nortel_fault" (encoded) Sequence# = 1390 Index = 1 - 11)	Notification Varbind Represented
nImLogVariableIndex 1	nImLogVariableTimeTicksVal .12.78.111.114.116.101.108.95.102.97.117.108.116.1390. 1	sysUpTime
nImLogVariableIndex 2	nImLogVariableOidVal. 12.78.111.114.116.101.108.95.102.97.117.108.116.1390.2	snmpTrapOID
nImLogVariableIndex 3	nImLogVariableOctetStringVal. 12.78.111.114.116.101.108.95.102.97.117.108.116.1390.3	alarmActiveResourceId
nImLogVariableIndex 4	nImLogVariableOctetStringVal. 12.78.111.114.116.101.108.95.102.97.117.108.116.1390.4	alarmActiveDescription
nImLogVariableIndex 5	nImLogVariableOctetStringVal. 12.78.111.114.116.101.108.95.102.97.117.108.116.1390.5	alarmActiveDateAndTime
nImLogVariableIndex 6	nImLogVariableInteger32Val .12.78.111.114.116.101.108 .95.102.97.117.108.116.139 0.6	ituAlarmEventType

nImLogVariableTable Index Variable	OID (nImLogName = "Nortel_fault" (encoded) Sequence# = 1390 Index = 1 - 11)	Notification Varbind Represented
nImLogVariableIndex 7	nImLogVariableInteger32Val .12.78.111.114.116.101.108 .95.102.97.117.108.116.139 0.7	ituAlarmProbableCause
nImLogVariableIndex 8	nImLogVariableOctetStringVal .12.78.111.114.116.101.108.95.102.97.117.108.116.1390. 8	ituAlarmAdditionalText
nImLogVariableIndex 9	nImLogVariableOctetStringVal .12.78.111.114.116.101.108.95.102.97.117.108.116.1390. 9	nnItuAlarmActiveDocumentationPointer
nImLogVariableIndex 10	nImLogVariableOctetStringVal .12.78.111.114.116.101.108.95.102.97.117.108.116.1390. 10	nnItuAlarmActiveResourceDescription
nImLogVariableIndex 11	nImLogVariableInteger32Val .12.78.111.114.116.101.108 .95.102.97.117.108.116.139 0.11	nnItuAlarmActiveSequenceNumber

Recovery of missing alarm by sequence number

IEMS

OSS



Northbound Performance Interface

IEMS Performance Interface Specification

The Northbound performance interface provides the customer a single reporting interface for the managed network. This has been achieved through the definition of a “Common Performance Record format” (CPR-F). The common format maps operational statistics from across network elements to a common set of metrics to provide a network-level view of performance.

The Common Performance Record format specification is defined using a standardized XML interface. It provides a full definition of the normalized containment hierarchy describing performance statistics for reporting network components. PM collection jobs configured in IEMS can report device metrics in either XML or CSV formats.

The following is a list of devices that support collection of performance data in the SN08 release, ERS8600, STORM, MS2000, Session Server-Trunks (platform PMs only), MAS, MCS, MCS Mgr, FPM, MG15000, SAM21, IEMS, UAS, GWC, USP, MG9K, and SSPFS.

XML

If XML is selected as the output format, then the data is collected and saved as an ACSII file in the format defined by the CPR-F XML Schema Document. The format specification below provides a full description of the normalized representation of PM data for supported network elements.

Conversion to CSV

When CSV output is configured in the collection job, data is initially transformed to the XML format described above. An additional step then converts the XML file to its corresponding CSV representation. There is no loss of information during this process. Net content represented by each output is identical.

The next section defines the CPR-F in terms of its XML structure followed by a discussion of its *conversion* to CSV format.

Also, collected CSV and XML performance files can be transferred from IEMS to an OSS system by configuring a transfer job for the performance files. The transfer can be done using FTP or SFTP.

For more information on configuring, retrieving, and transferring performance measurements through IEMS, see NN10327-711 - IEMS Performance Management Guide.

The Common Performance Record Format

Overview

The Common Performance record is an XML document specified using an XML Schema Document (XSD).

There are two major aspects to encoding performance measurements – identifying the source of the measurements within the network and recording the measurement data itself.

The CPR-F uses an XML containment structure to indicate the source point in the network of the performance measurements. A typical performance measurement may have originated in an NE and then been passed up to an element management system (EMS). The EMS in turn may have passed the measurements along to an Operations Support System (OSS).

For this particular case, the common record would contain an XML element representing the management system (the OSS) which ultimately received the set of performance measurements. Within this OSS element would be an element representing the EMS which forwarded the measurements to the OSS.

And within this EMS element, there would be an XML element representing the NE (network element) from which the PMs were obtained. The NE element may itself contain another XML element representing the sub-component in the NE which generated the measurement.

The measurement data itself would also be encoded in one or more XML elements. These data elements would be contained within the sub-component element above.

XML Elements

The common performance record format uses thirteen major elements to encode performance information:

The *PMFile* element is the top-level element and contains all other elements.

The *System* element, *Entity* element and *SubEntity* element are used to relate the measurements to some origination point in the network and to capture their path through the management systems.

The *SingleValues* & *SingleValue* elements, the *GroupOfValues* & *GroupValue* elements and the *Table*, *Labels*, *Label*, *RowOfValues* & *RowValue* elements may all be used to capture the performance measurement information itself.

Encoding Source Identification for Performance Measurements

A performance measurement (PM) originates in some device in the network which records the measured value. This measurement may be combined with

other measurements within the device and forwarded to a management system. The management system may combine the PMs from many devices into a single grouping and may forward this grouping of PMs to some superior management system. Again this superior management system may combine groupings of measurements from many domains in the network and forward the combined package of measurements to yet another management system.

This path that PMs take as they move from the network device level to the management level is encoded in the CPR. Three elements are used to indicate this path:

System element

Entity element

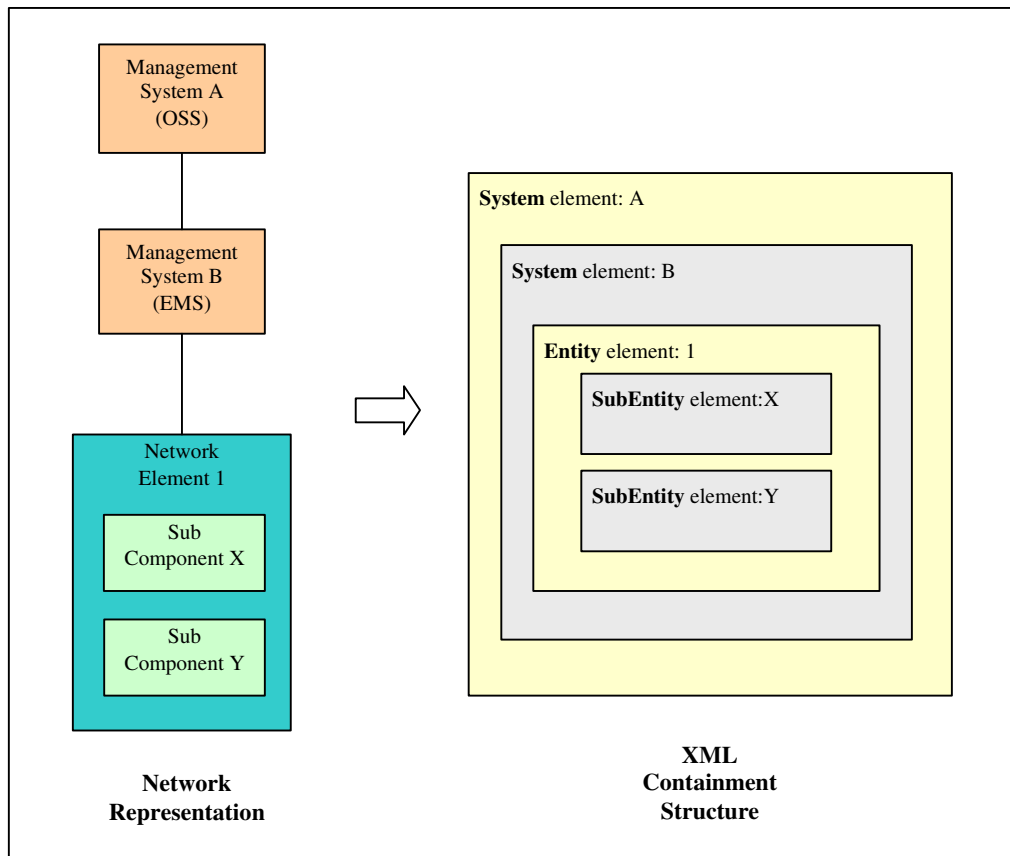
SubEntity element.

The intent of the Entity element is to represent the NE itself. What constitutes an NE and what device granularity determines an NE is an implementation choice for any particular product or technology. The System, Entity and SubEntity form a hierarchy. In this hierarchy, the Entity element may appear only once.

A Network Element may contain many sub-components and these sub-components may themselves contain sub-components and so on to some arbitrary level of decomposition. The SubEntity element represents a sub-component within the NE. A SubEntity element may contain other SubEntity elements to reflect the component structure within the NE. What constitutes a sub-component within an NE is, again, an implementation choice for any particular product or technology.

A set of performance measurements may traverse one or more management systems as it travels to some final destination system. Each of these intermediate management systems may be represented by a System element. A System element may contain another System element encoding the sequence of management systems which handle the performance measurement data.

The CPR may be emitted by a management system or by a network element. When an NE emits the record, the top-most XML element within the PMFile element will be an Entity element representing the NE which is sending the measurements. When a management system emits the CPR, the top-most XML element within the PMFile element will be a System element representing the management system.

OSS/EMS/NE hierarchy encoded in XML elements**Encoding the Performance Measurement Data****Measurement Descriptors**

In general, a performance measurement is some number which is bound to a measurement identifier such as: numberOfPackets = 23145. As well as these two items, a performance measurement may contain contextual information indicating the circumstances under which the measurement was taken or giving some further information as to the meaning of the measurement or its interpretation. The following information items are used in the common performance record format to describe measurement information:

Measurement Identifier: This is the name or label which uniquely identifies the measurement.

Measurement Value: This is (generally) the numerical value of the measurement (such as an integer or decimal number). Or it could be a string or some enumerated value

Measurement Kind: There are two kinds of performance measurement: 'snapshot' and 'period-based'.

A 'snapShot' measurement is one in which the measurement quantity (for example, some counter in a network device) is sampled at an instant in time and is being reported to the management system. There is no time significance attached to this sampled value. To derive information from a snapshot value, it may need to be compared to some previous snapshot of the counter or gauge and conclusions drawn about the change, if any, between the two values.

In contrast, a period-based measurement represents the value of some measurement quantity in the network device over a specified period of time. The measurement value relates only to activity which occurred within the measurement period.

Capture Time: This is the time at which the measurement value was captured. For a period-based measurement, this is the time at which measurement accrual stopped. For a snapshot measurement, it represents the time at which the measurement was sampled.

Interval Duration: This is the length of the time interval governing the performance measurement. For a period-based measurement, this interval is the duration between the time the measurement was started and the time the measurement was stopped. For a snapshot measurement, the interval indicates the duration between the time the current value was sampled and the time of the previous sample.

Last Record: If true this indicates that the performance measurement is the last value for the reporting time interval (indicated in IntervalDuration).

Reliability: This is an indicator of the quality or reliability of the measurement. It can take values such 'valid', 'invalid' and so on.

Unit: This names the unit in which the measurement is expressed (for example, packets, bytes and so on).

Value Type: This indicates the type of data contained in the Measurement Value. It can take on values such as 'integer', 'decimal', 'string' and so on).

Register Type: A register is the generic name given to the hardware or software capability in an NE which actually records the performance measurement. For numeric values the RegisterType property indicates whether the register behaves as a counter or a gauge or some other numeric register. (A counter is a register which accumulates a count of some defined event such as

the arrival of a packet. A gauge is a register which holds a state of usage sample – for example, the number of items in a queue).

Maximum Value: This property indicates the highest value the register can hold.

Reset Time: This is the register reset time. For numeric values this is the date/time when the register was last reset to zero.

Monitored Time: This indicates the actual duration of the period over which the measurements were taken. This property is used for cases where the actual measurement period is less than the period indicated in the Interval Duration value.

Intervals Covered: As an efficiency mechanism, it may be decided not to forward measurements when they have a value of zero at the end of the measurement period (for example, no events of interest occurred in the measurement period). This practice is called zero-suppression. In the case where a zero suppression representation is used, this attribute specifies the number of consecutive intervals over which a zero value was obtained for the measurement.

Table and Group Identifiers

Performance measurements may be stored within the common format as tables of values or as groups of values. The properties below are used to identify these tables and groups.

Table Identifier: This is the name or label for a particular table of measurements. This property is only used in the Table element.

KeyOfRow: This is a property specific to a column label used in representing tabular measurements. When it has a value of 'true' it indicates that this particular column of the table contains the key of the row of data values. The key is the identity of the object to which the row measurements pertain. This would generally refer to a sub-component in the network element.

Group Identifier: This is the name or label for a particular group of measurements. This property is only used in the GroupOfValues element.

Supplementary Identifiers

In many cases the identity of a network element, NE sub-component or performance measurement can be expressed in a single identifier. In other cases the identity will be contained in a number of individual identifiers. The approach taken in the common performance record format is to use supplementary identifiers to hold any additional identification information required in an element.

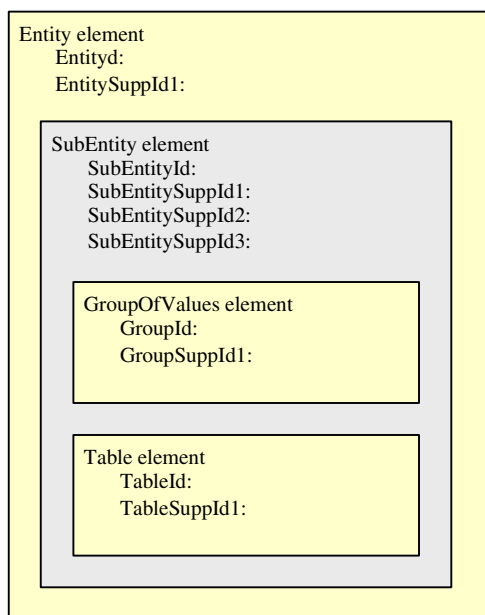
In the case of an *Entity* element (which is used to hold measurements for a particular NE), there are two identifiers: an EntityId (Entity Identifier) and an EntitySuppId (Entity Supplementary Identifier).

Likewise, the *SubEntity* element (which holds measurements for a sub-component of the NE) has a SubEntityId and three supplementary identifiers – SubEntitySuppId1, SubEntitySuppId2 and SubEntitySuppId3. Note that in the case of the *SubEntity* supplementary identifiers, it is not stipulated in which order or in which combination they are to be used. This is left as an implementation decision for any particular product/technology.

The performance measurement itself has a supplementary identifier – MeasureSuppId1. Both the *Table* element and *GroupOfValues* element also have a supplementary identifier – respectively TableSuppId1 and GroupSuppId1.

Some of these identifiers are mandatory and some are optional. See section “[Optionality](#)” on page 106 for more information.

Example of Identifiers and Supplementary Identifiers



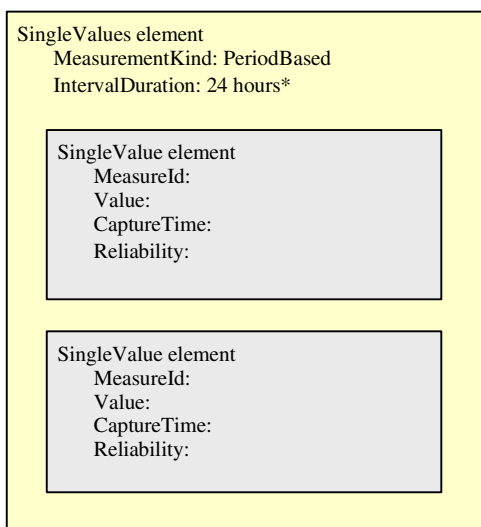
Measurement Elements

There are three ways to encode performance measurements in the common format – using a *SingleValues* approach, a *GroupOfValues* approach or a *Table* approach.

Single Values Approach

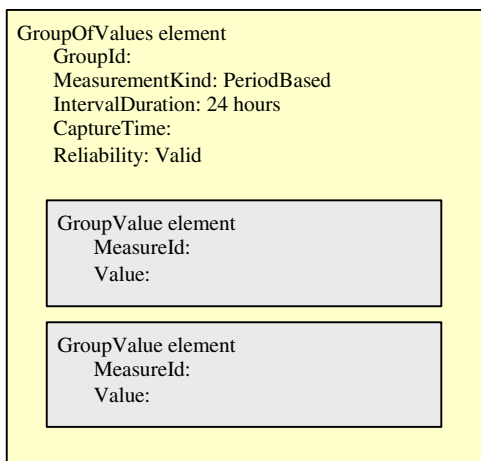
With this approach each performance measurement is considered as a standalone value with no explicit relationship to any other measurement value which may accompany it. Each measurement is encoded in a *SingleValue* element. One or more *SingleValue* elements are contained in a *SingleValues* element which specifies the kind of measurements contained within it (period-based or snapshot) and the interval duration for those measurements (for example, whether they are measurements for a 5-minute, 15-minute or 24-hour interval).

A SingleValues element containing two values



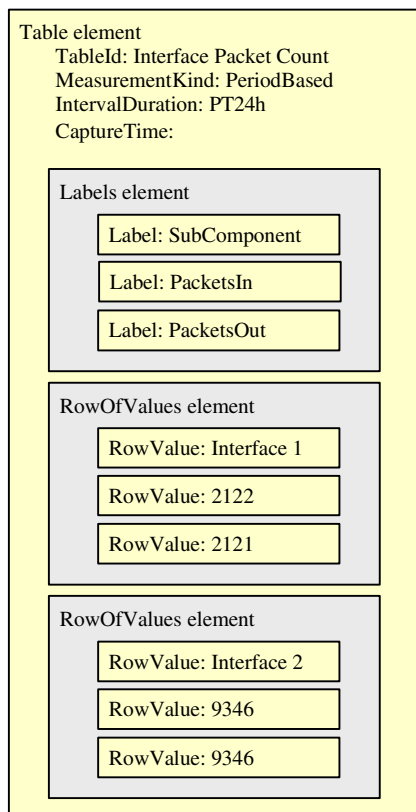
Group Values Approach

Like the *SingleValues* element, the *GroupOfValues* element contains one or more individual measurements. However, there is an explicit relationship between the measurements in the element. They are part of a group of measurements with a collective identity. The *GroupId* value contains the identity of the group. As with the *SingleValues* element, the *GroupOfValues* element specifies the kind of measurements it contains and their interval duration. In addition, many of the individual measurement properties such as *CaptureTime* and *Reliability* are common to the group and these are encoded once in the *GroupOfValues* element itself rather than being encoded for each measurement in the individual *GroupValue* element.

A GroupOfValues element containing two measurements**Table Approach**

The table approach encodes performance measurements in a tabular format. A Table element will contain a Labels element to hold the column headings for the table. The Table element will also contain one or more RowOfValues elements. Each RowOfValues element contains a row of individual data items with a one-to-one correspondence to the labels in the Labels element. One or more of the data items in a row may contain key information indicating the source of the measurements (that is, the data item will identify the sub-component from which the measurements were taken). This facet is indicated using the KeyOfRow property in the Label element.

A table may be explicitly identified using a TableId property or it may be an anonymous table with no name.

A Table element containing two rows of values**Interface Packet Count Table**

<u>SubComponent</u>	<u>PacketsIn</u>	<u>PacketsOut</u>
Interface 1	----	----

Top Level Properties

The performance measurements encoded in the common format constitute an XML string. This set of values will have high level properties in common. These are captured in the PMFile element. The term 'file' as used below is intended to designate the XML string containing the performance measurements.

MeasurementCategory: This property describes the type of measurements contained within the PM file (its value is always "PM" indicating the file contains performance measurements).

PMReportType: This describes the type of performance measurement report contained in the file (for example, this property could be used in the case where it is desired to distinguish between different types of PM reports).

FileCreationTime: This specifies the date/time when the PM file was created.

FileSchema: The FileSchema contains information which describes the format of a source non-CPR format PM file or the mapping file used to translate the source file into the common format.

FileSequenceNumber: The position of this file in some sequence of related PM files.

EarliestStartTime: This is set to the start time of the earliest measurement contained in the file.

LatestCaptureTime: This is set to the capture time of the latest measurement in the file.

PM File element contents

```
PMFile element
  MeasurementCategory:
  ReportType:
  FileCreationTime:
  FileSequenceNumber:
  EarliestStartTime:
  LatestCaptureTime:
  ValueTypeDefault:
  MaxValueDefault
  RegisterTypeDefault:
```

Default Values

ValueType, MaxValue and RegisterType are three properties which may be specified for a measurement (See Measurement Descriptors on page 11). It is possible to set defaults for these values in the file using the ValueTypeDefault, MaxValueDefault and RegisterTypeDefault properties in the top-level *PMFile* element. The scope of these default values is the entire PM file.

It is also possible to specify one or more of ValueType, MaxValue and RegisterType for each *SingleValue* element, each *GroupValue* element or each *Label* element (contained in a *Table* element). This local specification overrides the default value in *PMFile* for the particular element which contains the local specification.

If the property is not locally specified in the *SingleValue*, *GroupValue* or *Label* element, then the default value specified in the *PMFile* element is used.

If a default property is not specified in the *PMFile* element, then the following implicit default values are assumed. These implicit values function as if they were explicitly specified in *PMFile*.

RegisterTypeDefault: "counter"

ValueTypeDefault: "integer"

MaxValueDefault: 4,294,967,295 (that is, $2^{32} - 1$)

Optionality

It is possible to qualify a performance measurement with very many properties as shown above. Most of these properties are optional and are used in specific technologies or are needed to accommodate specific product performance management practices.

The following is the minimum set of properties required to identify a performance measurement. These are the required properties in a PM file:

PMFile Element: MeasurementCategory

System Element: SystemId

Entity: EntityId

SubEntity: SubEntityId

SingleValues Element: MeasurementKind

SingleValue Element: MeasureId; Value; CaptureTime

GroupOfValues Element: GroupId; CaptureTime; MeasurementKind

GroupValue Element: MeasureId; Value

Table Element: CaptureTime; MeasurementKind

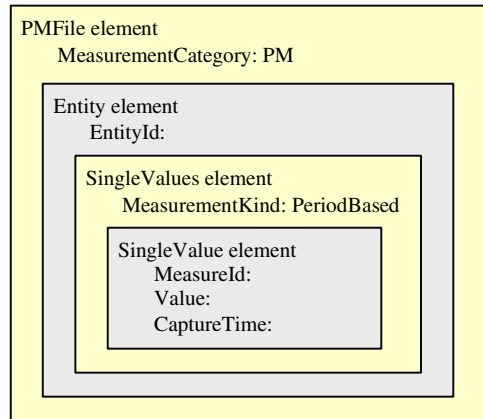
Labels Element: N/A

Label Element: N/A

RowOfValues Element: N/A

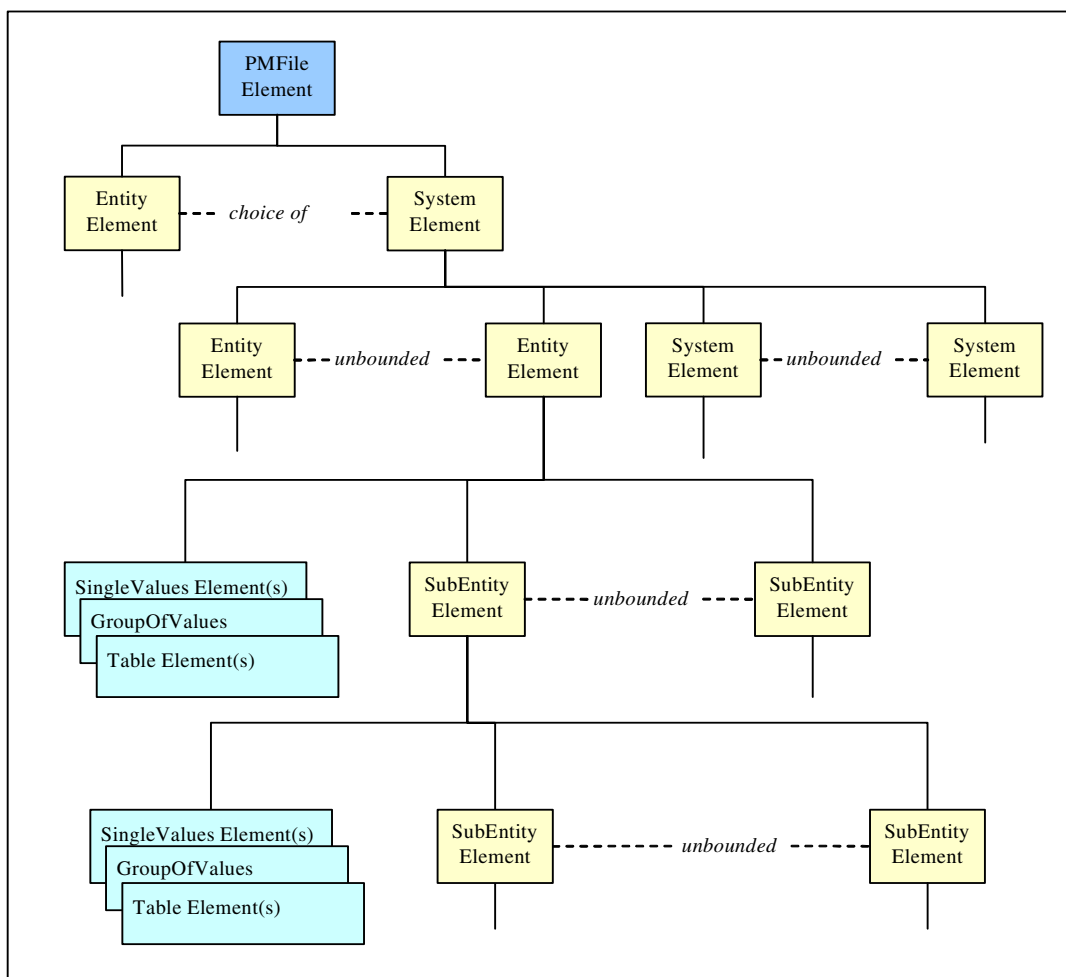
RowValue Element: Value

So a minimal CPR file would look like this:

Minimal Common Record Performance Record file

The figure below shows the hierarchical relationship of the major XML elements in the common performance record.

Hierarchy of the major XML elements



Attribute and Element Encoding

In the common performance record format some information is encoded as element data while other information is encoded using attributes. The approach followed is that attributes are used to encode metadata while elements are used for instance values.

Metadata is data which describes or qualifies some piece of information in terms of its class. So, in the common performance record, the *MeasurementKind* property differentiates between period-based measurements and snapshot measurements. This property is coded as an attribute.

Data which identifies or describes a specific instance of information rather than a class of information is encoded using an element. So the CaptureTime

property describes the time instant when a specific measurement was taken and so is not metadata. It is encoded as an element.

It also needs to be mentioned that the common performance record format adopts the approach of encoding the measurement name or label using an XML element. For instance:

Example 1: `<MeasureId> numberOfPackets </MeasureId>`

This is in contrast to the approach of directly coding the measurement name as an element tag:

Example 2: `<numberOfPackets> </numberOfPackets>`

The requirement for the common performance record format is to have standard fields for measurement information which could be used across all of Nortel (see the Performance Strategy requirements on page 5). This has been achieved using the current approach as shown in Example 1 above.

In order to use a direct coding of the measurement name as the element tag (Example 2 above) would require alignment across Nortel on the identification and semantics of all performance measurements which could possibly be encoded in the common performance record format. This alignment task has not been undertaken yet. It is envisaged that upon completion of such a convergence, the common performance record would be able to evolve to use measurement identifiers as tag names.

An additional concern is sometimes raised concerning the use of tables in the common performance record format. From a theoretical viewpoint, these tables are considered to constitute a lower quality of XML encoding than other means of encoding the data. However the common performance record format has opted to allow a tabular representation of data for pragmatic reasons. Tabular format measurement data has been the norm in most products for many years. Many operations systems expect their performance data to arrive in this customary format. In addition, industry standards for performance measurements such as 3GPP (Third Generation Partnership Project) mandate the use of tables for transporting performance data.

Layout of Elements and Attributes in the Common Format

The two figures below indicate which properties are expressed as elements and which are expressed via attributes. The figures represent one of many combinations of element types which are possible in the common performance record format. (Attributes are shown as *blue italicized* text. Elements are represented as boxes).

Layout of elements & attributes in the Common Performance Record**PMFile***MeasurementCategory= ;ReportType= ;*

FileCreationTime
FileSchema
FileSequenceNumber
EarliestStartTime
LatestCaptureTime
ValueTypeDefault
MaxValueDefault
RegisterTypeDefault

System*Type= ; Vendor= ;*

SystemId
SystemSuppId1
AuditSource

Entity*Type= ; Version= ; Vendor= ;*

EntityId
EntitySuppId1
EntityAddress

SubEntity*Type= ;*

SubEntityId
SubEntitySuppId1
SubEntitySuppId2
SubEntitySuppId3

SingleValues**GroupOfValues****Table**

Layout of elements & attributes in the CPR-F (cont'd)

SubEntity <i>Type= ;</i> <table border="1"> <tr><td>SubEntityId</td></tr> <tr><td>SubEntitySuppId1</td></tr> <tr><td>SubEntitySuppId2</td></tr> <tr><td>SubEntitySuppId3</td></tr> </table>		SubEntityId	SubEntitySuppId1	SubEntitySuppId2	SubEntitySuppId3										
SubEntityId															
SubEntitySuppId1															
SubEntitySuppId2															
SubEntitySuppId3															
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Common Performance Record Comma Separated Values (CSV) format

The following is an abbreviated generic description of the CPR CSV format. The CPR format is designed to be parsable into or from CPR XML format without loss of information.

The following elements are treated as ‘blocks’: PMFile, System, Entity, SubEntity, Table, GroupOfValues, SingleValues.

The start and end of these elements are marked or indicated in CSV with unique ‘Begin’ and ‘End’ markers. The format of an element block is as follows:

`{element_name}=Begin`

... CSV heading row for attributes & child text element nodes children of <element> ...

... CSV value row for attributes & child text element nodes of <element> ...

... recursive handling of all complex sub-elements (element children that are not text nodes) ...

`{element_name}=End`

For each element, a specific property (attribute or text element) has been selected as the identifier for that element. The identifier will always appear as the *first* of the comma separated values in the CSV representation of that element.

Values that contain commas are enclosed in double quotes in CSV format.

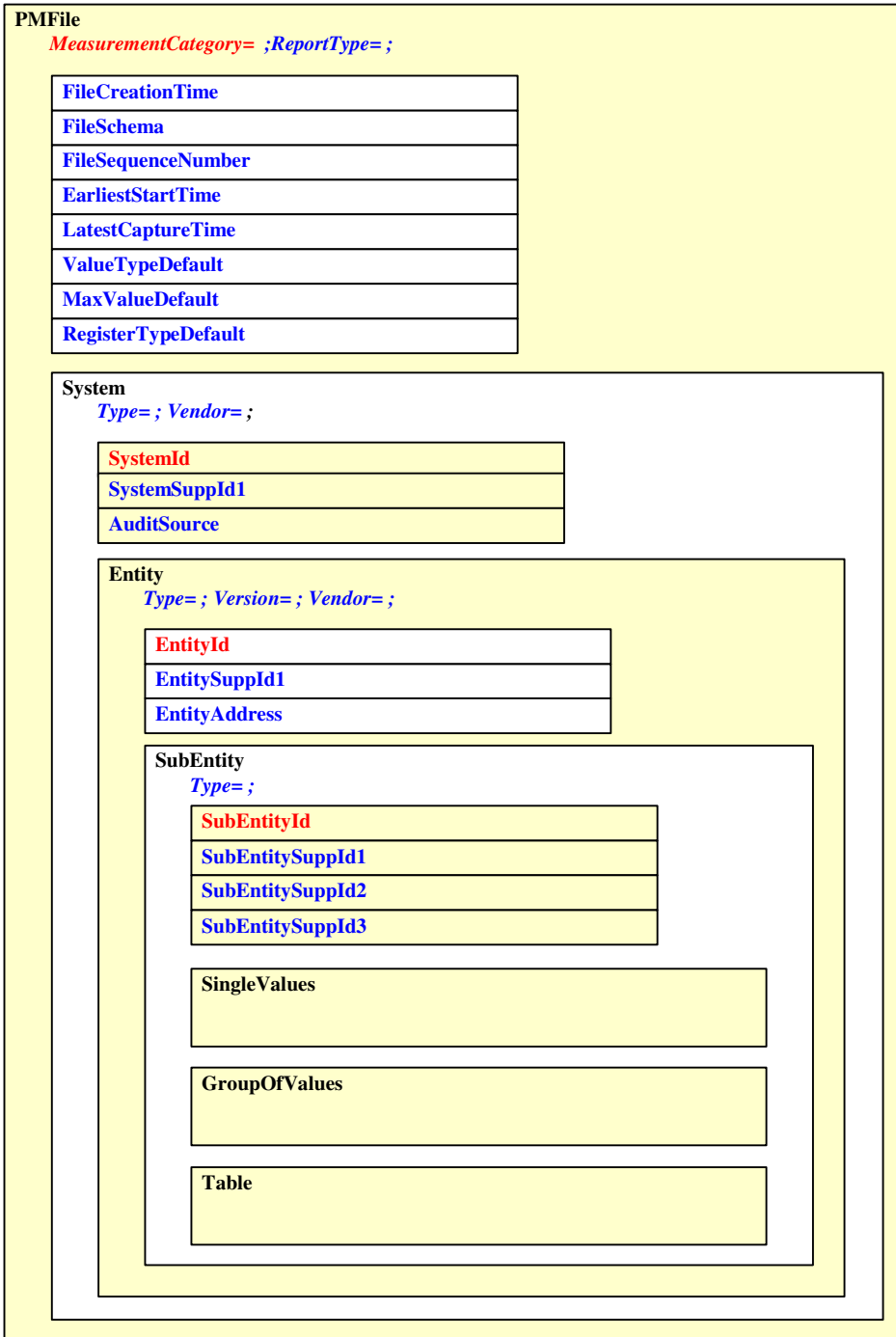
Element blocks and identifiers

Element	Block?	Identifier
PMFile	Y	MeasurementCategory
System	Y	SystemId
Entity	Y	EntityId
SubEntity	Y	SubEntityId
Table	Y	TableId
Labels	N	Label
RowOfValues	N	RowValue/Value

Element	Block?	Identifier
GroupOfValues	Y	GroupId
GroupValue	N	MeasureId
SingleValues	Y	MeasurementKind
SingleValue	N	MeasureId

As not all identifiers are in fact mandatory, when the identifier is not found in the XML being translated the value of `_Unnamed_` is used in the CSV output where the value of the identifier would normally appear.

For reference, “[Layout of elements & attributes in the Common Performance Record](#)” and “[Layout of elements & attributes in the CPR-F \(cont'd\)](#)” (which had been presented earlier) are shown below. The two figures indicate which properties are considered identifiers for each element, and therefore will always appear as the first comma separated value within a row. (Mandatory identifiers are shown in **red**. Optional identifiers are shown in **blue**. Attributes are shown as *italicized* text. Elements are represented as boxes.)

Layout of Elements & Attributes in the CPR-F

Layout of elements & attributes in the CPR-F (cont'd)

SubEntity <i>Type= ;</i> <table border="1"> <tr><td>SubEntityId</td></tr> <tr><td>SubEntitySuppId1</td></tr> <tr><td>SubEntitySuppId2</td></tr> <tr><td>SubEntitySuppId3</td></tr> </table>	SubEntityId	SubEntitySuppId1	SubEntitySuppId2	SubEntitySuppId3						
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RowValue <table border="1"> <tr> <td>Value</td> <td>ResetTime</td> </tr> </table>	Value	ResetTime								
Value	ResetTime									

CSV Table example

```

PMFile=Begin
PM,commonFormat.xsd,2004-06-23T13:01:14EST

System=Begin
NortelNetworks/IEMS

Entity=Begin
47.165.168.120,CICM

Table=Begin
.iso.org.dod.internet.mgmt.mib-
  2.rmmon.usrHistory.usrHistoryControlTable.usrHistoryControlEntry,Snapshot,5
,2004-06-23T13:00:00EST
usrHistoryControlInterval,usrHistoryControlIndex,usrHistoryControlStatus,usrHi
storyControlOwner
900,5,1,CICM-120A
Table=End

Table=Begin
.iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nortelPerfR
efMIB.nnPerfMetricReferenceTable.nnPerfMetricReferenceEntry,Snapshot,5,200
4-06-23T13:00:02EST
nnPerfMetricValue,nnPerfMetricSources,nnPerfMetricDataType,nnPerfMetricGroup,n
nPerfMetricName,nnPerfMetricRefIndex
0,2,1,CICM,ActiveConnections,5
0,2,1,CICM,PercentageCpuUsed,4
0,2,1,CICM,PercentageMemoryUsed,3
0,2,1,CICM,NumberOfLogs,2
0,2,1,CICM,ActiveSessions,1
Table=End
Entity=End
System=End
PMFile=End

```

Table attributes & text elements values
Labels attributes & text elements values
RowOfValues attributes & text elements

CSV SingleValues example

```

PMFile=Begin
PM,commonFormat.xsd,2004-06-23T17:30:21EST

System=Begin
NortelNetworks/IEMS

Entity=Begin
47.174.74.179,Session Server

SingleValues=Begin
Snapshot,5
sysDescr,2004-06-23T17:26:20EST,.iso.org.dod.internet.mgmt.mib-2.system,Linux sp2k-1
2.4.22-samxts #1 Thu May 13 01:48:09 EDT 2004 i686,Valid
snmpOutPkts,2004-06-23T17:26:20EST,.iso.org.dod.internet.mgmt.mib-2.snmp,8639,Valid
snmpInBadVersions,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
snmpInBadCommunityNames,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,1,Valid
snmpInTotalReqVars,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,9689,Valid
snmpOutTraps,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
snmpInBadCommunityUses,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInPkts,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-2.snmp,8652,Valid
snmpInTotalSetVars,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
snmpInASNParseErrs,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
hrSystemDate,2004-06-23T17:26:22EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,0,Valid
hrSystemUptime,2004-06-23T17:26:22EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,1315598,Valid
hrSystemProcesses,2004-06-23T17:26:22EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,170,Valid
snmpSilentDrops,2004-06-23T17:26:22EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
SingleValues=End

Entity=End
System=End
PMFile=End

```

Note on CSV Examples

All CSV examples are with header information suppressed by default. This is the default behavior for all CSV performance reports in the SN08 release.

To have the header information included in the CSV performance reports, the user must change the “suppress-headers” option from “true” to “false”. The “suppress-headers” option is located in the cprxml2csv.properties file in the /opt/nortel/iems/current/resources directory.

CSV with header information example:

```
PMFile=Begin
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2004-06-23T12:45:04EST
System=Begin
SystemId
NortelNetworks/IEMS
Entity=Begin
EntityId,Type
47.165.168.120,CICM
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
.iso.org.dod.internet.mgmt.mib-
2.rmon.usrHistory.usrHistoryControlTable.usrHistoryControlEntry,Snapshot,5,2004-06-
23T12:40:00EST
Label,Label,Label,Label
usrHistoryControlInterval,usrHistoryControlIndex,usrHistoryControlStatus,usrHistoryContr
olOwner
Value,Value,Value,Value
900,5,1,CICM-120A
Table=End

Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
.iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nortelPerfRefMIB.nnPerf
MetricReferenceTable.nnPerfMetricReferenceEntry,Snapshot,5,2004-06-23T12:40:01EST
Label,Label,Label,Label,Label,Label
nnPerfMetricValue,nnPerfMetricSources,nnPerfMetricDataType,nnPerfMetricGroup,nnPerf
MetricName,nnPerfMetricRefIndex
```

```
Value,Value,Value,Value,Value,Value
0,2,1,CICM,ActiveConnections,5
0,2,1,CICM,PercentageCpuUsed,4
0,2,1,CICM,PercentageMemoryUsed,3
0,2,1,CICM,NumberOfLogs,2
2662732,2,1,CICM,ActiveSessions,1
Table=End
Entity=End
System=End
PMFile=End
```

Note: Collected performance files (in CSV and XML format) can be forwarded from the IEMS server to an OSS system by configuring an IEMS transfer job. Transfer jobs can be configured to forward these files using FTP or the secure SFTP protocols.

Inventory/Topology Interface

Overview

The IEMS provides the ability to perform an ACSII dump of provisioned network inventory/topology information for use by 3rd party systems. The snapshot is initiated from the IEMS user interface and outputs full configuration details of the component hierarchy to the IEMS server as a text file. By default, the data is placed in the file */opt/nortel/iems/current/logs/inventoryData.txt*. This information can then be retrieved and processed by third parties. For a full description of the format and content of these topology listings see the section titled “Dumping Inventory Details” in:

NN10330-511 - Integrated EMS Configuration Management

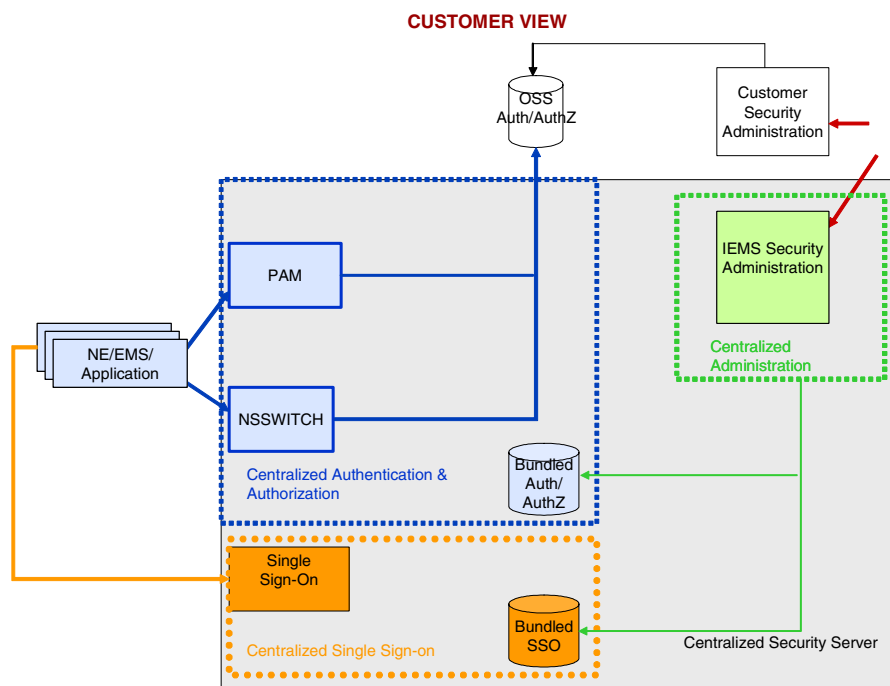
Network Security

Centralized Security Administration (Network Security)

Overview

The Integrated EMS provides a comprehensive security architecture based on PAM (Pluggable Authentication Module) and NSSwitch (Name Services Switch). The following figure shows the Nortel Networks VoIP Security Architecture.

Centralized Security Architecture



Features

This architecture provides the following features:

- Support for central administration of user accounts and user groups
- Support for central authentication: authentication of centrally administered user accounts is performed by the IEMS Security Server.
- Support for central authorization: authorization information needed to support user access control is securely managed and provided by the IEMS Security Server.
- Support for Single Sign-on (SSO)- This capability enables the user to access multiple network elements, applications, and features from a single login session. Session information for a user is shared between IEMS and network elements supporting SSO.
- Customer Plug-ability - provides the ability for third parties to plug-in its own Authentication/Authorization solutions on IEMS. Client authentication and authorization information are provided by the customer's security backend via the IEMS Security Server.

The following table lists the devices and applications supporting these features:

Authentication and Authorization

Central Security Administration -Supported Devices

Network Element/EMS Platforms	Device Authentication Method	Device Reference Documentation
USP	HTTPS	USP Security and Administration, NN10159-611
Ethernet Routing Switch 8600	Radius	Configuring and Managing Security, 314724-B
SSPFS CS 2000 Management Tools (ossgate, sam2em, gwcem, uasem, apsem, lmm, tmm, Audio Provisioning Server (APS) Network Patch Manager (NPM) MG 9000 Manager	Radius	ATM/IP Solution-level Security and Administration, NN10402-600
Integrated EMS	HTTPS	Integrated EMS Security and Administration, NN10336-611
GWC	PAM Proxy	?
Integrated EMS	HTTPS	Integrated EMS Security and Administration, NN10336-611
SDM	Radius	?
MDM and MDM Operator Client, PAM and Sun ONEIS	Radius	?
MG15000 (previously PVG)	Radius	?
CEM	PAM Proxy	?
MG9K	Radius	?

The following table lists Integrated EMS single sign-on launch points.

Integrated EMS single sign-on launch points

Network element/EMS platform/application	Integrated EMS launch point
USP	USP Command Line USP Manager
ERS 8600	ERS8600 Command Line

Integrated EMS single sign-on launch points

Network element/EMS platform/application	Integrated EMS launch point
SSPFS	CS 2000 Management Tools
CS 2000 Management Tools	
Audio Provisioning Server (APS)	
Network Patch Manager (NPM)	
MG 9000 Manager	
SAM21 Manager	SAM21 Manager
UAS Manager	UAS Manager
LMM	LMM
TMM	TMM
OSSGate	OSSGate
	BPT Servlet
	BPT Command Line
MG9000 Manager	MG9000 Manager
MG9000 Mid-Tier	
APS	APS Manager
	APS Application
NPM	NPM
	NPM Command Line
CEM	CEM
SSPFS	SSPFS

Network Elements and Applications can be configured to use Centralized Security Administration. To enable a device to use Centralized Security Administration, the device must be configured to use the IEMS central security server to authenticate users and access user profile information.

The IEMS Central Security Server uses PAM (Pluggable Authentication Module) to process the authentication requests and NSSwitch (Name Services Switch) to return user privilege and user profile information to Network Elements and Applications.

PAM Services

PAM provides authentication services for clients in the managed network. Customers have the option to use the PAM services that come pre-bundled with the security server or to provide their own. When customers use the PAM services provided by the IEMS Security Server, the user accounts are managed via the IEMS security and administration GUI.

When a request is forwarded to the IEMS PAM SPI (PAM Service Provider), then authentication is performed against data provisioned and administered by the Security Administration application on the IEMS client.

Conversely, when a PAM services are provided by a customer, incoming authentication requests are forwarded to the customer SPI for resolution against their remote database.

NSSwitch Services

NSSwitch provides services to obtain group and profile information for users. Centralized access to network resources depends on the definition of a common set of user groups to map security access for each user. The Nortel Networks solution provides a number of predefined user groups to address the full range of OAM&P functions required across a managed network. For a full discussion of these user groups and their categorization, see *NN10281-600 - ATM/IP Administration and Security*.

Customers can configure NSSwitch to use the service pre-bundled with IEMS or, as with PAM services, provide their own service remotely. When the pre-bundled service is used, group and user profile information is administered via the IEMS security and administration GUI. See NN10336-611 - IEMS Administration and Security.

If NSSwitch services are configured on a third party system, it is important to note that this security solution supports *only* the NSSwitch group and password databases. Although other database types may be defined in NSSwitch, they are not used by the central security feature.

See the References section for additional information on PAM and NSSwitch.

Single Sign-on (SSO)

The Single Sign-on feature allows users transparent access to multiple network elements and applications through a single login.

Once a user has been successfully authenticated for the first time (by user login), an SSO token is created by the IEMS security server that will be used to authenticate the same user on subsequent login attempts.

Network Elements and Applications use a Single Sign-On (SSO) interface on the Central Security Server to request SSO tokens whenever authentication is required.

For full details on the interface specification, see *NN10336-611 - IEMS Administration and Security*.

Configuring Security Administration

Managing Accounts

It is recommended practice that all user accounts be managed centrally with the following exceptions:

- accounts required to provide emergency access to a device.
- super user accounts (for example ‘root’ users)

For more information on adding a centrally managed user, refer to the "Adding New Users" section of *IEMS Administration and Security*.

Note: Detailed procedures for these steps can be found in *NN10336-611 - IEMS Administration and Security*.

Configuring Centralized Security Administration on NEs and EMS Platforms

An OSS must configure NEs and EMS Platforms to use centralized security administration. To enable centralized security administration on a device, the OSS must follow the procedures outlined for the device. For security configuration information for a specific device, look for its listing in the “Supported Devices” section of this document.

Note: Detailed procedures for these steps can be found in *NN10336-611 - IEMS Administration and Security*.

IEMS Suported Devices

The sections that follow contain a directory to provide customers a quick reference to device-specific information on faults, performance, interfaces, and other user documentation. The intended purpose is to allow customers to correlate IEMS Northbound interface events and behaviors with their originating source.

Each device in the listings below provide sample logs from all four Northbound fault streams: SCC2, NTSTD, Syslog, and SNMP. With the exception of the SNMP fault feed, these samples are shown as they appear from the Northbound interfaces.

Understanding SNMP Fault samples

Since SNMP has no inherent display format, each event is presented in a format that displays the short name of the MIB variables populated by the event:

<short MIB variable Name> => <value>

for example:

nnExtAlarmActiveResourceDescription =>
IEMS=nc0rtp2127.us.nortel.com-MS2000;

The following table provides a mapping of the displayed “short” variable name to its full form as well as its associated OID.

OID Short Name Mapping in SNMP Log Samples

Short name	sysUpTime
Long name	system.sysUpTime.0
OID	.1.3.6.1.2.1.1.3
Short name	snmpTrapOID.0
Long name	.iso.org.dod.internet.snmpV2.snmpModules.snmpMIB.snmpMIBObjects.snmpTrap.snmpTrapOID.0
OID	.1.3.6.1.6.3.1.1.4.1
Short name	alarmActiveResourceId
Long name	alarmMIB.alarmObjects.alarmActive.alarmActiveTable.alarmActiveEntry.alarmActiveResourceId
OID	.1.3.6.1.2.1.111.1.2.2.1.10
Short name	alarmActiveDateAndTime

Long name	alarmMIB.alarmObjects.alarmActive.alarmActiveTable.alarmActiveEntry.alarmActiveDateAndTime
OID	.1.3.6.1.2.1.111.1.2.2.1.2
Short name	alarmActiveDescription
Long name	alarmMIB.alarmObjects.alarmActive.alarmActiveTable.alarmActiveEntry.alarmActiveDescription
OID	.1.3.6.1.2.1.111.1.2.2.1.11
Short name	nnExtAlarmActiveEventType
Long name	enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveEventType
OID	.1.3.6.1.4.1.562.29.6.1.1.1.1
Short name	nnExtAlarmActiveProbableCause
Long name	enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveProbableCause
OID	.1.3.6.1.4.1.562.29.6.1.1.1.2
Short name	nnExtAlarmActiveAdditionalText
Long name	enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveAdditionalText
OID	.1.3.6.1.4.1.562.29.6.1.1.1.3
Short name	nnExtAlarmActiveDocumentationPointer
Long name	enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveDocumentationPointer
OID	.1.3.6.1.4.1.562.29.6.1.1.1.4
Short name	nnExtAlarmActiveResourceDescription
Long name	enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveResourceDescription
OID	.1.3.6.1.4.1.562.29.6.1.1.1.5
Short name	nnExtAlarmActiveManualClear
Long name	enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveManualClear
OID	.1.3.6.1.4.1.562.29.6.1.1.1.6

Short name	nnExtAlarmActiveSequenceNumber
Long name	enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveSequenceNumber
OID	.1.3.6.1.4.1.562.29.6.1.1.1.7
Short name	nnExtAlarmMessageResource
Long name	.iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmMessageTable.nnExtAlarmMessageEntry.nnExtAlarmMessageResource
OID	.1.3.6.1.4.1.562.29.6.1.3.1.1
Short name	nnExtAlarmMessageResourceDescription
Long name	iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmMessageTable.nnExtAlarmMessageEntry.nnExtAlarmMessageResourceDescription
OID	.1.3.6.1.4.1.562.29.6.1.3.1.2
Short name	nnExtAlarmMessageDateAndTime
Long name	iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmMessageTable.nnExtAlarmMessageEntry.nnExtAlarmMessageDateAndTime
OID	.1.3.6.1.4.1.562.29.6.1.3.1.3
Short name	nnExtAlarmMessageDocumentationPointer
Long name	iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmMessageTable.nnExtAlarmMessageEntry.nnExtAlarmMessageDocumentationPointer
OID	.1.3.6.1.4.1.562.29.6.1.3.1.4
Short name	nnExtAlarmMessageInfo
Long name	iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmMessageTable.nnExtAlarmMessageEntry.nnExtAlarmMessageInfo
OID	.1.3.6.1.4.1.562.29.6.1.3.1.5

Call Agent Core

This section contains IEMS Northbound log samples and device documentation references for the Call Agent Core.

Call Agent Core Fault Interface

Fault documentation for Call Agent Core :

- NN10275-909 - Succession fault Management logs Reference
- NN10083-911 - Communication Server 2000 Fault Management

DMS Standard (North America)

- 297-8021-840 - North American DMS100 Log Report Reference Manual Volumes 1 to 8

International Succession

- 297-9051-8401 - DMS100 Log Report Reference Manual Volumes 1 to 7

Fault Mapping for Call Agent Core

The following criteria can be used for looking up information on specific faults for Call Agent Core.

Fault Correlation for Call Agent Core

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
Call Agent Core	log name and log number	log name and log number	log name and log number	log name and log number	see section “Fault documentation for Call Agent Core :”

Northbound Fault Formats for Call Agent Core

SCC2

The following is an example of a Call Agent Core log in SCC2 format:

```
56 LINE138 3778 INFO TRMT
      SLOA 21 1 02 01      DN 2145202111
      TREATMENT SET = BUSY      CALLED NO =      5202111
      CALLID= 01BE 036D
```

NTSTD

The following is an example of a Call Agent Core log in NTSTD format:

```
RTPU07BR      LINE138 Jan23 16:56:30 3778 INFO TRMT
              SLOA 21 1 02 01      DN 2145202111
              TREATMENT SET = BUSY   CALLED NO =                5202111
              CALLID= 01BE 036D
```

SNMP

The following is an example of a Call Agent Core log in SNMP format:

```
system.sysUpTime.0 => 19:51:46
snmpTrapOID.0 => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr;
nnExtAlarmMessageDateAndTime => 2004-1-23,11:56:30.0,
nnExtAlarmMessageDocumentationPointer => LINE138
nnExtAlarmMessageInfo => 56 LINE138 3778 INFO TRMT              SLOA 21 1 02 01
DN 2145202111
              TREATMENT SET = BUSY   CALLED NO =                5202111
              CALLID= 01BE 036D
```

Syslog

The following is an example of a Call Agent Core log in Syslog format:

```
Feb 23 11:57:27 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=3835~~ LINE138 NONE INFO
TRMT^M      SLOA 21 1 02 01      DN 2145202111 ^M      TREATMENT SET = BUSY   CALLED
NO =                5202111 ^M      CALLID= 01BE 036D
```

Performance

OM and PM Documentation references for Call Agent Core

- NN10149-711 - Communications Server 2000 Performance Management

DMS Standard (North America)

- 297-8021-814P1 - North American DMS-100 Operational Measurements Reference Manual Volumes 1 to 6

International Succession

- 297-9051-8141 - DMS-100 Family Operational Measurements Reference Manual Volumes 1 to 6

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

Performance measurements for Call Agent Core are available from the CS2K Core Manager. See NN10149-711 - Communications Server 2000 Performance Management for more information.

XML

The following is an example of Performance data for Call Agent Core in XML format:

***Note:** The IEMS northbound performance interface does not support this device..*

CSV

The following is an example of Performance data for Call Agent Core in CSV format:

***Note:** The IEMS northbound performance interface does not support this device..*

GUI/CLUI Documentation for Call Agent Core

The Call Agent Core provides both command-line and MAP-based interfaces accessed through the CS2000 Core Manager.

GUI/CLUI Launching and User procedures

- NN10018-111 - CS2000 Core Manager Basics
see section “Accessing the Core”

Related documents

- NN10197-111 - Communication Server 2000 Basics
- NN10193-511 - Communication Server 2000 Configuration Management
- NN10127-811 - Communication Server 2000 Accounting Management
- NN10171-611 - Communication Server 2000 Security and Administration
- 297-5051-921 - SuperNode Data Manager DDMS ASCII CI Gateway User Guide
- 297-5161-022P1 - Advanced Intelligent Network Service Enablers SIG Volumes 1 to 3
- 297-8021-350P1 - North American DMS-100 Translations Guide Volumes 1 to 25

- 297-8021-351P1 - DMS-100 Data Schema Reference Manual (volumes 1 to 12)
- 297-8021-801 - DMS-100 Feature Guide
- 297-8021-808P1 - DMS-100 SERVORD Reference Manual
- 297-8021-808P2 - DMS-100 SERVORD Reference Manual
- 297-8021-814P1 - DMS-100 Operational Measurements Reference Manual (volumes 1 to 6)
- 297-8021-840P1 - DMS-100 Logs Reference Manual (volumes 1 to 6)
- 297-8021-855P1 - DMS-100 Office Parameters Reference Manual (volumes 1 to 3)
- 297-8991-810 - XA-Core Reference Manual

Call Agent Platform

This section contains IEMS Northbound log samples and device documentation references for the Call Agent Platform.

Call Agent Platform Fault Interface

Fault documentation for Call Agent Platform :

- NN10087-911 - Call Agent Fault Management

Fault Mapping for Call Agent Platform

The following criteria can be used for looking up information on specific faults for Call Agent Platform.

Fault Correlation for Call Agent Platform

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
Call Agent Platform	logname and number	logname and number	logname and number	logname and number	NN10087-911 Call Agent Fault Management

Northbound Fault Formats for Call Agent Platform

SCC2

The following is an example of a Call Agent Platform log in SCC2 format:

```
* 41 CCA 355 6064 FLT Jam Inactive Unit
Unit Number : 0, ACTIVE
Description : Inactive JAMMED
```

NTSTD

The following is an example of a Call Agent Platform log in NTSTD format:

```
COMPACT06BT * CCA355 JAN21 18:41:14 1864 FLT Jam Inactive Unit
Unit Number : 0, ACTIVE
Description : Inactive JAMMED
```

SNMP

The following is an example of a Call Agent Platform log in SNMP format:

```
system.sysUpTime.0 => 1 day, 4:49:05
snmpTrapOID.0 => nnExtAlarmMinor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.49.44.54.58.52.49.58.49.52.46.48.44.8995
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => DeviceSpecificInfo=Unavailable;Unit Number : 0, ACTIVE
Description : Inactive JAMMED
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => CCA 355
nnExtAlarmActiveResourceDescription => IEMS=47.142.128.16-CS2K-Mgr;
nnExtAlarmActiveManualClear => 3
nnExtAlarmActiveSequenceNumber => 9104
```

Syslog

The following is an example of a Call Agent Platform log in Syslog format:

```
Jan 21 19:41:06 wnc0s0qh IEMS: _V2_~I=~H=wnc0s0qh~A=IEMS~S=2860~~ CCA355 MINOR FLT
Jam Inactive Unit^M Unit Number : 0, ACTIVE ^M Description : Inactive JAMMED
```

Performance

OM and PM Documentation references for Call Agent Platform

- NN10153-711 - Call Agent Performance Management

Northbound OM/PM Formats

Performance measurements for Call Agent Platform are available only from the Call Agent Manager interface. See NN10153-711 - Call Agent Performance Management for more information.

XML

The following is an example of Performance data for Call Agent Platform in XML format:

***Note:** The IEMS northbound performance interface does not support this device..*

CSV

The following is an example of Performance data for Call Agent Platform in CSV format:

***Note:** The IEMS northbound performance interface does not support this device..*

GUI/CLUI Documentation for Call Agent Platform

GUI Launching and User procedures

- NN10175-611 - Call Agent Administration and Security

Related documents

- NN10023-111 - Call Agent Basics
- NN10109-511 - Call Agent Configuration Management

Core Element Manager (CEM)

This section contains IEMS Northbound log samples and device documentation references for the Core Element Manager.

CEM Fault Interface

This section will provide references to customer documentation for Fault, Performance, Topology, GUI/CLUI, and Security for CEM.

Fault documentation for CEM :

The document that describes CEM faults is CEM Logs and OMs - Integrated EMS Fault Management, NN10334-911- I .

Fault Mapping for CEM

The following criteria can be used for looking up information on specific faults for CEM.

Table 1 Fault Correlation for CEM

NB format ->	SCC2	NTStd	SNMP	Syslog	Document Reference
Device/EM					
CEM	Description log name and log number	Description log name and log number	Device specific info	Description log name and log number	NN10334-911- I

Northbound Fault Formats for CEM

SCC2

The following is an example of a CEM log in SCC2 format:

info event:

```
58 CSEM600 0069 INFO Log
Equip Id: 250Q C7SP
Notification Id: 0000042693
Category: communications
Cause: unableToSSTreply
ComponentId: C7SP
LogKey: CCS224
Description:
"RTPU08AZI | | ICCS224|JAN19|13:57:30|8844|INFO|No reply SST Invd CGPA

SSN = 100,
CGPA: VALID  ANSI7  43 0 1 ANSI7 252 050 006
GTNAME: INVALID UNKNOWN 208 164 94 00 OCTET
DIGITS:
I1106161126"
```

alarm raise or clear:

```
* 00 CSEM300 0083 TBL Alarm set
Equip Id: 250Q SDM-0
Notification Id: 0000042700
Category: processingError
Cause: applStatusChange
ComponentId: SDM-0
LogKey: SDM550
Description:
"RTPU08AZI |** | |SDM550|JAN19|13:59:04|8861|INFO|Node Status Change
Node: SDM 0
Status: ** ISTb from ** ISTb
Reason: DCE unavailable alarm
|1106161220"
```

NTStd

The following is an example of a CEM log in NTStd format:

info event:

```
znc0s0jh CSEM600 JAN19 13:58:58 0071 INFO Log
Equip Id: 250Q MPC-1
Notification Id: 0000042694
Category: equipment
Cause: mpcINFO
ComponentId: MPC-1
LogKey: MPC101
Description:
"RTPU08AZI | | |IMPC101|JAN19|13:57:43|8845|INFO|MPC_INFORMATION_REPORT
REASON = 19
UNABLE TO DOWNLOAD MPC. FILE-ID NOT FOUND.
MPC = 1

|1106161138"
```

alarm raise or clear:

```

znc0s0jh * CSEM300 JAN19 14:00:20 0083 TBL Alarm set
Equip Id: 250Q SDM-0
Notification Id: 0000042700
Category: processingError
Cause: applStatusChange
ComponentId: SDM-0
LogKey: SDM550
Description:
"RTPU08AZI|**| |SDM550|JAN19|13:59:04|8861|INFO|Node Status Change
Node: SDM 0
Status: ** ISTb from ** ISTb
Reason: DCE unavailable alarm
l1106161220"

```

SNMP

The following is an example of a CEM log in SNMP format for **event**:

info event:

sysUpTime. => 1:56:59

snmpTrapOID. => nnExtAlarmMessage

nnExtAlarmMessageResource => .0.0

nnExtAlarmMessageResourceDescription =>
IEMS=250Q@rtpu@47.142.94.68;MPC-1

nnExtAlarmMessageDateAndTime => 2005-1-19,1:58:58.0

nnExtAlarmMessageDocumentationPointer => MPC101

nnExtAlarmMessageInfo => 58 CSEM600 0071 INFO Log

```

"RTPU08AZI| | |
|MPC101|JAN19|13:57:43|8845|INFO|MPC_INFORMATION_REPORT
REASON = 19

```

UNABLE TO DOWNLOAD MPC. FILE-ID NOT FOUND.

MPC = 1

l110616

clear alarm:

sysUpTime. => 4:50:21

snmpTrapOID. => nnExtAlarmClear

mib-2. =>

.1.3.6.1.2.1.118.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.11
6.20.50.48.48.53.45.49.45.49.57.44.49.58.53.51.58.53.50.46.48.44.45906

mib-2. => 054

mib-2. => DeviceSpecificInfo="RTPU08AZ|**|
|SDM550|JAN19|13:52:37|8807|INFO|Node Status Change

Node: SDM 0

Status: ** ISTb from ** ISTb

Reason: DCE unavailable alarm

l1106160832"

nnExtAlarmActiveEventType => 3

nnExtAlarmActiveProbableCause => 118

nnExtAlarmActiveAdditionalText =>

nnExtAlarmActiveDocumentationPointer =>

nnExtAlarmActiveResourceDescription =>
IEMS=250Q@rtpu@47.142.128.85;

nnExtAlarmActiveSequenceNumber => 4629

minor alarm:

sysUpTime. => 1:58:22

snmpTrapOID. => nnExtAlarmMinor

mib-2. =>

.1.3.6.1.2.1.118.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.11
6.19.50.48.48.53.45.49.45.49.57.44.50.58.48.58.50.48.46.48.44.2

mib-2. => Õ

mib-2. => DeviceSpecificInfo=applStatusChange;"RTPU08AZI |** |
ISDM550|JAN19|13:59:04|8861|INFO|Node Status Change

Node: SDM 0

Status: ** ISTb from ** ISTb

Reason: DCE unavailable alarm

|1106161220"

nnExtAlarmActiveEventType => 3

nnExtAlarmActiveProbableCause => 118

nnExtAlarmActiveAdditionalText =>

nnExtAlarmActiveDocumentationPointer => SDM550

nnExtAlarmActiveResourceDescription =>
IEMS=250Q@rtpu@47.142.94.68;SDM-0

nnExtAlarmActiveManualClear => 2

nnExtAlarmActiveSequenceNumber => 3

major alarm:

sysUpTime. => 4:50:22

snmpTrapOID. => nnExtAlarmMajor

mib-2. =>

.1.3.6.1.2.1.118.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.11
6.19.50.48.48.53.45.49.45.49.57.44.50.58.48.58.50.49.46.48.44.45917

mib-2. => Õ

mib-2. => DeviceSpecificInfo=sdmBaseMaintenance;"RTPU08AZI|**|
ISDM317|JAN19|14:00:19|8862|TBL|SDM Base Maintenance

DCE problem detected

Reason: sec client service failed: Waited for 5 minutes and DCED had
not initia

nnExtAlarmActiveEventType => 3

nnExtAlarmActiveProbableCause => 118

nnExtAlarmActiveAdditionalText =>

nnExtAlarmActiveDocumentationPointer => SDM317

nnExtAlarmActiveResourceDescription =>
IEMS=250Q@rtpu@47.142.128.85;SDM-0

nnExtAlarmActiveManualClear => 4

nnExtAlarmActiveSequenceNumber => 4630

critical alarm:

Syslog

The following is an example of a CEM log in Syslog format:

info event:

```
Aug 1 18:30:17 znc0s0jh IEMS:
_V2_~I=~H=znc0s0jh~A=IEMS~S=0444~~ CSEM600 NONE INFO
Log^M Equip Id: 250Q C7SP^M Notification Id: 0000048176^M
Category: communications^M Cause: unableToSSTreply^M
ComponentId: C7SP^M LogKey: CCS224^M Description:^M
"RTPU08AZI| | |CCS224|JAN20|00:32:43|8642|INFO|No reply SST Invd
CGPA^M ^M SSN = 100,^M CGPA: VALID ANSI7
43 0 1 ANSI7 252 050 006 ^M GTNAME: INVALID
UNKNOWN 208 164 94 00 OCTET ^M DIGITS: ^M
|1106199239"
```

alarm raise or clear:

```
Aug 1 18:30:27 znc0s0jh IEMS:
_V2_~I=~H=znc0s0jh~A=IEMS~S=0451~~CSEM300 MINOR TBL Alarm
set^M Equip Id: 250Q SDM-0^M Notification Id: 0000048178^M
Category: processingError^M Cause: applStatusChange^M
ComponentId: SDM-0^M LogKey: SDM550^M Description:^M
"RTPU08AZ||**||SDM550|JAN20|00:32:53|8644|INFO|Node Status Change
^M Node: SDM 0^M Status: ** ISTb from ** ISTb
^M Reason: DCE unavailable alarm^M |1106199249"
```

Performance

OM and PM Documentation references for CEM

- Not supported in SN08

Northbound OM/PM Formats

N/A

GUI/CLUI Documentation for CEM

GUI Launching and User procedures

- Adding a Core Element Manager - Integrated EMS Configuration Management NN10330-511
- Launching a Core Element Manager - Integrated EMS Basics, NN10329-111
- CEM Overview and GUI description - Integrated EMS Basics, NN10329-111

Related documents

- Adding a Core Element Manager - Integrated EMS Configuration Management NN10330-511
- Launching a Core Element Manager - Integrated EMS Basics, NN10329-111
- CEM Logs and OMs - Integrated EMS Fault Management, NN10334-911-
- CEM Overview and GUI description - Integrated EMS Basics, NN10329-111 and Solution-level Configuration or Solution-level Overview (number tbd)
- CEM Restore - Solution level Security and Administration, NN10402-600
- Synchronous Backup Manager procedures - Solution level Security and Administration, NN10402-600

Ethernet Routing Switch 8600 (previously Passport 8600)

This section contains IEMS Northbound log samples and device documentation references for the ERS8600.

ERS8600 Fault Interface

Fault documentation for ERS8600 :

- 241-6001-502 MDM Device Alarms Reference Guide
- 241-6003-110 - Passport 8600 Device Integration Cartridge User Guide

Fault Mapping for ERS8600

The following criteria can be used for looking up information on specific faults for ERS600.

Fault Correlation for ERS8600

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
Passport 8600	logname and number	logname and number	logname and number	logname and number	241-6003-110 - Passport 8600 Device Integration Cartridge User Guide

Northbound Fault Formats for ERS8600

SCC2

The following is an example of a ERS8600 log in SCC2 format:

```

**59 PP 330 0010 TBL PP Fault
Location: pp8600;47.142.106.1
State: Raised
Category: equipment
Cause: Link Oscillation detected
Time: Aug 09 15:59:14 2004
Component ID: PP8600=47.142.106.1; portIndex=198
Specific Problem: RC Link Oscillation
Description: LinkOscillation: portIndex = 198
.1.3.6.1.6.3.1.1.4.1.0: .1.3.6.1.4.1.2272.1.21.0.8
.1.3.6.1.2.1.1.3.0: 50 days, 17 hours, 4 minutes, 39 seconds.

```

```
03 PP 318 0011 INFO PP Fault
```

Location: pp8600;47.142.106.1
State: Cleared
Category: communications
Cause: communication regained
Time: Aug 09 16:03:38 2004
Component ID: PP8600=47.142.106.1; ifIndex=89
Specific Problem: Generic Link Status
Description: Link Up: ifIndex = 89(AdminStatus = up OperationStatus = up)
.1.3.6.1.6.3.1.1.4.1.0: .1.3.6.1.6.3.1.1.5.4.0
.1.3.6.1.2.1.1.3.0: 50 days, 17 hours, 9 minutes, 3 seconds

NTSTD

The following is an example of a ERS8600 log in NTSTD format:

MY_OFFICE ** PP330 AUG09 15:59:14 0010 TBL PP Fault

Location: pp8600;47.142.106.1
State: Raised
Category: equipment
Cause: Link Oscillation detected
Time: Aug 09 15:59:14 2004
Component ID: PP8600=47.142.106.1; portIndex=198
Specific Problem: RC Link Oscillation
Description: LinkOscillation: portIndex = 198
.1.3.6.1.6.3.1.1.4.1.0: .1.3.6.1.4.1.2272.1.21.0.8
.1.3.6.1.2.1.1.3.0: 50 days, 17 hours, 4 minutes, 39 seconds.

MY_OFFICE PP318 AUG09 16:03:38 0011 INFO PP Fault

Location: pp8600;47.142.106.1
State: Cleared
Category: communications
Cause: communication regained
Time: Aug 09 16:03:38 2004
Component ID: PP8600=47.142.106.1; ifIndex=89
Specific Problem: Generic Link Status
Description: Link Up: ifIndex = 89(AdminStatus = up OperationStatus = up)
p)

```
.1.3.6.1.6.3.1.1.4.1.0: .1.3.6.1.6.3.1.1.5.4.0
.1.3.6.1.2.1.1.3.0: 50 days, 17 hours, 9 minutes, 3 seconds.
```

SNMP

The following is an example of a ERS8600 log in SNMP format:

```
sysUpTime.0 => 2:55:28
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.19.50.48
.48.52.45.50.45.52.44.53.58.53.56.58.52.54.46.54.44.90024
alarmActiveDateAndTime => 2004-2-4,5:58:46.6
alarmActiveDescription => DeviceSpecificInfo=;Link Down: ifIndex = 175 ( AdminStatus
= down OperationStatus = down )
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => PP 398
nnExtAlarmActiveResourceDescription => IEMS=47.142.130.66-PP8600;3
nnExtAlarmActiveSequenceNumber => 2709
```

Syslog

The following is an example of a ERS8600 log in Syslog format:

```
Aug 9 15:58:57 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=3342~~ PP317 MAJOR TBL
PP Fault^M Location: pp8600;47.142.106.1^M State: Raised^M Category:
com
munications^M Cause: loss of communication^M Time: Aug 09 15:58:56 2004^M
Component ID: PP8600=47.142.106.1; ifIndex=89^M Specific Problem: Generic Li
nk Status^M Description: Link Down: ifIndex = 89( AdminStatus = down
OperationStatus^M = down)^M .1.3.6.1.6.3.1.1.4.1.0:
.1.3.6.1.6.3.1.1.5.3.0^M .1.
3.6.1.2.1.1.3.0: 50 days, 17 hours, 4 minutes, 22 seconds.

Aug 9 15:59:14 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=3343~~ PP318 NONE INFO
PP Fault^M Location: pp8600;47.142.106.1^M State: Cleared^M Category:
co
mmunications^M Cause: communication regained^M Time: Aug 09 15:59:14
2004^M Component ID: PP8600=47.142.106.1; ifIndex=198^M Specific Problem:
Generic
```

```

Link Status^M      Description: Link Up: ifIndex = 198( AdminStatus = up
OperationStatus = ^M up)^M .1.3.6.1.6.3.1.1.4.1.0: .1.3.6.1.6.3.1.1.5.4.0^M
.1.3.
6.1.2.1.1.3.0: 50 days, 17 hours, 4 minutes, 39 seconds.

```

Performance

OM and PM Documentation references for Ethernet Routing Switch 8600

Not available at time of publication

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of Performance for Ethernet Routing Switch 8600 in XML format:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
_ <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
<FileCreationTime>2004-06-23T17:35:01EST</FileCreationTime>
_ <System>
<SystemId>NortelNetworks/IEMS</SystemId>
_ <Entity Type="PP8600">
<EntityId>47.142.130.66</EntityId>
_ <SingleValues MeasurementKind="Snapshot" IntervalDuration="5">
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:01EST</CaptureTime>
<MeasureId>snmpInvalidMsgs</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.snmpV2.snmpModules.snmpMPDMIB.snmpMPDM
IBObjects.snmpMPDStats</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:01EST</CaptureTime>
<MeasureId>snmpOutPkts</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>

```

```
<Value>311026</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:01EST</CaptureTime>
<MeasureId>snmpOutTraps</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:01EST</CaptureTime>
<MeasureId>snmpInTotalSetVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>15</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:02EST</CaptureTime>
<MeasureId>snmpInPkts</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>320467</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:03EST</CaptureTime>
<MeasureId>snmpInTotalReqVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>1412075</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:03EST</CaptureTime>
<MeasureId>snmpInASNParseErrs</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>2</Value>
```

```

<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:03EST</CaptureTime>
<MeasureId>snmpInBadVersions</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:04EST</CaptureTime>
<MeasureId>snmpInBadCommunityUses</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>

```

CSV

The following is an example of Performance for Ethernet Routing Switch 8600 in CSV format:

```

PMFile=Begin
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2005-04-29T16:03:27EST

System=Begin
SystemId
NortelNetworks/IEMS

Entity=Begin
EntityId,Type
47.142.106.1,ERS 8600

```


Table=Begin

TableId,MeasurementKind,IntervalDuration,CaptureTime

.iso.org.dod.internet.mgmt.mib-

2.interfaces.ifTable.ifEntry,Snapshot,60,2005-04-29T16:03:25EST

Label,Label,Label,Label,Label,Label,Label,Label

ifIndex,ifInOctets,ifInDiscards,ifInErrors,ifOutOctets,ifOutDiscards,ifDescr
,ifOutErrors

Value,Value,Value,Value,Value,Value,Value,Value

99,3519556990,,,2843839675,,10BaseTX Port 1/36 Name RTPU SDM,

98,1892551806,,,2939876487,,10BaseTX Port 1/35 Name ,

97,0,,,0,,10/100BaseTX Port 1/34 Name ,

96,2607035364,,,1156091781,,100BaseTX Port 1/33 Name RTPU EIOP,

95,585000400,,,3333348300,,100BaseTX Port 1/32 Name ,

94,0,,,0,,10/100BaseTX Port 1/31 Name ,

93,0,,,0,,10/100BaseTX Port 1/30 Name ? on port status,

92,0,,,0,,10/100BaseTX Port 1/29 Name ,

91,0,,,0,,10/100BaseTX Port 1/28 Name ,

90,692189368,,,1918881709,,100BaseTX Port 1/27 Name RTPU IEMS,

139,0,,,0,,10/100BaseTX Port 2/12 Name ,

138,0,,,0,,10/100BaseTX Port 2/11 Name ,

137,0,,,0,,10/100BaseTX Port 2/10 Name ,

136,0,,,0,,10/100BaseTX Port 2/9 Name ,

135,0,,,0,,10/100BaseTX Port 2/8 Name ,

134,0,,,0,,10/100BaseTX Port 2/7 Name ,

199,742043178,,,2204480142,,1000GbicSx Port 3/8 Name RTPU-RTPH MLT Link 1,

133,0,,,0,,10/100BaseTX Port 2/6 Name ,

198,3024541849,,,147000570,,1000GbicSx Port 3/7 Name MG9K C410,

132,0,,,0,,10/100BaseTX Port 2/5 Name ,

197,3067630249,,,4072781420,,1000GbicSx Port 3/6 Name MG9K MG16,

131,0,,,0,,10/100BaseTX Port 2/4 Name ,

196,267713923,,,1565959639,,1000GbicSx Port 3/5 Name MG9K CO22,

130,0,,,0,,10/100BaseTX Port 2/3 Name ,

195,3664,,,192888860,,1000GbicSx Port 3/4 Name ,

194,0,,,0,,1000GbicSx Port 3/3 Name MG9K HW3,

193,2648170775,,,1114208656,,1000GbicSx Port 3/2 Name MG9K UD16,

192,1881433572,,,3766840280,,1000GbicSx Port 3/1 Name RTPU IP IW SPM4 ,

89,2393684118,,,1734992991,,100BaseTX Port 1/26 Name ,
88,0,,,0,,10/100BaseTX Port 1/25 Name ,
87,0,,,3921817024,,100BaseTX Port 1/24 Name ,
86,244245726,,,4058571199,,100BaseTX Port 1/23 Name ,
85,2400959711,,,2195841459,,100BaseTX Port 1/22 Name RTPU CS2M,
84,1800636,,,25853284,,10/100BaseTX Port 1/21 Name ,
83,317573162,,,91399040,,100BaseTX Port 1/20 Name Test Port,
82,0,,,0,,10/100BaseTX Port 1/19 Name Test Port,
81,2579864907,,,1099267363,,100BaseTX Port 1/18 Name RTPU GWC7 Unit 0,
80,1316890489,,,2166234394,,100BaseTX Port 1/17 Name RTPU GWC7 Unit 1,
129,0,,,0,,10/100BaseTX Port 2/2 Name ,
128,0,,,0,,10/100BaseTX Port 2/1 Name ,
79,1357807862,,,1141374711,,100BaseTX Port 1/16 Name RTPU GWC6 Unit 0,
78,3315302032,,,783265118,,100BaseTX Port 1/15 Name RTPU GWC6 Unit 1,
77,2492825486,,,1466290424,,100BaseTX Port 1/14 Name RTPU GWC5 Unit 0,
76,1474662523,,,2148003140,,100BaseTX Port 1/13 Name RTPU GWC5 Unit 1,
75,3468717706,,,2408425514,,100BaseTX Port 1/12 Name RTPU GWC4 Unit 0,
74,2223654205,,,2620590791,,100BaseTX Port 1/11 Name RTPU GWC4 Unit 1,
73,4232774182,,,3276379595,,100BaseTX Port 1/10 Name RTPU GWC3 Unit 0,
72,1979511439,,,2755663000,,100BaseTX Port 1/9 Name RTPU GWC3 Unit 1,
71,2117328003,,,3779464870,,100BaseTX Port 1/8 Name RTPU GWC2 Unit 0,
70,1411219792,,,3395507222,,100BaseTX Port 1/7 Name RTPU GWC2 Unit 1,
111,890693112,,,454582540,,100BaseTX Port 1/48 Name To RTPU_BS450 1 & 2,
110,222680327,,,1712847940,,100BaseTX Port 1/47 Name Uplink to Cisco PIX and
Corwan,
175,0,,,0,,10/100BaseTX Port 2/48 Name ,
174,0,,,0,,10/100BaseTX Port 2/47 Name ,
173,0,,,0,,10/100BaseTX Port 2/46 Name ,
172,0,,,0,,10/100BaseTX Port 2/45 Name ,
171,0,,,0,,10/100BaseTX Port 2/44 Name ,
170,0,,,0,,10/100BaseTX Port 2/43 Name ,
69,2523957761,,,978312068,,100BaseTX Port 1/6 Name RTPU GWC1 Unit 0,
68,1230452356,,,2093299274,,100BaseTX Port 1/5 Name RTPU GWC1 Unit 1,
67,2004590554,,,1447660543,,100BaseTX Port 1/4 Name RTPU GWC0 Unit 0,
66,1822773443,,,1710305771,,100BaseTX Port 1/3 Name RTPU GWC0 Unit 1,
65,2337429088,,,1861141968,,100BaseTX Port 1/2 Name RTPU GWC SC Unit 1,

64,3169371581,,,2444974653,,100BaseTX Port 1/1 Name RTPU GWC SC Unit 0,
109,0,,,0,,10/100BaseTX Port 1/46 Name ,
108,1749105803,,,4259656198,,10BaseTX Port 1/45 Name RTPU_MG9KEM,
107,1044800,,,96018816,,10BaseTX Port 1/44 Name Backbone B,
106,3920056,,,1105156687,,100BaseTX Port 1/43 Name Backbone A,
105,0,,,0,,10/100BaseTX Port 1/42 Name ,
263,4070227425,,,1056151913,,1000GbicSx Port 4/8 Name RTPU-RTPH MLT Link 2,
104,0,,,0,,10/100BaseTX Port 1/41 Name ,
169,0,,,0,,10/100BaseTX Port 2/42 Name ,
262,0,,,0,,1000Gbic Port 4/7 Name ,
168,0,,,0,,10/100BaseTX Port 2/41 Name ,
103,0,,,0,,10/100BaseTX Port 1/40 Name ,
261,0,,,0,,1000Gbic Port 4/6 Name ,
102,0,,,0,,10/100BaseTX Port 1/39 Name ,
167,0,,,0,,10/100BaseTX Port 2/40 Name ,
260,0,,,0,,1000Gbic Port 4/5 Name ,
101,0,,,0,,10/100BaseTX Port 1/38 Name ,
166,0,,,0,,10/100BaseTX Port 2/39 Name ,
100,0,,,0,,10/100BaseTX Port 1/37 Name ,
165,0,,,0,,10/100BaseTX Port 2/38 Name ,
164,0,,,0,,10/100BaseTX Port 2/37 Name ,
163,0,,,0,,10/100BaseTX Port 2/36 Name ,
162,0,,,0,,10/100BaseTX Port 2/35 Name ,
161,0,,,0,,10/100BaseTX Port 2/34 Name ,
160,0,,,0,,10/100BaseTX Port 2/33 Name ,
259,0,,,0,,1000Gbic Port 4/4 Name ,
258,0,,,0,,1000Gbic Port 4/3 Name ,
257,0,,,0,,1000GbicSx Port 4/2 Name MG9K CO24,
256,1976538350,,,3582672036,,1000GbicSx Port 4/1 Name RTPU IP IW SPM4,
159,953365301,,,1219438157,,100BaseTX Port 2/32 Name ,
158,244956300,,,2666151542,,100BaseTX Port 2/31 Name ,
157,448168415,,,2799200531,,100BaseTX Port 2/30 Name ,
156,451154192,,,2893074267,,100BaseTX Port 2/29 Name ,
155,148226724,,,2572168254,,100BaseTX Port 2/28 Name ,
154,1032287162,,,1263107257,,100BaseTX Port 2/27 Name ,
153,0,,,0,,10/100BaseTX Port 2/26 Name ,

```
152,0,,,0,,10/100BaseTX Port 2/25 Name ,
151,0,,,0,,10/100BaseTX Port 2/24 Name ,
150,0,,,0,,10/100BaseTX Port 2/23 Name ,
149,0,,,0,,10/100BaseTX Port 2/22 Name ,
148,0,,,0,,10/100BaseTX Port 2/21 Name ,
147,0,,,0,,10/100BaseTX Port 2/20 Name ,
146,0,,,0,,10/100BaseTX Port 2/19 Name ,
145,0,,,0,,10/100BaseTX Port 2/18 Name ,
144,0,,,0,,10/100BaseTX Port 2/17 Name ,
143,0,,,0,,10/100BaseTX Port 2/16 Name ,
142,0,,,0,,10/100BaseTX Port 2/15 Name ,
141,0,,,0,,10/100BaseTX Port 2/14 Name ,
140,0,,,0,,10/100BaseTX Port 2/13 Name ,
```

Table=End

SingleValues=Begin

MeasurementKind, IntervalDuration

Snapshot, 60

MeasureId, CaptureTime, MeasureSuppId1, Value, Reliability

ipOutRequests, 2005-04-29T16:03:26EST, .iso.org.dod.internet.mgmt.mib-
2.ip, 51086849, Valid

ipInReceives, 2005-04-29T16:03:26EST, .iso.org.dod.internet.mgmt.mib-
2.ip, 474055521, Valid

SingleValues=End

Entity=End

System=End

PMFile=End

GUI/CLUI Documentation for Ethernet Routing Switch 8600 (previously Passport 8600)

GUI Launching and User procedures

- 316341-B Rev 00 - Installing and Using Device Manager

- 314723-B - Configuring Network Management

Related documentation

- 314724-B - Configuring and Managing Security
- 314997-B - Read Me for Security
- 316341-A - Installing and Using Device Manager
- 313189-C - Getting Started
- 315545-B - Managing Platform Operations and Using Diagnostics Tools
- 314723-B - Configuring Network Management
- 314721-B - Configuring BGP Services
- 316433-B - Configuring QoS and IP Filtering
- 314720-C - Configuring IP Routing Operations
- 314725-B - Configuring Layer 2 Operations: "VLANs," Spanning "Tree," Multilink Trunking
- 314719-B - Configuring IP Multicast Routing Protocols
- 316343-A - Configuring IGMP for User Authentication (IGAP)
- 314722-A - Configuring IPX Routing Operations
- 314995-A - Configuring the Web Switching Module with Device Manager
- 316350-A - Using the SSL acceleration module with the Web switching module for the 8600 Series switch
- 315015-B - System Messaging Platform Reference Guide
- 315023-B - Using the Packet Capture Tool

Gateway Controller (GWC)

This section contains IEMS Northbound log samples and device documentation references for the GWC.

GWC Fault Interface

Fault documentation for GWC :

- NN10090-911 - GWC Fault Management

Fault Mapping for GWC

The following criteria can be used for looking up information on specific faults for GWC.

Fault Correlation for GWC

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
GWC	logname and number	logname and number	logname and number	logname and number	NN10090-911 GWC Fault Management

Northbound Fault Formats for GWC

SCC2

The following is an example of a GWC log in SCC2 format:

```
**14 GWC 307 7250 TBL GWC Fault
Location: GWC-2-UNIT-0
NotificationID: 4
State: Raise
Category: Communications
Cause: Communications subsystem failure
Time: Jan 23 15:15:59 2004
Component Id: GWC=GWC-2-UNIT-0;Version=PGC92BA;Unit=unit_0;Software=NODE
MTC
Specific Problem: EM not responding, provisioned data loaded from local
Flash
Description: Element Manager communication failure.
```

NTSTD

The following is an example of a GWC log in NTSTD format:

```
COMPACT06BT ** GWC307 Jan23 20:14:38 7250 TBL GWC Fault
Location: GWC-2-UNIT-0
NotificationID: 4
State: Raise
Category: Communications
Cause: Communications subsystem failure
```

```

Time: Jan 23 15:15:59 2004
Component Id: GWC=GWC-2-UNIT-0;Version=PGC92BA;Unit=unit_0;Software=NODE
MTC
Specific Problem: EM not responding, provisioned data loaded from local
Flash
Description: Element Manager communication failure.

```

SNMP

The following is an example of a GWC log in SNMP format:

```

system.sysUpTime.0 => 23:10:15
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.
20.50.48
.48.52.45.49.45.50.51.44.51.58.49.52.58.51.56.46.48.44.42848
alarmActiveDateAndTime => 2004-1-23,3:14:38.0,
alarmActiveDescription => Communication with a gateway is down.
nnExtAlarmActiveEventType => 2
nnExtAlarmActiveProbableCause => 554
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => GWC304
nnExtAlarmActiveResourceDescription => IEMS=0x00000063000000a1ac101127-GWC-
19-UNIT-1;GWC=GWC-19-UNIT-1;Version=GN090CD;Unit=unit_1;Software=SSC
nnExtAlarmActiveManualClear => 0
nnExtAlarmActiveSequenceNumber => 9028

```

Syslog

The following is an example of a GWC log in Syslog format:

```

Feb 23 15:15:56 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=7307~~ GWC307 MAJOR TBL
GWC Fault^M          Location: GWC-2-UNIT-0^M          NotificationID: 4^M          State:
Raise^M              Category: Communications^M          Cause: Communications subsystem
failure^M            Time: Jan 23 15:15:59 2004^M          Component Id: GWC=GWC-2-UNIT-
0;Version=PGC92BA;Unit=unit_0;Software=NODE^M          MTC^M          Specific Problem: EM
not responding, provisioned data loaded from local^M          Flash^M          Description:
Element Manager communication failure.^M

```

Performance

OM and PM Documentation references for GWC

- NN10156-711 - GWC Performance Management

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of performance data for GWC in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
- <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
  <FileCreationTime>2005-02-04T14:30:30EST</FileCreationTime>
- <System>
  <SystemId>NortelNetworks/IEMS</SystemId>
- <Entity Type="GWC">
  <EntityId>172.17.40.52</EntityId>
- <SingleValues MeasurementKind="Snapshot" IntervalDuration="30">
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:17EST</CaptureTime>
  <MeasureId>totalResourceCapacity</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.raMeasurements</MeasureSu
ppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:17EST</CaptureTime>
  <MeasureId>resourceRequestError</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.raMeasurements</MeasureSu
ppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
```



```
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:17EST</CaptureTime>
  <MeasureId>raState</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.raMeasurements</MeasureSu
ppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:10EST</CaptureTime>
  <MeasureId>maxSimulApgCalls</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.apgMeasurements</MeasureS
uppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:10EST</CaptureTime>
  <MeasureId>accState</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.apgMeasurements</MeasureS
uppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:03EST</CaptureTime>
  <MeasureId>dptCallFailResTimeout</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.dptMeasurements</MeasureS
uppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
```

```
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:03EST</CaptureTime>
  <MeasureId>dptToneNotApplied</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.dptMeasurements</MeasureS
uppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:03EST</CaptureTime>
  <MeasureId>dptCallFailResError</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.dptMeasurements</MeasureS
uppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:01EST</CaptureTime>
  <MeasureId>norUnitActivity</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.gwcUnitStatusMIB.gwcUnitO
bjects.gwcUnitStatus</MeasureSuppId1>
  <Value>1</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:01EST</CaptureTime>
  <MeasureId>norUnitAdminStatus</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.gwcUnitStatusMIB.gwcUnitO
bjects.gwcUnitStatus</MeasureSuppId1>
  <Value>1</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
```

```
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:01EST</CaptureTime>
  <MeasureId>norUnitOperStatus</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.gwcUnitStatusMIB.gwcUnitO
bjects.gwcUnitStatus</MeasureSuppId1>
  <Value>1</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:10EST</CaptureTime>
  <MeasureId>apgCallFailGWException</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.apgMeasurements</MeasureS
uppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:10EST</CaptureTime>
  <MeasureId>apgInsertions</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.apgMeasurements</MeasureS
uppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:10EST</CaptureTime>
  <MeasureId>apgCallFailGWLost</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.apgMeasurements</MeasureS
uppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
```

```

- <SingleValue>
  <CaptureTime>2005-02-04T14:30:03EST</CaptureTime>
  <MeasureId>dptCallAttempts</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.dptMeasurements</MeasureS
uppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-04T14:30:03EST</CaptureTime>
  <MeasureId>dptCallFailAccOOS</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.legacyCallServer.lcsGateWayController.dptMeasurements</MeasureS
uppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>

```

CSV

The following is an example of performance data for GWC in CSV format:

```

PMFile=Begin
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2005-02-04T14:30:30EST

System=Begin
SystemId
NortelNetworks/IEMS

Entity=Begin
EntityId,Type
172.17.40.52,GWC

```

SingleValues=Begin
MeasurementKind, IntervalDuration
Snapshot, 30
MeasureId, CaptureTime, MeasureSuppId1, Value, Reliability
totalResourceCapacity, 2005-02-
04T14:30:17EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.raMeasurements, 0, Valid
resourceRequestError, 2005-02-
04T14:30:17EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.raMeasurements, 0, Valid
raState, 2005-02-
04T14:30:17EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.raMeasurements, 0, Valid
maxSimulApgCalls, 2005-02-
04T14:30:10EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.apgMeasurements, 0, Valid
accState, 2005-02-
04T14:30:10EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.apgMeasurements, 0, Valid
dptCallFailResTimeout, 2005-02-
04T14:30:03EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.dptMeasurements, 0, Valid
dptToneNotApplied, 2005-02-
04T14:30:03EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.dptMeasurements, 0, Valid
dptCallFailResError, 2005-02-
04T14:30:03EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.dptMeasurements, 0, Valid
norUnitActivity, 2005-02-
04T14:30:01EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.gwcUnitStatusMIB.gwcUnitOb
jects.gwcUnitStatus, 1, Valid
norUnitAdminStatus, 2005-02-
04T14:30:01EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.gwcUnitStatusMIB.gwcUnitOb
jects.gwcUnitStatus, 1, Valid
norUnitOperStatus, 2005-02-
04T14:30:01EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.gwcUnitStatusMIB.gwcUnitOb
jects.gwcUnitStatus, 1, Valid
apgCallFailGWException, 2005-02-
04T14:30:10EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.apgMeasurements, 0, Valid
apgInsertions, 2005-02-
04T14:30:10EST, .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.apgMeasurements, 0, Valid

```
apgCallFailGWLost,2005-02-
04T14:30:10EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.apgMeasurements,0,Valid

dptCallAttempts,2005-02-
04T14:30:03EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.dptMeasurements,0,Valid

dptCallFailAccOOS,2005-02-
04T14:30:03EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.ser
viceControl.legacyCallServer.lcsGateWayController.dptMeasurements,0,Valid

SingleValues=End
```

Entity=End

System=End

PMFile=End

GUI/CLUI Documentation for GWC

GUI Launching and User procedures

- NN10026-111 - GWC Basics
- NN10112-511 - GWC Configuration Management
- NN10178-611 - GWC Security and Administration

Related documents

Integrated EMS (IEMS)

IEMS Fault Interface

This section will provide references to customer documentation for Fault, Performance, Topology, GUI/CLUI, and Security for the IEMS managed object.

Fault documentation for IEMS :

- NN10275-909v3: Succession Fault Management Logs Reference Vol. 3
- NN10334-911: Integrated EMS Fault Management

Fault Mapping for IEMS

The following criteria can be used for looking up information on specific faults for IEMS.

Table 1 Fault Correlation for IEMS

NB format ->	SCC2	NTStd	SNMP	Syslog	Document Reference
Device/EM					
IEMS	Log name and log number (Log Names: EMSS, IEMS, EMJS)	Log name and log number (Log Names: EMSS, IEMS, EMJS)	Log name and log number (Log Names: EMSS, IEMS, EMJS)	Log name and log number (Log Names: EMSS, IEMS, EMJS)	NN10275-909v3

Northbound Fault Formats for IEMS

SCC2

The following is an example of a IEMS log in SCC2 format:

Sample Raise:

```
*C55 IEMS398 0006 FLT Communication Lost
Location: 47.142.94.68
NotificationID: 0
State: Raised
Category: Communications
Cause: Communications subsystem failure
Time: Dec 13 13:55:15 2004
ComponentId: znc0s0jh-SSPFS-Unit-0
Specific Problem: Connection Lost
Description: IEMS Unable to communicate with managed device
```

Sample Clear:

```
55 IEMS399 0007 FLT Communication Regained
Location: 47.142.94.68
NotificationID: 0
State: Cleared
Category: Communications
Time: Dec 13 13:55:22 2004
ComponentId: znc0s0jh-SSPFS-Unit-0
```

Description: IEMS regained communication with the managed device

NTStd

The following is an example of a IEMS log in NTStd format:

Sample Raise:

```
office_name *** IEMS398 DEC13 13:55:15 0006 FLT Communication Lost
Location: 47.142.94.68
NotificationID: 0
State: Raised
Category: Communications
Cause: Communications subsystem failure
Time: Dec 13 13:55:15 2004
ComponentId: znc0s0jh-SSPFS-Unit-0
Specific Problem: Connection Lost
Description: IEMS Unable to communicate with managed device
```

Sample Clear:

```
office_name IEMS399 DEC13 13:55:22 0007 FLT Communication Regained
Location: 47.142.94.68
NotificationID: 0
State: Cleared
Category: Communications
Time: Dec 13 13:55:22 2004
ComponentId: znc0s0jh-SSPFS-Unit-0
Description: IEMS regained communication with the managed device
```

SNMP

The following is an example of a IEMS log in SNMP format:

Sample Raise:

```
system.sysUpTime.0 => 7:01:55
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.118.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.19.50.48
.48.52.45.49.50.45.49.51.44.50.58.52.58.56.46.51.44.649
alarmActiveDateAndTime => 2004-12-13,2:4:8.3,
alarmActiveDescription => IEMS Unable to communicate with managed device
nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 6
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => IEMS398
nnExtAlarmActiveResourceDescription => IEMS=IEMS-Mgr;znc0s0jh-SSPFS-Unit-0
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 7
```

Sample Clear:

```
system.sysUpTime.0 => 7:01:55
```



```

snmpTrapOID.0 => nnExtAlarmClear
alarmActiveResourceId =>
.1.3.6.1.2.1.118.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48.48.52.45.49.50.45.49.51.44.50.58.52.5
8.50.50.46.48.44.649
alarmActiveDateAndTime => 2004-12-13,2:4:22.0,
alarmActiveDescription => DeviceSpecificInfo=;IEMS regained communication with the managed
device
nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => IEMS399
nnExtAlarmActiveResourceDescription => IEMS=IEMS-Mgr;znc0s0jh-SSPFS-Unit-0
nnExtAlarmActiveSequenceNumber => 8

```

Syslog

The following is an example of a IEMS log in Syslog format:

Sample Raise:

```

Dec 13 13:55:15 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=4093~~ IEMS398 CRIT
FLT Communication Lost^M Location: 47.142.94.68^M NotificationID: 0^M State:
Raised^M Category: Communications^M Cause: Communications subsystem failure^M
Time: Dec 13 13:55:15 2004^M ComponentId: znc0s0jh-SSPFS-Unit-0^M Specific
Problem: Connection Lost^M Description: IEMS Unable to communicate with managed
device

```

Sample Clear:

```

Dec 13 13:55:22 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=4094~~ IEMS399
NONE FLT Communication Regained^M Location: 47.142.94.68^M NotificationID:
0^M State: Cleared^M Category: Communications^M Time: Dec 13 13:55:22
2004^M ComponentId: znc0s0jh-SSPFS-Unit-0^M Description: IEMS regained
communication with the managed device

```

Performance

OM and PM Documentation references for IEMS

•

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

CSV

The following is an example of Performance data for IEMS in CSV format:

```
PMFile=Begin
```

```
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
```

PM,commonFormat.xsd,2005-03-17T13:00:02EST

System=Begin

SystemId

NortelNetworks/IEMS

Entity=Begin

EntityId,Type

47.142.128.115,IEMS

Table=Begin

TableId,MeasurementKind,IntervalDuration,CaptureTime

fiveMinCollectionJobTable,Snapshot,5,2005-03-17T13:00:02EST

Label,Label,Label,Label

fiveMinCollectionJobID, fiveMinCollectionJobName, fiveMinCollectionJobStartTime, fiveMinCollectionJobExecutionTime

Value,Value,Value,Value

1,IEMS5minCollection,1111082100898,2233

Table=End

Table=Begin

TableId,MeasurementKind,IntervalDuration,CaptureTime

tableSpaceTable,Snapshot,5,2005-03-17T13:00:01EST

Label,Label,Label

tableSpaceName,usedTableSpaceInBytes,usedTableSpaceInPercent

Value,Value,Value

IEMS_TS,45875200,44

IEMS_EVENT_TS,134610944,16

IEMS_PERF_TS,13238272,2

Table=End

Table=Begin

TableId,MeasurementKind,IntervalDuration,CaptureTime

fiveMinTransferJobTable,Snapshot,5,2005-03-17T13:00:02EST

Label,Label,Label,Label

fiveMinTransferJobID, fiveMinTransferJobName, fiveMinTransferJobStartTime, fiveMinTransferJobExecutionTime

Value, Value, Value, Value

1, IEMS5minTransfer, 1111082103882, 453

Table=End

Table=Begin

TableId, MeasurementKind, IntervalDuration, CaptureTime

deviceEventRateTable, Snapshot, 5, 2005-03-17T13:00:01EST

Label, Label, Label, Label

deviceID, deviceName, eventRate, eventRateDetails

Value, Value, Value, Value

3, rtpo-mg9kem.us.nortel.com-MG9K-Mgr_7.0, 0, 106 events received in 298170 milliseconds.

2, wnc0s0pe.us.nortel.com-MG9K-Mgr_9.0, 0, 14 events received in 298170 milliseconds.

1, SYSLOG, 0, 6 events received in 298170 milliseconds.

Table=End

Table=Begin

TableId, MeasurementKind, IntervalDuration, CaptureTime

fiveMinReportJobTable, Snapshot, 5, 2005-03-17T13:00:02EST

Label, Label, Label, Label

fiveMinReportJobID, fiveMinReportJobName, fiveMinReportJobStartTime, fiveMinReportJobExecutionTime

Value, Value, Value, Value

1, IEMS5minReport, 1111082100898, 733

Table=End

SingleValues=Begin

MeasurementKind, IntervalDuration

Snapshot, 5

MeasureId, CaptureTime, MeasureSuppId1, Value, Reliability

systemRestartCount, 2005-03-17T13:00:00EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.system, 2, Valid

numOfActiveClients, 2005-03-17T13:00:00EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.client, 6, Valid

numOfEventsFromUnknownCustlogDevices, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.eve
nt, 6, Valid

eventQueueSize, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.eve
nt, 0, Valid

numOfEventsFromUnknownSNMPDevices, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.eve
nt, 0, Valid

avgEventThroughputRate, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.eve
nt, 0, Valid

numOfEventsFromUnknownDevices, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.eve
nt, 6, Valid

maxEventThroughputRate, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.eve
nt, 2, Valid

numOfDiscardedEvents, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.eve
nt, 0, Valid

numOfEvents, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.eve
nt, 150735, Valid

numOfEventsAdded, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.eve
nt, 137, Valid

numOfAlarmsCleared, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.ala
rms, 73, Valid

numOfMajorAlarms, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.ala
rms, 263, Valid

numOfWarningAlarms, 2005-03-
17T13:00:01EST, .iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.ala
rms, 75, Valid

numOfCriticalAlarms,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.ala
rms,36,Valid

numOfAlarmsAdded,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.ala
rms,47,Valid

numOfMinorAlarms,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.ala
rms,74,Valid

numOfActiveAlarms,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.fault.ala
rms,448,Valid

numOfDBCcleanUpPolicyExecutions,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.database,
1,Valid

applicationHeapSize,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.memory,10
1923064,Valid

maxApplicationHeapSize,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.memory,13
9169296,Valid

numOfAttributesCollected,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce,19411,Valid

numOfReportsJobsProvisioned,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce,0,Valid

numOfTransferJobsProvisioned,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce,0,Valid

numOfCollectionJobsProvisioned,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce,0,Valid

numOfAttributesCollectedOverThisInterval,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce,176,Valid

numOfFailedReportJobs,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce,0,Valid

numOf24HrSuccessfulJobs,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce.successfulCollectionJobs,0,Valid

numOf30MinSuccessfulJobs,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce.successfulCollectionJobs,0,Valid

numOf12HrSuccessfulJobs,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce.successfulCollectionJobs,0,Valid

numOf15MinSuccessfulJobs,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce.successfulCollectionJobs,0,Valid

numOf60MinSuccessfulJobs,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce.successfulCollectionJobs,0,Valid

numOf5MinSuccessfulJobs,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce.successfulCollectionJobs,1,Valid

numOf15MinPartialSuccessfulJobs,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce.partialSuccessfulCollectionJobs,0,Valid

numOf60MinPartialSuccessfulJobs,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce.partialSuccessfulCollectionJobs,0,Valid

numOf5MinPartialSuccessfulJobs,2005-03-
17T13:00:01EST,.iso.org.dod.internet.private.enterprises.nortel.nortelGeneri
cMIBs.nortelNetworkManagementInterfaceMIBs.operationalMeasurements.performan
ce.partialSuccessfulCollectionJobs,0,Valid

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PMFile=End

XML

The following is an example of Performance data for IEMS in XML format:

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```



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</Entity>  
</System>  
</PMFile>
```

GUI/CLUI Documentation for IEMS

GUI Launching and User procedures

- NN10329-111: Integrated EMS Basics

Related documents

- NN10334-911: Integrated EMS Fault Management

- NN10330-511: Integrated EMS Configuration Management
- NN10327-711: Integrated EMS Performance Management
- NN10336-611: Integrated EMS Security and Administration

Media Application Server (MAS)

MAS Fault Interface

This section will provide references to customer documentation for Fault, Performance, Topology, GUI/CLUI, and Security for MAS.

Fault documentation for MAS :

- NN10303-111 - MCP 2.0 MAS Meetme Basics
- NN10297-111 - MCP 2.0 MAS Adhoc Basics

Fault Mapping for MAS

The following criteria can be used for looking up information on specific faults for MAS.

Fault Correlation for MAS

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
MAS	Event Id Logname and Log number	Event Id Logname and Log number	Event Id Logname and Log number	Event Id Logname and Log number	NN10303-111 MCP 2.0 MAS Meetme Basics NN10297-111 MCP 2.0 MAS Adhoc Basics

Northbound Fault Formats for MAS

SCC2

The following is an example of a MAS log in SCC2 format:

```
*C00 MAS 330 2515 FLT Fault
Location: 47.104.11.120
Notification Id: 1001
```

State: Raised
Category: processingError
Cause: applicationSubsystemFailure
Time: Mar 23 10:46:51 2004
Component Id: MediaServer_CStore
Specific Problem: MAS;330
Description: Component Shutdown

NTSTD

The following is an example of a MAS log in NTSTD format:

```
RTPU07CAPT *** MAS330 MAR23 17:00:18 2310 FLT Fault
Location: 47.104.11.120
Notification Id: 1001
State: Raised
Category: processingError
Cause: applicationSubsystemFailure
Time: Mar 23 10:46:51 2004
Component Id: MediaServer_CStore
Specific Problem: MAS;330
Description: Component Shutdown
```

SNMP

The following is an example of a MAS log in SNMP format:

```
sysUpTime.0 => 1:52:16
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.19.50.48
.48.52.45.51.45.50.51.44.48.58.48.58.49.56.46.54.44.
2572
alarmActiveDateAndTime => 2004-3-23,0:0:18.6
alarmActiveDescription => Location: 47.104.11.120
Notification Id: 1001
State: Raised
Category: processingError
Cause: applicationSubsystemFailure
Time: Mar 23 10:46:51 2004
Component Id: MediaServer_CStore
Specific Problem: MAS;330
Description: Component Shutdown
```

```

nnExtAlarmActiveEventType => 3
nnExtAlarmActiveProbableCause => 2
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => MAS 330
nnExtAlarmActiveResourceDescription => IEMS=47.104.11.120-MAS;MediaServer_CStore
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 1

```

Syslog

The following is an example of a MAS log in Syslog format:

```

Mar 23 12:00:19 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=3629~~ MAS330 CRIT FLT
Fault^M      Location: 47.104.11.120^M      Notification Id: 1001^M      State:
Raised^M      Category: processingError^M Cause: applicationSubsystemFailure^M
Time: Mar 23 10:46:51 2004^M      Component Id: MediaServer_CStore^M      Specific
Problem: MAS;330^M      Description: Component Shutdown

```

Performance

OM and PM Documentation references for MAS

- NN10303-111 - MCP 2.0 MAS Meetme Basics
- NN10297-111 - MCP 2.0 MAS Adhoc Basics

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of Performance data for MAS in XML format:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
- <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
  <FileCreationTime>2004-04-12T23:30:57GMT+05:30</FileCreationTime>
- <System>
  <SystemId>NortelNetworks/IEMS</SystemId>
- <Entity Type="MAS">
  <EntityId>192.168.110.136</EntityId>
- <SingleValues MeasurementKind="Snapshot" IntervalDuration="15">
- <SingleValue>
  <CaptureTime>2004-04-12T23:18:53GMT+05:30</CaptureTime>
  <MeasureId>ActiveConferenceParties</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>

```

```
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- <SingleValue>
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
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- <SingleValue>
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
```

```
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  <MeasureId>CFMessagesReceived</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>1</Value>
```

```
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
```

```
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- <SingleValue>
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
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```
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
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  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2004-04-12T23:18:53GMT+05:30</CaptureTime>
  <MeasureId>MFRecordRequests</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2004-04-12T23:18:53GMT+05:30</CaptureTime>
  <MeasureId>MFReleaseRequests</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2004-04-12T23:18:53GMT+05:30</CaptureTime>
  <MeasureId>MFReserveRequests</MeasureId>
```

```
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
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  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2004-04-12T23:18:53GMT+05:30</CaptureTime>
  <MeasureId>MMCMessagesReceived</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
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- <SingleValue>
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
```

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- <SingleValue>
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- <SingleValue>
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  <MeasureId>OriginatingStatus200</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
```

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- <SingleValue>
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  <MeasureId>OriginationStatus400</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
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- <SingleValue>
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  <MeasureId>RegisterRequest</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
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  <Reliability>Valid</Reliability>
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  <MeasureId>SignaledDigit</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
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  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
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  <MeasureId>TerminatingByes</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
```

```
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- <SingleValue>
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
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- <SingleValue>
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  <MeasureId>TerminatingNotifies</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
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- <SingleValue>
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- <SingleValue>
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  <MeasureId>TerminatingStatus200</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
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  <Reliability>Valid</Reliability>
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- <SingleValue>
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
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  <Reliability>Valid</Reliability>
</SingleValue>
```

```
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  <MeasureId>VxmlDocumentStarted</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2004-04-12T23:18:53GMT+05:30</CaptureTime>
  <MeasureId>VxmlDocumentStopped</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2004-04-12T23:18:53GMT+05:30</CaptureTime>
  <MeasureId>VxmlIvrMPAdjustRequests</MeasureId>
  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
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- <SingleValue>
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  <MeasureSuppId1>MediaController</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability> </DIV>
```

The XML page cannot be displayed

Cannot view XML input using XSL style sheet. Please correct the error and then click the Refresh button, or try again later.

End tag 'SingleValues' does not match the start tag 'SingleValue'. Error processing resource 'file:///D:/Profiles/yuenglin/...

```
</SingleValues>
--^
>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2004-04-12T23:18:53GMT+05:30</CaptureTime>
  <MeasureId>VxmlIvrMPEvents</MeasureId>
```

CSV

The following is an example of Performance data for MAS in CSV format:

PMFile=Begin

MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2005-03-24T17:40:24EST

System=Begin

SystemId
NortelNetworks/IEMS

Entity=Begin

EntityId,Type
47.104.11.120,MAS

SingleValues=Begin

MeasurementKind,IntervalDuration
Snapshot,5
MeasureId,CaptureTime,MeasureSuppId1,Value,Reliability
Interrupts/sec,2005-03-24T17:45:30EST,Processor(_Total),1111.6441874632208,Valid
Alignment Errors,2005-03-24T17:45:30EST,RAS Port(VPN3-0),0,Valid
Buffer Overrun Errors,2005-03-24T17:45:30EST,RAS Port(VPN3-0),0,Valid
Bytes Received,2005-03-24T17:45:30EST,RAS Port(VPN3-0),0,Valid
Bytes Received/Sec,2005-03-24T17:45:30EST,RAS Port(VPN3-0),0,Valid

Bytes Transmitted,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Bytes Transmitted/Sec,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
CRC Errors,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Frames Received.,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Frames Received/Sec,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Frames Transmitted,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Frames Transmitted/Sec,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Percent Compression In,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Percent Compression Out,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Serial Overrun Errors,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Timeout Errors,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Total Errors,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Total Errors/Sec,2005-03-24T17:45:30EST,RAS Port (VPN3-0) ,0,Valid
Alignment Errors,2005-03-24T17:45:30EST,RAS Total,0,Valid
Buffer Overrun Errors,2005-03-24T17:45:30EST,RAS Total,0,Valid
Bytes Received,2005-03-24T17:45:30EST,RAS Total,0,Valid
Bytes Received/Sec,2005-03-24T17:45:30EST,RAS Total,0,Valid
Bytes Transmitted,2005-03-24T17:45:30EST,RAS Total,0,Valid
Bytes Transmitted/Sec,2005-03-24T17:45:30EST,RAS Total,0,Valid
CRC Errors,2005-03-24T17:45:30EST,RAS Total,0,Valid
Frames Received.,2005-03-24T17:45:30EST,RAS Total,0,Valid
Frames Received/Sec,2005-03-24T17:45:30EST,RAS Total,0,Valid
Frames Transmitted,2005-03-24T17:45:30EST,RAS Total,0,Valid
Frames Transmitted/Sec,2005-03-24T17:45:30EST,RAS Total,0,Valid
Percent Compression In,2005-03-24T17:45:30EST,RAS Total,0,Valid
Percent Compression Out,2005-03-24T17:45:30EST,RAS Total,0,Valid
Serial Overrun Errors,2005-03-24T17:45:30EST,RAS Total,0,Valid
Timeout Errors,2005-03-24T17:45:30EST,RAS Total,0,Valid
Total Connections,2005-03-24T17:45:30EST,RAS Total,0,Valid
Total Errors/Sec,2005-03-24T17:45:30EST,RAS Total,0,Valid
Bytes Received/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Bytes Total/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Bytes Transmitted/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Connects Core,2005-03-24T17:45:30EST,Redirector,0,Valid
Connects Lan Manager 2.0,2005-03-24T17:45:30EST,Redirector,0,Valid
Connects Windows NT,2005-03-24T17:45:30EST,Redirector,0,Valid

Current Commands,2005-03-24T17:45:30EST,Redirector,0,Valid
File Data Operations/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
File Read Operations/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
File Write Operations/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Network Errors/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Packets Received/sec,2005-03-24T17:45:30EST,Redirector,0.19650772272639574,Valid
Packets Transmitted/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Packets/sec,2005-03-24T17:45:30EST,Redirector,0.19650772272639574,Valid
Read Bytes Cache/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Read Bytes Network/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Read Bytes Non-Paging/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Read Bytes Paging/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Read Operations Random/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Read Packets Small/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Read Packets/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Reads Denied/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Reads Large/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Server Disconnects,2005-03-24T17:45:30EST,Redirector,0,Valid
Server Reconnects,2005-03-24T17:45:30EST,Redirector,0,Valid
Server Sessions,2005-03-24T17:45:30EST,Redirector,0,Valid
Server Sessions Hung,2005-03-24T17:45:30EST,Redirector,0,Valid
Write Bytes Cache/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Write Bytes Network/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Write Bytes Non-Paging/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Write Bytes Paging/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Write Operations Random/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Write Packets Small/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Write Packets/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Writes Denied/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
Writes Large/sec,2005-03-24T17:45:30EST,Redirector,0,Valid
ActiveIvrMPConnections,2005-03-24T17:45:30EST,StreamSource,1,Valid
AllocatedAudioBuffers,2005-03-24T17:45:30EST,StreamSource,4,Valid
BytesProcessedPerSecond,2005-03-24T17:45:30EST,StreamSource,17216,Valid
BytesStreamedPerSecond,2005-03-24T17:45:30EST,StreamSource,17216,Valid
ExternalProviderConnection,2005-03-24T17:45:30EST,StreamSource,0,Valid

PendingIvrMPConnections,2005-03-24T17:45:30EST,StreamSource,0,Valid
TotalFilesTranscoded,2005-03-24T17:45:30EST,StreamSource,6,Valid
% Registry Quota In Use,2005-03-
24T17:45:30EST,System,99.976567878944763,Valid
Alignment Fixups/sec,2005-03-24T17:45:30EST,System,0,Valid
Context Switches/sec,2005-03-24T17:45:30EST,System,3625.1744688565486,Valid
Exception Dispatches/sec,2005-03-24T17:45:30EST,System,0,Valid
File Control Bytes/sec,2005-03-
24T17:45:30EST,System,42616.236812227988,Valid
File Control Operations/sec,2005-03-
24T17:45:30EST,System,180.19758174010488,Valid
File Data Operations/sec,2005-03-
24T17:45:30EST,System,78.996104536011089,Valid
File Read Bytes/sec,2005-03-24T17:45:30EST,System,33872.822197239737,Valid
File Read Operations/sec,2005-03-
24T17:45:30EST,System,43.624714445259855,Valid
File Write Bytes/sec,2005-03-24T17:45:30EST,System,23679.57360397614,Valid
File Write Operations/sec,2005-03-
24T17:45:30EST,System,35.371390090751234,Valid
Floating Emulations/sec,2005-03-24T17:45:30EST,System,0,Valid
Processes,2005-03-24T17:45:30EST,System,63,Valid
Processor Queue Length,2005-03-24T17:45:30EST,System,0,Valid
System Calls/sec,2005-03-24T17:45:30EST,System,5671.4093856065074,Valid
System Up Time,2005-03-24T17:45:30EST,System,5226.140625,Valid
Threads,2005-03-24T17:45:30EST,System,629,Valid
Connection Failures,2005-03-24T17:45:30EST,TCP,208,Valid
Connections Active,2005-03-24T17:45:30EST,TCP,306,Valid
SingleValues=End

Entity=End

System=End

PMFile=End

GUI/CLUI Documentation for MAS

GUI Launching and User procedures

- NN10303-111 - MCP 2.0 MAS Meetme Basics

Related Documents

None

Multimedia Communication Server (MCS)

MCS Fault Interface

This section will provide references to customer documentation for Fault, Performance, Topology, GUI/CLUI, and Security for MCS.

Fault documentation for MCS :

- NN10030-111 - Multimedia Communication Server 5200 Management Module Basics
- NN10303-111 - MCP 2.0 MAS Meetme Basics
- NN10297-111 - MCP 2.0 MAS Adhoc Basics

Fault Mapping for MCS

The following criteria can be used for looking up information on specific faults for MCS.

Fault Correlation for MCS

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
MCS	logname and log number	logname and log number	logname and log number	logname and log number	NN10247-111 Multimedia Communication Server 5200 System Management Console User Guide

Northbound Fault Formats for MCS

SCC2

The following is an example of a MCS log in SCC2 format:

```
**55 LAM 102 0447 FLT  Fault
    Location: 47.104.23.117
    Notification Id: 1199
    State: Raised
    Category: communications
    Cause: communicationsSubsystemFailure
    Time: Mar 23 11:55:13 2004
    Component Id: Site=MgmtSite;Server=AppSvr;System.Sites.MgmtSite.Servers.
    Appsvr.Services.appsvr.BillingTransferAgent.BtaPrimaryConnectToAmLost
    Specific Problem: LAM;102
    Description: severity=MAJOR;probableCause=communications subsystem failu
    re;addedText=Communication Error : Primary stream cannot connect to CAM;
```

NTSTD

The following is an example of a MCS log in NTSTD format:

```
RTPU07CAPT  **  LAM102 MAR23 16:55:13 0242 FLT  Fault
    Location: 47.104.23.117
    Notification Id: 1199
    State: Raised
    Category: communications
    Cause: communicationsSubsystemFailure
    Time: Mar 23 11:55:13 2004
    Component Id: Site=MgmtSite;Server=AppSvr;System.Sites.MgmtSite.Servers.
    Appsvr.Services.appsvr.BillingTransferAgent.BtaPrimaryConnectToAmLost
    Specific Problem: LAM;102
    Description: severity=MAJOR;probableCause=communications subsystem failu
    re;addedText=Communication Error : Primary stream cannot connect to CAM;
```

SNMP

The following is an example of a MCS log in SNMP format:

```
sysUpTime.0 => 2:19:58
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.
21.50.48
```

```
.48.52.45.51.45.50.51.44.49.49.58.53.53.58.49.51.46.
48.44.2616
alarmActiveDateAndTime => 2004-3-23,11:55:13.0
alarmActiveDescription => severity=MAJOR;probableCause=communications
subsystem
failure;addedText=Communication Error : Primary stream cannot connect to CAM;
nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 6
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => LAM 102
nnExtAlarmActiveResourceDescription => IEMS=47.104.23.117-
CSE;Site=MgmtSite;Server=AppSvr;System.Sites.MgmtSite.Servers.Appsvr.Service
s.appsvr
.BillingTransferAge
nt.BtaPrimaryConnectToAmLost
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 533
```

Syslog

The following is an example of a MCS log in Syslog format:

```
Mar 23 12:17:08 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=1558~~ LAM102 MAJOR FLT
Fault^M Location: 47.104.23.117^M Notification Id: 1199^M State:
Raised^M Category: communications^M Cause: communicationsSubsystemFailure^M
Time: Mar 23 11:55:13 2004^M Component Id:
Site=MgmtSite;Server=AppSvr;System.Sites.MgmtSite.Servers.^M
Appsvr.Services.appsvr.BillingTransferAgent.BtaPrimaryConnectToAmLost^M
Specific Problem: LAM;102^M Description:
severity=MAJOR;probableCause=communications subsystem failu^M
re;addedText=Communication Error : Primary stream cannot connect to CAM;
```

Performance

OM and PM Documentation references for MCS

- NN10030-111 - Multimedia Communication Server 5200 Management Module Basics
- NN10247-111 - Multimedia Communication Server 5200 System

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of Performance data for MCS in XML format:

Not available at time of publication

CSV

The following is an example of Performance data for MCS in CSV format:

Not available at time of publication

GUI/CLUI Documentation for MCS

GUI Launching and User procedures

- NN10247-111 - Multimedia Communication Server 5200 System Management Console User Guide

Related Documents

None

Media Gateway 9000 (MG9000)

This section contains IEMS Northbound log samples and device documentation references for the MG9000.

MG 9000 Fault Interface

Fault documentation for MG 9000 :

- NN10074-911 MG9000 Fault Management
- NN10325-900 ATM/IP Fault Management

Fault Mapping for MG 9000

The following criteria can be used for looking up information on specific faults for MG 9000.

Fault Correlation for MG 9000

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
MG 9000	logname and number	logname and number	logname and number	logname and number	NN10325-900 ATM/IP Fault Management

Northbound Fault Formats for MG 9000

SCC2

The following is an example of a MG 9000 log in SCC2 format:

```
* 37 SWLN302 4259 TBL MG9K NorLineFault
Location: Port.frame0.shelf1.slot5.WL32.port21
Notification Id: 330712652810
State: UnAcknowledged
Category: processingError
Cause: Underlying Resource Unavailable
      NorLineFault - Line Protection Fault
Component Id: Port.frame0.shelf1.slot5.WL32.port21
specificProblem: NorLineFault - Line Protection Fault
Description: Line Protection HighVoltageError      : 0,1,5,21 [suspect b
ad LineCard]
```

NTSTD

The following is an example of a MG 9000 log in NTSTD format:

```
RTPU07BU * SWLN302 Jan23 17:37:31 4259 TBL MG9K NorLineFault
Location: Port.frame0.shelf1.slot5.WL32.port21
Notification Id: 330712652810
State: UnAcknowledged
Category: processingError
Cause: Underlying Resource Unavailable
      NorLineFault - Line Protection Fault
Component Id: Port.frame0.shelf1.slot5.WL32.port21
specificProblem: NorLineFault - Line Protection Fault
Description: Line Protection HighVoltageError      : 0,1,5,21 [suspect b
ad LineCard]
```

SNMP

The following is an example of a MG 9000 log in SNMP format:

```
system.sysUpTime.0 => 17:59:11
```

```

snmpTrapOID.0 => nnExtAlarmClearalarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.19.50.48
.48.52.45.49.45.50.51.44.49.48.58.52.58.50.46.54.44.41817

alarmActiveDateAndTime => 2004-1-23,10:4:2.6,

alarmActiveDescription => Underlying Resource Unavailable
    NorLineFault - Line Protection Fault

nnExtAlarmActiveEventType => 3
nnExtAlarmActiveProbableCause => 56
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SWLN302
nnExtAlarmActiveResourceDescription => IEMS=CC07;Port.frame0.shelf1.slot5.WL32.port21
nnExtAlarmActiveSequenceNumber => 7240

```

Syslog

The following is an example of a MG 9000 log in Syslog format:

```

Feb 23 12:40:26 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=4323~~ SWLN302 NONE TBL
MG9K NorLineFault^M      Location: Port.frame0.shelf1.slot5.WL32.port21^M
Notification Id: 330712652810^M      State: Cleared^M      Category:
processingError^M      Cause: Underlying Resource Unavailable^M
NorLineFault - Line Protection Fault^M      Component Id:
Port.frame0.shelf1.slot5.WL32.port21^M      specificProblem: NorLineFault - Line
Protection Fault^M      Description: Line Protection HighVoltageError      : 0,1,5,21
[suspect b^M      ad LineCard]

```

Performance

OM and PM Documentation references for MG 9000

- NN10140-711 MG9000 Performance Management

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of Performance data for MG 9000 in XML format:

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<MeasureId>nnPmSnmpIntervReqPeak</MeasureId>
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<Value>40</Value>
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<MeasureId>nnPmSnmpIntervReqAvg</MeasureId>
<MeasureSuppId1>nnPmSnmpOmIntervTable</MeasureSuppId1>
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<MeasureId>nnClkSyncSignalLossOfSignalCount</MeasureId>
<MeasureSuppId1>nnClkSyncSignalTable</MeasureSuppId1>
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<MeasureId>nnClkSyncSignalLossOfFrameCount</MeasureId>
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<MeasureSuppId1>nnBwIntervalBandwUtilTable</MeasureSuppId1>
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<MeasureSuppId1>nnBwIntervalBandwUtilTable</MeasureSuppId1>
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<MeasureSuppId1>nnBwIntervalQueueFillTable</MeasureSuppId1>
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<CaptureTime>2005-01-18T15:45:00EST</CaptureTime>
<MeasureId>nnBwQueueFillIntervalRtVbr</MeasureId>
<MeasureSuppId1>nnBwIntervalQueueFillTable</MeasureSuppId1>
<Value>0</Value>
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<CaptureTime>2005-01-18T15:45:00EST</CaptureTime>
<MeasureId>nnBwQueueFillIntervalNrtVbr</MeasureId>
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<Value>0</Value>
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<CaptureTime>2005-01-18T15:45:00EST</CaptureTime>
<MeasureId>nnBwQueueFillIntervalUbr</MeasureId>
<MeasureSuppId1>nnBwIntervalQueueFillTable</MeasureSuppId1>
<Value>0</Value>
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```

```

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<MeasureSuppId1>nnBwIntervalQueueFillTable</MeasureSuppId1>
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<CaptureTime>2005-01-18T15:45:00EST</CaptureTime>
<MeasureId>nnBwQueueFillIntervalControl</MeasureId>
<MeasureSuppId1>nnBwIntervalQueueFillTable</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
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</System>
</PMFile>

```

CSV

The following is an example of Performance data for MG 9000 in CSV format (using GIGE):

PMFile=Begin

MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime

PM,commonFormat.xsd,2005-02-03T13:31:16EST

System=Begin

SystemId

NortelNetworks/IEMS

Entity=Begin

EntityId,Type

172.21.4.13,MG9K Mgr

SubEntity=Begin

SubEntityId

172.21.4.13

Table=Begin

TableId,MeasurementKind,IntervalDuration,CaptureTime

nnMegacoOMECANIntervalTable,Snapshot,30,2005-02-03T13:30:00EST

Label,Label,Label

Source, nnMegacoOMECANnumResrceReq, nnMegacoOMECANnumResrceReqFail

Value, Value, Value

Frame004.Shelf2.Slot19, 0, 0

Frame004.Shelf2.Slot21, 0, 0

Frame004.Shelf2.Slot18, 0, 0

Frame004.Shelf2.Slot20, 0, 0

Frame004.Shelf3.Slot13, 0, 0

Frame004.Shelf2.Slot7, 0, 0

Frame004.Shelf3.Slot12, 0, 0

Frame004.Shelf2.Slot6, 0, 0

Frame004.Shelf2.Slot13, 0, 0

Frame004.Shelf2.Slot12, 0, 0

Frame004.Shelf2.Slot3, 0, 0

Frame004.Shelf2.Slot2, 0, 0

Table=End

Table=Begin

TableId, MeasurementKind, IntervalDuration, CaptureTime

nnMegacoOMDSPIntervalTable, Snapshot, 30, 2005-02-03T13:30:00EST

Label, Label, Label, Label, Label, Label, Label

Source, nnMegacoOMDSPnumCMRmodemReq, nnMegacoOMDSPnumCMRmodemReqFail, nnMegacoOMDSPnumToneGenReq, nnMegacoOMDSPnumToneGenReqFail, nnMegacoOMDSPnumToneRcvrReq, nnMegacoOMDSPnumToneRcvrReqFail

Value, Value, Value, Value, Value, Value, Value

Frame004.Shelf2.Slot19, 0, 0, 0, 0, 0, 0

Frame004.Shelf2.Slot21, 0, 0, 0, 0, 0, 0

Frame004.Shelf2.Slot18, 0, 0, 0, 0, 0, 0

Frame004.Shelf2.Slot20, 0, 0, 0, 0, 0, 0

Frame004.Shelf3.Slot13, 0, 0, 0, 0, 0, 0

Frame004.Shelf2.Slot7, 0, 0, 0, 0, 0, 0

Frame004.Shelf3.Slot12, 0, 0, 0, 0, 0, 0

Frame004.Shelf2.Slot6, 0, 0, 0, 0, 0, 0

Frame004.Shelf2.Slot13, 0, 0, 0, 0, 0, 0

Frame004.Shelf2.Slot12, 0, 0, 0, 0, 0, 0

Frame004.Shelf2.Slot3, 0, 0, 0, 0, 0, 0

Frame004.Shelf2.Slot2, 0, 0, 0, 0, 0, 0

Table=End

Table=Begin

TableId,MeasurementKind,IntervalDuration,CaptureTime

nnMegacoQoSIntervalTable,Snapshot,30,2005-02-03T13:30:00EST

Label,Label,Label,Label,Label,Label,Label,Label

Source,nnMegacoQoSIntervalBadCalls,nnMegacoQoSIntervalCalls,nnMegacoQoSIntervalJitter,nnMegacoQoSIntervalLatency,nnMegacoQoSIntervalPktLossPct,nnMegacoQoSIntervalPktsLost,nnMegacoQoSIntervalPktsRecvd

Value,Value,Value,Value,Value,Value,Value,Value

Frame004.Shelf2.Slot20.Port1,0,0,0,0,0,0,0

Frame004.Shelf2.Slot18.Port1,0,0,0,0,0,0,0

Frame004.Shelf3.Slot12.Port1,0,0,0,0,0,0,0

Frame004.Shelf2.Slot2.Port1,0,0,0,0,0,0,0

Frame004.Shelf2.Slot12.Port1,0,0,0,0,0,0,0

Frame004.Shelf2.Slot6.Port1,0,0,0,0,0,0,0

Table=End

Table=Begin

TableId,MeasurementKind,IntervalDuration,CaptureTime

nnIpsecOmIntervalTable,Snapshot,30,2005-02-03T13:30:00EST

Label,Label,Label,Label,Label,Label,Label,Label

Source,nnIpsecConfigInterfaceId,nnIpsecConfigSecLinkId,nnIpsecOmIntervalPacketsDiscardedIn,nnIpsecOmIntervalPacketsDiscardedOut,nnIpsecOmIntervalPacketsRx,nnIpsecOmIntervalPacketsTx

Value,Value,Value,Value,Value,Value,Value,Value

Frame004.Shelf2.Slot21,1,1,0,0,0,5453

Frame004.Shelf2.Slot19,1,1,0,0,0,5452

Frame004.Shelf2.Slot18,1,1,0,180,10956,10851

Frame004.Shelf2.Slot20,1,1,0,180,10954,10849

Frame004.Shelf3.Slot13,1,1,0,0,0,0

Frame004.Shelf2.Slot7,1,1,0,180,13803,10851

Frame004.Shelf3.Slot12,1,1,0,104,4711,5048

Frame004.Shelf2.Slot6,1,1,0,0,0,8001

Frame004.Shelf2.Slot13,1,1,0,126,4904,5308

```
Frame004.Shelf2.Slot3,1,1,0,0,0,7082
Frame004.Shelf2.Slot12,1,1,0,0,0,0
Frame004.Shelf2.Slot11,1,1,0,0,0,0
Frame004.Shelf2.Slot2,1,1,0,0,14411,11971
Frame004.Shelf2.Slot10,1,1,0,0,1358,1369
Table=End
```

Table=Begin

TableId,MeasurementKind,IntervalDuration,CaptureTime

nnPmOvldRscIntervTable,Snapshot,30,2005-02-03T13:30:00EST

Label,Label,Label,Label,Label,Label,Label,Label,Label

Source,nnPmOvldRscIntervCbvMsgRAvg,nnPmOvldRscIntervCbvMsgRPeak,nnPmOvldRscIntervConQDelAvg,nnPmOvldRscIntervConQDelPeak,nnPmOvldRscIntervCpuUtilAvg,nnPmOvldRscIntervCpuUtilPeak,nnPmOvldRscIntervPduRateAvg,nnPmOvldRscIntervPduRatePeak

Value,Value,Value,Value,Value,Value,Value,Value,Value

```
Frame004.Shelf2.Slot21,0,0,0,0,365,450,4,6
Frame004.Shelf2.Slot19,0,0,0,0,373,463,4,6
Frame004.Shelf2.Slot18,0,0,0,0,425,527,7,10
Frame004.Shelf2.Slot20,0,0,0,0,397,496,6,9
Frame004.Shelf3.Slot13,0,0,0,0,378,564,2,2
Frame004.Shelf2.Slot7,0,0,0,0,387,521,6,10
Frame004.Shelf3.Slot12,0,0,0,0,404,497,3,3
Frame004.Shelf2.Slot6,0,0,0,0,313,486,3,5
Frame004.Shelf2.Slot13,0,0,0,0,387,536,3,6
Frame004.Shelf2.Slot3,0,0,0,0,360,500,4,5
Frame004.Shelf2.Slot12,0,0,0,0,356,456,2,2
Frame004.Shelf2.Slot11,0,0,0,0,402,534,22,35
Frame004.Shelf2.Slot2,0,0,0,0,408,505,5,8
Frame004.Shelf2.Slot10,0,0,0,0,724,1185,22,36
Table=End
```

Table=Begin

TableId,MeasurementKind,IntervalDuration,CaptureTime

nnBwShelfIntervalSloaBandwResrvdTable,Snapshot,30,2005-02-03T13:30:00EST

```
Label,Label
Source,nnBwShelfIntervalSloaBandwReserved
Value,Value
Frame004.Shelf3,0
Frame004.Shelf2,259488
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
nnBwAbiIntervalBandwResrvdEntry,Snapshot,30,2005-02-03T13:30:00EST
Label,Label
Source,nnBwAbiIntervalBandwReserved
Value,Value
Frame004.Shelf2.Slot3,2544000
Frame004.Shelf2.Slot2,2544000
Frame004.Shelf2.Slot21,2544000
Frame004.Shelf2.Slot20,2544000
Frame004.Shelf2.Slot19,2544000
Frame004.Shelf2.Slot18,2544000
Frame004.Shelf2.Slot7,2544000
Frame004.Shelf2.Slot6,2673744
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
etherHistoryHighCapacityTable,Snapshot,30,2005-02-03T13:30:00EST
Label,Label,Label,Label,Label
Source,etherHistoryHighCapacityOctets,etherHistoryHighCapacityOverflowOctets
,etherHistoryHighCapacityOverflowPkts,etherHistoryHighCapacityPkts
Value,Value,Value,Value,Value
Frame004.Shelf2.Slot10.Port3,0,0,0,0
Frame004.Shelf2.Slot10.Port2,0,0,0,0
Frame004.Shelf2.Slot10.Port1,109813501,0,0,756205
Frame004.Shelf2.Slot11.Port4,0,0,0,0
```

```
Frame004.Shelf2.Slot11.Port3,0,0,0,0
Frame004.Shelf2.Slot11.Port2,0,0,0,0
Frame004.Shelf2.Slot11.Port1,26340641,0,0,381439
Frame004.Shelf2.Slot10.Port4,0,0,0,0
Table=End
```

Table=Begin

```
TableId,MeasurementKind,IntervalDuration,CaptureTime
nnPmUtilOmIntervTable,Snapshot,30,2005-02-03T13:30:00EST
Label,Label,Label,Label,Label,Label,Label,Label,Label
Source,nnPmUtilIntervChanAvg,nnPmUtilIntervChanPeak,nnPmUtilIntervCpuAvg,nnP
mUtilIntervCpuPeak,nnPmUtilIntervFlashAvg,nnPmUtilIntervFlashPeak,nnPmUtilIn
tervRamAvg,nnPmUtilIntervRamPeak
Value,Value,Value,Value,Value,Value,Value,Value,Value
Frame004.Shelf2.Slot21,0,0,3,5,14,17,27,32
Frame004.Shelf2.Slot19,0,0,3,5,14,17,27,32
Frame004.Shelf2.Slot20,0,0,4,5,14,17,27,32
Frame004.Shelf2.Slot18,0,0,4,5,14,17,27,32
Frame004.Shelf3.Slot13,0,0,4,6,23,27,56,67
Frame004.Shelf2.Slot7,0,0,5,5,17,17,32,32
Frame004.Shelf3.Slot12,0,0,4,5,21,25,56,67
Frame004.Shelf2.Slot6,0,0,4,5,14,17,27,32
Frame004.Shelf2.Slot15,0,0,3,7,16,19,29,35
Frame004.Shelf2.Slot14,0,0,3,3,25,30,29,35
Frame004.Shelf2.Slot13,0,0,4,5,20,24,55,66
Frame004.Shelf2.Slot3,0,0,3,5,26,31,27,32
Frame004.Shelf2.Slot12,0,0,3,5,20,24,55,66
Frame004.Shelf2.Slot2,0,0,4,5,14,17,27,32
Frame004.Shelf2.Slot11,0,0,4,5,9,11,33,39
Frame004.Shelf2.Slot10,0,0,7,12,9,11,33,39
Table=End
```

Table=Begin

```
TableId,MeasurementKind,IntervalDuration,CaptureTime
nnRelMsgSctpAssocOmIntervTable,Snapshot,30,2005-02-03T13:30:00EST
```


Label, Label, Label, Label, Label, Label, Label, Label, Label, Label, Label, Label

Source, nnRelMsgSctpAscIntervAbort, nnRelMsgSctpAscIntervClosed, nnRelMsgSctpAscIntervCongCleared, nnRelMsgSctpAscIntervCongCount, nnRelMsgSctpAscIntervDiscPacks, nnRelMsgSctpAscIntervInPacks, nnRelMsgSctpAscIntervOutPacks, nnRelMsgSctpAscIntervRetranPacks, nnRelMsgSctpAscIntervT1expires, nnRelMsgSctpAscIntervT2expires, nnRelMsgSctpAscIntervT3expires

Value, Value, Value, Value, Value, Value, Value, Value, Value, Value, Value, Value

Frame004.Shelf2.Slot3,0,0,0,0,0,0,1095,917,0,0,0,0

Frame004.Shelf2.Slot2,0,0,0,0,0,0,1408,1308,0,0,0,0

Frame004.Shelf2.Slot21,0,0,0,0,0,0,1474,1154,0,0,0,0

Frame004.Shelf2.Slot20,0,0,0,0,0,0,1499,1595,0,0,0,0

Frame004.Shelf2.Slot19,0,0,0,0,0,0,1670,1194,0,0,0,0

Frame004.Shelf2.Slot18,0,0,0,0,0,0,3340,3159,0,0,0,0

Frame004.Shelf2.Slot7,0,0,0,0,0,0,1725,1652,0,0,0,0

Frame004.Shelf2.Slot6,0,0,0,0,0,0,975,877,0,0,0,0

Table=End

Table=Begin

TableId, MeasurementKind, IntervalDuration, CaptureTime

nnMegacoOMCESIntervalTable, Snapshot, 30, 2005-02-03T13:30:00EST

Label, Label, Label, Label, Label

Source, nnMegacoOMCESnumChnlAllocInter, nnMegacoOMCESnumChnlAllocInterFail, nnMegacoOMCESnumChnlAllocIntra, nnMegacoOMCESnumChnlAllocIntraFail

Value, Value, Value, Value, Value

Frame004.Shelf2.Slot21,0,0,0,0

Frame004.Shelf2.Slot19,0,0,0,0

Frame004.Shelf2.Slot18,0,0,0,0

Frame004.Shelf2.Slot20,0,0,0,0

Frame004.Shelf3.Slot13,0,0,0,0

Frame004.Shelf2.Slot7,0,0,0,0

Frame004.Shelf3.Slot12,0,0,0,0

Frame004.Shelf2.Slot6,0,0,0,0

Frame004.Shelf2.Slot13,0,0,0,0

Frame004.Shelf2.Slot3,0,0,0,0

Frame004.Shelf2.Slot12,0,0,0,0

Frame004.Shelf2.Slot11,0,0,0,0

Frame004.Shelf2.Slot2,0,0,0,0

```
Frame004.Shelf2.Slot10,0,0,0,0
```

```
Table=End
```

```
Table=Begin
```

```
TableId,MeasurementKind,IntervalDuration,CaptureTime
```

```
nnBwAbiCurrentBandwResrvdTable,Snapshot,30,2005-02-03T13:30:00EST
```

```
Label,Label
```

```
Source,nnBwAbiCapacityBandwReserved
```

```
Value,Value
```

```
Frame004.Shelf2.Slot3,0
```

```
Frame004.Shelf2.Slot2,0
```

```
Frame004.Shelf2.Slot21,0
```

```
Frame004.Shelf2.Slot20,0
```

```
Frame004.Shelf2.Slot19,0
```

```
Frame004.Shelf2.Slot18,0
```

```
Frame004.Shelf2.Slot7,0
```

```
Frame004.Shelf2.Slot6,0
```

```
Table=End
```

```
Table=Begin
```

```
TableId,MeasurementKind,IntervalDuration,CaptureTime
```

```
nnClkSyncRefTable,Snapshot,30,2005-02-03T13:30:00EST
```

```
Label,Label,Label,Label
```

```
Source,nnClkSyncRefId,nnClkSyncRefLossOfFrameCount,nnClkSyncRefLossOfSignalCount
```

```
Value,Value,Value,Value
```

```
Frame004.Shelf2.Slot12,7,0,0
```

```
Frame004.Shelf2.Slot13,7,0,0
```

```
Table=End
```

```
Table=Begin
```

```
TableId,MeasurementKind,IntervalDuration,CaptureTime
```

```
nnBwShelfCurrentSloaBandwResrvdTable,Snapshot,30,2005-02-03T13:30:00EST
```



```
rHistoryMulticastPkts,etherHistoryOctets,etherHistoryOversizePkts,etherHistoryPkts,etherHistoryUndersizePkts,etherHistoryUtilization
```

```
Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value
```

```
Frame004.Shelf2.Slot10.Port3,0,0,0,0,0,0,0,0,0,0,0,0,0,0
```

```
Frame004.Shelf2.Slot10.Port2,0,0,0,0,0,0,0,0,0,0,0,0,0,0
```

```
Frame004.Shelf2.Slot10.Port1,0,0,0,0,0,0,0,0,0,0,0,0,0,4
```

```
Frame004.Shelf2.Slot11.Port4,0,0,0,0,0,0,0,0,0,0,0,0,0,0
```

```
Frame004.Shelf2.Slot11.Port3,0,0,0,0,0,0,0,0,0,0,0,0,0,0
```

```
Frame004.Shelf2.Slot11.Port2,0,0,0,0,0,0,0,0,0,0,0,0,0,0
```

```
Frame004.Shelf2.Slot11.Port1,0,0,0,0,0,0,0,0,0,0,0,0,0,0
```

```
Frame004.Shelf2.Slot10.Port4,0,0,0,0,0,0,0,0,0,0,0,0,0,0
```

```
Table=End
```

```
Table=Begin
```

```
TableId,MeasurementKind,IntervalDuration,CaptureTime
```

```
nnPmOvldConnDenyIntervTable,Snapshot,30,2005-02-03T13:30:00EST
```

```
Label,Label
```

```
Source,nnPmOvldConnDenyIntervCount
```

```
Value,Value
```

```
Frame004.Shelf2.Slot21,0
```

```
Frame004.Shelf2.Slot19,0
```

```
Frame004.Shelf2.Slot18,0
```

```
Frame004.Shelf2.Slot20,0
```

```
Frame004.Shelf3.Slot13,0
```

```
Frame004.Shelf2.Slot7,0
```

```
Frame004.Shelf3.Slot12,0
```

```
Frame004.Shelf2.Slot6,0
```

```
Frame004.Shelf2.Slot13,0
```

```
Frame004.Shelf2.Slot3,0
```

```
Frame004.Shelf2.Slot12,0
```

```
Frame004.Shelf2.Slot11,0
```

```
Frame004.Shelf2.Slot2,0
```

```
Frame004.Shelf2.Slot10,0
```

```
Table=End
```

Table=Begin

TableId, MeasurementKind, IntervalDuration, CaptureTime

nnMegacoOMMedGwyIntervalTable, Snapshot, 30, 2005-02-03T13:30:00EST

Label, Label, Label, Label, Label, Label, Label, Label, Label, Label

Source, nnMegacoOMMedGwyAvrgInMsgRate, nnMegacoOMMedGwyAvrgOutMsgRate, nnMegacoOMMedGwyMaxInMsgRate, nnMegacoOMMedGwyMaxOutMsgRate, nnMegacoOMMedGwyNumInMessages, nnMegacoOMMedGwyNumInOctets, nnMegacoOMMedGwyNumOutMessages, nnMegacoOMMedGwyNumOutOctets

Value, Value, Value, Value, Value, Value, Value, Value, Value, Value

Frame004.Shelf2.Slot20.Port1, 24, 24, 0, 0, 709, 41423, 709, 50655

Frame004.Shelf2.Slot18.Port1, 21, 21, 0, 0, 618, 35152, 618, 43381

Frame004.Shelf3.Slot12.Port1, 10, 10, 0, 0, 304, 13502, 304, 17684

Frame004.Shelf2.Slot2.Port1, 0, 0, 0, 0, 0, 0, 0, 0, 0

Frame004.Shelf2.Slot12.Port1, 10, 10, 0, 0, 311, 13922, 311, 18800

Frame004.Shelf2.Slot6.Port1, 27, 27, 0, 0, 819, 47329, 819, 57626

Table=End

SingleValues=Begin

MeasurementKind, IntervalDuration

Snapshot, 30

MeasureId, CaptureTime, MeasureSuppId1, Value, Reliability

snmpInvalidMsgs, 2005-02-03T13:30:00EST, Miscellaneous, 0, Valid

snmpInBadCommunityNames, 2005-02-03T13:30:00EST, Miscellaneous, 0, Valid

snmpInPkts, 2005-02-03T13:30:00EST, Miscellaneous, 22953, Valid

nnPmSnmpIntervReqPeak, 2005-02-03T13:30:00EST, nnPmSnmpOmIntervTable, 40, Valid

nnPmSnmpIntervReqAvg, 2005-02-03T13:30:00EST, nnPmSnmpOmIntervTable, 129, Valid

nnPmSnmpIntervNotifPeak, 2005-02-03T13:30:00EST, nnPmSnmpOmIntervTable, 3, Valid

nnPmSnmpIntervNotifAvg, 2005-02-03T13:30:00EST, nnPmSnmpOmIntervTable, 5, Valid

nnClkSyncSignalId, 2005-02-03T13:30:00EST, nnClkSyncSignalTable, 7, Valid

nnClkSyncSignalLossOfSignalCount, 2005-02-03T13:30:00EST, nnClkSyncSignalTable, 0, Valid

nnClkSyncSignalLossOfFrameCount, 2005-02-03T13:30:00EST, nnClkSyncSignalTable, 0, Valid

nnBwBandwUtilIntervalInCellRate, 2005-02-03T13:30:00EST, nnBwIntervalBandwUtilTable, 45811, Valid

```
nnBwBandwUtilIntervalOutCellRate,2005-02-
03T13:30:00EST,nnBwIntervalBandwUtilTable,45318,Valid

nnBwBandwUtilIntervalInDslCellRate,2005-02-
03T13:30:00EST,nnBwIntervalBandwUtilTable,0,Valid

nnBwBandwUtilIntervalOutDslCellRate,2005-02-
03T13:30:00EST,nnBwIntervalBandwUtilTable,0,Valid

nnBwQueueFillIntervalTotal,2005-02-
03T13:30:00EST,nnBwIntervalQueueFillTable,0,Valid

nnBwQueueFillIntervalCbr,2005-02-
03T13:30:00EST,nnBwIntervalQueueFillTable,0,Valid

nnBwQueueFillIntervalRtVbr,2005-02-
03T13:30:00EST,nnBwIntervalQueueFillTable,0,Valid

nnBwQueueFillIntervalNrtVbr,2005-02-
03T13:30:00EST,nnBwIntervalQueueFillTable,0,Valid

nnBwQueueFillIntervalUbr,2005-02-
03T13:30:00EST,nnBwIntervalQueueFillTable,0,Valid

nnBwQueueFillIntervalUbrPlus,2005-02-
03T13:30:00EST,nnBwIntervalQueueFillTable,0,Valid

nnBwQueueFillIntervalControl,2005-02-
03T13:30:00EST,nnBwIntervalQueueFillTable,0,Valid

SingleValues=End
```

SubEntity=End

Entity=End

System=End

PMFile=End

CSV

The following is an example of Performance data for MG 9000 in CSV format

```
PMFile=Begin
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2005-01-18T15:45:34EST

System=Begin
SystemId
NortelNetworks/IEMS

Entity=Begin
EntityId,Type
172.31.125.226,MG9K Mgr
```

```
SubEntity=Begin
SubEntityId
172.31.125.226
```

```
Table=Begin
TableId, MeasurementKind, IntervalDuration, CaptureTime
nnMegacoOMECANIntervalTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label, Label
Source, nnMegacoOMECANnumResrceReq, nnMegacoOMECANnumResrceReqFail
Value, Value, Value
Frame008.Shelf1.Slot17, 0, 0
Frame008.Shelf1.Slot16, 0, 0
Frame008.Shelf1.Slot5, 0, 0
Frame008.Shelf1.Slot4, 0, 0
Frame008.Shelf1.Slot13, 0, 0
Frame008.Shelf1.Slot12, 0, 0
Table=End
```

```
Table=Begin
TableId, MeasurementKind, IntervalDuration, CaptureTime
nnMegacoOMDSPIntervalTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label, Label, Label, Label, Label, Label, Label
Source, nnMegacoOMDSPnumCMRmodemReq, nnMegacoOMDSPnumCMRmodemReqFail, nnMegacoO
MDSPnumToneGenReq, nnMegacoOMDSPnumToneGenReqFail, nnMegacoOMDSPnumToneRcvrReq
, nnMegacoOMDSPnumToneRcvrReqFail
Value, Value, Value, Value, Value, Value, Value, Value
Frame008.Shelf1.Slot17, 0, 0, 0, 0, 0, 0, 0
Frame008.Shelf1.Slot16, 0, 0, 0, 0, 0, 0, 0
Frame008.Shelf1.Slot5, 0, 0, 0, 0, 0, 0, 0
Frame008.Shelf1.Slot4, 0, 0, 0, 0, 0, 0, 0
Frame008.Shelf1.Slot13, 0, 0, 0, 0, 0, 0, 0
Frame008.Shelf1.Slot12, 0, 0, 0, 0, 0, 0, 0
Table=End
```

```
Table=Begin
TableId, MeasurementKind, IntervalDuration, CaptureTime
nnMegacoQoSIntervalTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label, Label, Label, Label, Label, Label, Label, Label
Source, nnMegacoQoSIntervalBadCalls, nnMegacoQoSIntervalCalls, nnMegacoQoSInter
valJitter, nnMegacoQoSIntervalLatency, nnMegacoQoSIntervalPktLossPct, nnMegacoQ
oSIntervalPktsLost, nnMegacoQoSIntervalPktsRecvd
Value, Value, Value, Value, Value, Value, Value, Value, Value
Frame008.Shelf1.Slot4.Port1, 0, 0, 0, 0, 0, 0, 0, 0
Frame008.Shelf1.Slot16.Port1, 0, 0, 0, 0, 0, 0, 0, 0
Frame008.Shelf1.Slot12.Port1, 0, 0, 0, 0, 0, 0, 0, 0
Table=End
```

```
Table=Begin
TableId, MeasurementKind, IntervalDuration, CaptureTime
nnIpsecOmIntervalTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label, Label, Label, Label, Label
Source, nnIpsecConfigInterfaceId, nnIpsecConfigSecLinkId, nnIpsecOmIntervalPack
etsDiscardedIn, nnIpsecOmIntervalPacketsDiscardedOut, nnIpsecOmIntervalPackets
Rx, nnIpsecOmIntervalPacketsTx
Value, Value, Value, Value, Value, Value, Value, Value
Frame008.Shelf1.Slot17, 1, 1, 0, 0, 0, 0, 0
Frame008.Shelf1.Slot16, 1, 1, 0, 0, 0, 0, 0
```

```
Frame008.Shelf1.Slot5,1,1,0,0,0,0
Frame008.Shelf1.Slot4,1,1,0,0,0,0
Frame008.Shelf1.Slot13,1,1,0,0,0,0
Frame008.Shelf1.Slot12,1,1,0,0,0,0
Frame008.Shelf1.Slot11,1,1,0,0,0,0
Frame008.Shelf1.Slot10,1,1,0,0,0,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
nnPmOvldRscIntervTable,Snapshot,15,2005-01-18T15:45:00EST
Label,Label,Label,Label,Label,Label,Label,Label,Label
Source,nnPmOvldRscIntervCbvMsgRAvg,nnPmOvldRscIntervCbvMsgRPeak,nnPmOvldRscI
ntervConQDelAvg,nnPmOvldRscIntervConQDelPeak,nnPmOvldRscIntervCpuUtilAvg,nnP
mOvldRscIntervCpuUtilPeak,nnPmOvldRscIntervPduRateAvg,nnPmOvldRscIntervPduRa
tePeak
Value,Value,Value,Value,Value,Value,Value,Value,Value
Frame008.Shelf1.Slot17,0,0,0,0,514,552,5,6
Frame008.Shelf1.Slot16,0,0,0,0,494,498,5,5
Frame008.Shelf1.Slot5,0,1,0,0,435,449,5,6
Frame008.Shelf1.Slot4,0,0,0,0,451,476,6,8
Frame008.Shelf1.Slot13,0,2,0,3,545,567,5,6
Frame008.Shelf1.Slot12,0,0,0,0,591,649,6,9
Frame008.Shelf1.Slot11,0,0,0,0,428,483,17,27
Frame008.Shelf1.Slot10,0,2,0,0,554,995,17,25
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
nnBwShelfIntervalSloaBandwResrvdTable,Snapshot,15,2005-01-18T15:45:00EST
Label,Label
Source,nnBwShelfIntervalSloaBandwReserved
Value,Value
Frame008.Shelf1,897
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
sonetPathIntervalTable,Snapshot,15,2005-01-18T15:45:00EST
Label,Label,Label,Label,Label
Source,sonetPathIntervalCVs,sonetPathIntervalESs,sonetPathIntervalSESSs,sonet
PathIntervalUASs
Value,Value,Value,Value,Value
Frame008.Shelf1.Slot11.Port1,0,0,0,0
Frame008.Shelf1.Slot10.Port1,0,0,0,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
nnBwAbiIntervalBandwResrvdEntry,Snapshot,15,2005-01-18T15:45:00EST
Label,Label
Source,nnBwAbiIntervalBandwReserved
Value,Value
Frame008.Shelf1.Slot17,6000
Frame008.Shelf1.Slot16,7000
Frame008.Shelf1.Slot5,6612
Frame008.Shelf1.Slot4,7000
```


Table=End

Table=Begin

TableId, MeasurementKind, IntervalDuration, CaptureTime
nnPmUtilOmIntervTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label, Label, Label, Label, Label, Label, Label, Label
Source, nnPmUtilIntervChanAvg, nnPmUtilIntervChanPeak, nnPmUtilIntervCpuAvg, nnPmUtilIntervCpuPeak, nnPmUtilIntervFlashAvg, nnPmUtilIntervFlashPeak, nnPmUtilIntervRamAvg, nnPmUtilIntervRamPeak
Value, Value, Value, Value, Value, Value, Value, Value, Value
Frame008.Shelf1.Slot5, 0, 0, 4, 4, 17, 17, 32, 32
Frame008.Shelf1.Slot4, 0, 0, 5, 5, 17, 17, 32, 32
Frame008.Shelf1.Slot17, 0, 0, 5, 6, 17, 17, 32, 32
Frame008.Shelf1.Slot16, 0, 0, 5, 5, 17, 17, 32, 32
Frame008.Shelf1.Slot15, 0, 0, 2, 2, 19, 19, 36, 36
Frame008.Shelf1.Slot14, 0, 0, 2, 2, 18, 18, 36, 36
Frame008.Shelf1.Slot13, 0, 0, 5, 6, 24, 24, 32, 32
Frame008.Shelf1.Slot12, 0, 0, 6, 6, 24, 24, 32, 32
Frame008.Shelf1.Slot11, 0, 0, 4, 5, 47, 47, 37, 37
Frame008.Shelf1.Slot10, 0, 1, 6, 10, 23, 23, 38, 38
Table=End

Table=Begin

TableId, MeasurementKind, IntervalDuration, CaptureTime
nnRelMsgSctpAssocOmIntervTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label, Label, Label, Label, Label, Label, Label, Label, Label, Label, Label, Label
Source, nnRelMsgSctpAscIntervAbort, nnRelMsgSctpAscIntervClosed, nnRelMsgSctpAscIntervCongCleared, nnRelMsgSctpAscIntervCongCount, nnRelMsgSctpAscIntervDiscPacks, nnRelMsgSctpAscIntervInPacks, nnRelMsgSctpAscIntervOutPacks, nnRelMsgSctpAscIntervRetranPacks, nnRelMsgSctpAscIntervT1expires, nnRelMsgSctpAscIntervT2expires, nnRelMsgSctpAscIntervT3expires
Value, Value, Value, Value, Value, Value, Value, Value, Value, Value, Value, Value, Value
Frame008.Shelf1.Slot17, 0, 0, 0, 0, 0, 467, 487, 0, 0, 0, 0
Frame008.Shelf1.Slot16, 0, 0, 0, 0, 0, 465, 485, 0, 0, 0, 0
Frame008.Shelf1.Slot5, 0, 0, 0, 0, 0, 761, 697, 0, 0, 0, 0
Frame008.Shelf1.Slot4, 0, 0, 0, 0, 0, 792, 726, 0, 0, 0, 0
Table=End

Table=Begin

TableId, MeasurementKind, IntervalDuration, CaptureTime
sonetLineIntervalTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label, Label, Label, Label
Source, sonetLineIntervalCVs, sonetLineIntervalESs, sonetLineIntervalSEs, sonetLineIntervalUASs
Value, Value, Value, Value, Value
Frame008.Shelf1.Slot11.Port1, 0, 0, 0, 0
Frame008.Shelf1.Slot10.Port1, 0, 0, 0, 0
Table=End

Table=Begin

TableId, MeasurementKind, IntervalDuration, CaptureTime
nnMegacoOMCESIntervalTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label, Label, Label, Label
Source, nnMegacoOMCESNumChnlAllocInter, nnMegacoOMCESNumChnlAllocInterFail, nnMegacoOMCESNumChnlAllocIntra, nnMegacoOMCESNumChnlAllocIntraFail
Value, Value, Value, Value, Value
Frame008.Shelf1.Slot17, 0, 0, 0, 0

```
Frame008.Shelf1.Slot16,0,0,0,0
Frame008.Shelf1.Slot5,0,0,0,0
Frame008.Shelf1.Slot4,0,0,0,0
Frame008.Shelf1.Slot13,0,0,0,0
Frame008.Shelf1.Slot12,0,0,0,0
Frame008.Shelf1.Slot11,3,0,0,0
Frame008.Shelf1.Slot10,3,0,0,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
nnBwAbiCurrentBandwResrvdTable,Snapshot,15,2005-01-18T15:45:00EST
Label,Label
Source,nnBwAbiCapacityBandwReserved
Value,Value
Frame008.Shelf1.Slot17,0
Frame008.Shelf1.Slot16,0
Frame008.Shelf1.Slot5,0
Frame008.Shelf1.Slot4,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
sonetSectionIntervalTable,Snapshot,15,2005-01-18T15:45:00EST
Label,Label,Label,Label,Label
Source,sonetSectionIntervalCVs,sonetSectionIntervalESs,sonetSectionIntervals
EFSS,sonetSectionIntervalSESS
Value,Value,Value,Value,Value
Frame008.Shelf1.Slot11.Port1,0,0,0,0
Frame008.Shelf1.Slot10.Port1,0,0,0,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
nnClkSyncRefTable,Snapshot,15,2005-01-18T15:45:00EST
Label,Label,Label,Label
Source,nnClkSyncRefId,nnClkSyncRefLossOfFrameCount,nnClkSyncRefLossOfSignalC
ount
Value,Value,Value,Value
Frame008.Shelf1.Slot13,3,0,1
Frame008.Shelf1.Slot12,3,0,3
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
nnBwShelfCurrentSloaBandwResrvdTable,Snapshot,15,2005-01-18T15:45:00EST
Label,Label
Source,nnBwShelfCapacitySloaBandwReserved
Value,Value
Frame008.Shelf1,48960
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
norCarrSonetMediumIntervalTable,Snapshot,15,2005-01-18T15:45:00EST
Label,Label,Label
```

```
Source, nnorCarrSonetMedIntervalLBC, norCarrSonetMedIntervalOpt
Value, Value, Value
Frame008.Shelf1.Slot11.Port1, 106, 99
Frame008.Shelf1.Slot10.Port1, 103, 100
Table=End
```

```
Table=Begin
TableId, MeasurementKind, IntervalDuration, CaptureTime
nnPmOvldConnDenyIntervTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label
Source, nnPmOvldConnDenyIntervCount
Value, Value
Frame008.Shelf1.Slot17, 0
Frame008.Shelf1.Slot16, 0
Frame008.Shelf1.Slot5, 0
Frame008.Shelf1.Slot4, 0
Frame008.Shelf1.Slot13, 0
Frame008.Shelf1.Slot12, 0
Frame008.Shelf1.Slot11, 0
Frame008.Shelf1.Slot10, 0
Table=End
```

```
Table=Begin
TableId, MeasurementKind, IntervalDuration, CaptureTime
apsChanStatusTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label, Label, Label
Source, apsChanSignalDegrades, apsChanSignalFailures, apsChanSwitchovers
Value, Value, Value, Value
Frame008.Shelf1.Slot11.Port1, 0, 0, 0
Frame008.Shelf1.Slot10.Port1, 0, 0, 0
Table=End
```

```
Table=Begin
TableId, MeasurementKind, IntervalDuration, CaptureTime
nnMegacoOMMedGwyIntervalTable, Snapshot, 15, 2005-01-18T15:45:00EST
Label, Label, Label, Label, Label, Label, Label, Label, Label, Label
Source, nnMegacoOMMedGwyAvrgInMsgRate, nnMegacoOMMedGwyAvrgOutMsgRate, nnMegaco
OMMedGwyMaxInMsgRate, nnMegacoOMMedGwyMaxOutMsgRate, nnMegacoOMMedGwyNumInMess
ages, nnMegacoOMMedGwyNumInOctets, nnMegacoOMMedGwyNumOutMessages, nnMegacoOMMe
dGwyNumOutOctets
Value, Value, Value, Value, Value, Value, Value, Value, Value, Value
Frame008.Shelf1.Slot4.Port1, 29, 29, 0, 0, 438, 25752, 438, 36018
Frame008.Shelf1.Slot16.Port1, 29, 29, 0, 0, 440, 25867, 440, 33229
Frame008.Shelf1.Slot12.Port1, 53, 53, 0, 0, 805, 50834, 805, 52001
Table=End
```

```
SingleValues=Begin
MeasurementKind, IntervalDuration
Snapshot, 15
MeasureId, CaptureTime, MeasureSuppId1, Value, Reliability
snmpInvalidMsgs, 2005-01-18T15:45:00EST, Miscellaneous, 0, Valid
snmpInBadCommunityNames, 2005-01-18T15:45:00EST, Miscellaneous, 0, Valid
snmpInPkts, 2005-01-18T15:45:00EST, Miscellaneous, 124921, Valid
nnPmSnmpIntervReqPeak, 2005-01-18T15:45:00EST, nnPmSnmpOmIntervTable, 40, Valid
nnPmSnmpIntervReqAvg, 2005-01-18T15:45:00EST, nnPmSnmpOmIntervTable, 126, Valid
nnPmSnmpIntervNotifPeak, 2005-01-18T15:45:00EST, nnPmSnmpOmIntervTable, 0, Valid
nnPmSnmpIntervNotifAvg, 2005-01-18T15:45:00EST, nnPmSnmpOmIntervTable, 0, Valid
```

```
nnClkSyncSignalId,2005-01-18T15:45:00EST,nnClkSyncSignalTable,5,Valid
nnClkSyncSignalLossOfSignalCount,2005-01-
18T15:45:00EST,nnClkSyncSignalTable,3,Valid
nnClkSyncSignalLossOfFrameCount,2005-01-
18T15:45:00EST,nnClkSyncSignalTable,0,Valid
nnBwBandwUtilIntervalInCellRate,2005-01-
18T15:45:00EST,nnBwIntervalBandwUtilTable,878,Valid
nnBwBandwUtilIntervalOutCellRate,2005-01-
18T15:45:00EST,nnBwIntervalBandwUtilTable,936,Valid
nnBwBandwUtilIntervalInDslCellRate,2005-01-
18T15:45:00EST,nnBwIntervalBandwUtilTable,0,Valid
nnBwBandwUtilIntervalOutDslCellRate,2005-01-
18T15:45:00EST,nnBwIntervalBandwUtilTable,0,Valid
nnBwQueueFillIntervalTotal,2005-01-
18T15:45:00EST,nnBwIntervalQueueFillTable,0,Valid
nnBwQueueFillIntervalCbr,2005-01-
18T15:45:00EST,nnBwIntervalQueueFillTable,0,Valid
nnBwQueueFillIntervalRtVbr,2005-01-
18T15:45:00EST,nnBwIntervalQueueFillTable,0,Valid
nnBwQueueFillIntervalNrtVbr,2005-01-
18T15:45:00EST,nnBwIntervalQueueFillTable,0,Valid
nnBwQueueFillIntervalUbr,2005-01-
18T15:45:00EST,nnBwIntervalQueueFillTable,0,Valid
nnBwQueueFillIntervalUbrPlus,2005-01-
18T15:45:00EST,nnBwIntervalQueueFillTable,0,Valid
nnBwQueueFillIntervalControl,2005-01-
18T15:45:00EST,nnBwIntervalQueueFillTable,0,Valid
SingleValues=End
```

SubEntity=End

Entity=End

System=End

PMFile=End

GUI/CLUI Documentation for MG 9000

GUI Launching and User procedures

- NN10096-511 MG9000 Configuration Management

Related documents

- NN10276-500 ATM/IP Configuration Management

MultiService Switch 7400, 15000, 20000

This section contains IEMS Northbound log samples and device documentation references for the MSS 7400, 15000, 20000.

Information for this device is covered in MDM documentation. *Please refer to Section “ Multi-Service Data Manager (MDM)” on page 562.* for more details.

MSS 7400, 15000, 20000 Fault Interface

Fault documentation for MSS 7400, 15000, 20000 :

Please refer to Section “ Fault documentation for MDM:” on page 562.

Fault Mapping for MSS 7400, 15000, 20000

Please refer to Section “ Fault Mapping for MDM” on page 562.

Northbound Fault Formats for MSS 7400, 15000, 20000

SCC2

The following is an example of a MSS 7400, 15000, 20000 log in SCC2 format:

```
19 PPEM302 8013 TBL
  time: 2004 01 27 14 19 53
  event: message
  compId: EM PP04 LP 8
  severity: indeterminate
  faultcode: 70560000
  alarmType: other
  commentData: 1-7-200
  0000
  1;DBG_WARNING:R:21-L:18 stats timeout.
```

NTSTD

The following is an example of a MSS 7400, 15000, 20000 log in NTSTD format:

```
RTPU07BU      PPEM302 Jan27 19:19:53 7467 TBL
  time: 2004 01 27 14 19 53
  event: message
  compId: EM PP04 LP 8
  severity: indeterminate
  faultcode: 70560000
```

```

alarmType: other
commentData: 1-7-200
0000
1;DBG_WARNING:R:21-L:18 stats timeout.

```

SNMP

The following is an example of a MSS 7400, 15000, 20000 log in SNMP format:

```

sysUpTime. => 0:28:39
snmpTrapOID. => nnExtAlarmMinor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.
20.50.48
.48.52.45.54.45.50.52.44.51.58.53.51.58.52.49.46.48.44.5248
alarmActiveDateAndTime => 2004-6-24,3:53:41.0
alarmActiveDescription => Far end has raised a Line Remote Failure Indication
alarm (rxRfiAlarm).
Check the operational attributes of the far-end.
nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => 70115203
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0m3.us.nortel.com-MDM-
Mgr;EM MANTEO
LP 3 SONET 2
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 1375

```

Syslog

The following is an example of a MSS 7400, 15000, 20000 log in Syslog format:

```

Feb 27 13:19:58 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=2202~~ PPEM302 NONE TBL ^M
time: 2004 01 27 14 19 53^M          event: message^M          compId: EM PP04 LP 8^M
severity: indeterminate^M          faultcode: 70560000^M          alarmType: other^M
commentData: 1-7-200^M          0000 ^M          1;DBG_WARNING:R:21-L:18 stats timeout.

```

Performance

OM and PM Documentation references for MSS 7400, 15000, 20000

Please refer to Section “ OM and PM Documentation references for MDM” on page 565.

Northbound OM/PM Formats

Performance measurements for MSS 7400, 15000, 20000 are available only from the MDM directly. *Please refer to Section “ Northbound OM/PM Formats” on page 565.*

XML

The following is an example of Performance data for MSS 7400, 15000, 20000 in XML format:

***Note:** The IEMS northbound performance interface does not support this device..*

CSV

The following is an example of Performance data for MSS 7400, 15000, 20000 in CSV format:

***Note:** The IEMS northbound performance interface does not support this device..*

GUI/CLUI Documentation for MSS 7400, 15000, 20000

GUI Launching and User procedures

Please refer to “GUI/CLUI Documentation for MDM” on page 566.

- NN10600-030 - Nortel Networks Multiservice Switch 7400/15000/20000 Overview
- 241-5701-045 - Passport "7400," "15000," 20000 Management System User Interface Guide
- NN10600-050 - Nortel Networks Multiservice Switch 7400/15000/20000 Commands Reference
- NN10600-053 - Nortel Networks Multiservice Switch 7400/15000/20000 Commands Job Aid

Related documents

Please refer to “Related documents” on page 567.

- NN10600-001 - Nortel Networks Multiservice Switch 7400/15000/20000 Using the Documentation
- NN10600-002 - Nortel Networks Multiservice Switch 7400/15000/20000 Using Task-based Documentation Job Aid
- NN10600-005 - Nortel Networks Multiservice Switch 7400/15000/20000 Terminology
- NN10600-030 - Nortel Networks Multiservice Switch 7400/15000/20000 Overview
- NN10600-270 - Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation
- NN10600-271 - Nortel Networks Multiservice Switch 7400/15000/20000 Network Management Connectivity
- NN10600-272 - Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software
- NN10600-300 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: SNMP
- 241-5701-400 - Passport "7400," "15000," 20000 Networking Overview
- NN10600-405 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Call Server
- NN10600-410 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Call Redirection Server
- NN10600-415 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Hunt Group Server
- NN10600-420 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Trunking
- NN10600-425 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Dynamic Packet Routing System
- NN10600-435 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Path-Oriented Routing System
- NN10600-440 - Nortel Networks Multiservice Switch 7400 Operations: Frame Relay Managed Cut-through Switching
- NN10600-445 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Multiprotocol Label Switching
- NN10600-500 - Nortel Networks Multiservice Switch 7400/15000/20000 Alarms Reference
- NN10600-510 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Trace System

- NN10600-520 - Nortel Networks Multiservice Switch 7400/15000/20000 Fault and Performance Management: Troubleshooting
- NN10600-581 - Nortel Networks Multiservice Switch 7400/15000/20000 IP VPN Technology Fundamentals
- NN10600-582 - Nortel Networks Multiservice Switch 7400/15000/20000 IP VPN Configuration Management
- NN10600-550 - Nortel Networks Multiservice Switch 7400/15000/20000 Common Configuration Procedures
- NN10600-561 - Nortel Networks Multiservice Switch 7400/15000/20000 Data Management
- NN10600-551 - Nortel Networks Multiservice Switch 7400/15000/20000 FP Configuration Reference
- NN10600-560 - Nortel Networks Multiservice Switch 7400/15000/20000 Accounting
- NN10600-700 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Technology Fundamentals
- NN10600-702 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Routing and Signaling Fundamentals
- NN10600-705 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Traffic Management Fundamentals
- NN10600-706 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Traffic Shaping and Policing Fundamentals
- NN10600-707 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Queuing and Scheduling Fundamentals
- NN10600-708 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM CAC and Bandwidth Fundamentals
- NN10600-710 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Configuration Management
- NN10600-715 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Fault and Performance Management
- NN10600-720 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: AAL1 Circuit Emulation
- NN10600-730 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Inverse Multiplexing for ATMe
- NN10600-780 - Nortel Networks Media Gateway 7480/15000 Technology Fundamentals
- NN10600-781 - Nortel Networks Media Gateway 7480/15000 Non-switched Service Configuration Management

- NN10600-782 - Nortel Networks Media Gateway 7480/15000 Switched Service Configuration Management
- NN10600-800 - Nortel Networks Multiservice Switch 7400/15000/20000 IP Technology Fundamentals
- NN10600-801 - Nortel Networks Multiservice Switch 7400/15000/20000 IP Configuration Management
- NN10600-580 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Ethernet Service
- NN10600-120 - Nortel Networks Multiservice Switch 15000/20000 Hardware Description
- NN10600-130 - Nortel Networks Multiservice Switch 15000/20000 Hardware Installation, Maintenance, and Upgrade
- NN10600-170 - Nortel Networks Multiservice Switch 7400 Hardware Description
- NN10600-130 - Nortel Networks Multiservice Switch 15000/20000 Hardware Installation, Maintenance, and Upgrade
- NN10600-172 - Nortel Networks Multiservice Switch 7400 FP Cabling Reference
- NN10600-745 - Nortel Networks Multiservice Switch 7400 Operations: MPANL
- NN10600-750 - Nortel Networks Multiservice Switch 7400 Operations: Voice Transport
- NN10600-755 - Nortel Networks Multiservice Switch 7400 Operations: Voice Networking
- NN10600-765 - Nortel Networks Multiservice Switch 7400 Operations: Remote Server Agent
- NN10600-605 - Passport MDM Network Security: Operations
- NN10600-606 - Passport MDM Network Security: User Access Configuration
- NN10600-607 - Passport MDM Network Security: Secure Communications Configuration
- 241-6001-309 - MDM Management Data Provider User Guide
- 241-6001-806 - MDM MDP Data Formats Reference Guide
- NN10600-060 - Nortel Networks Multiservice Switch 7400/15000/20000 Components Reference

MS2000 Series Node

This section contains IEMS Northbound log samples and device documentation references for the MS2000 Series Node.

MS2000 Series Node Fault Interface

Fault documentation for MS2000 Series Node :

- NN10328-911 MS2000 Fault Management

Fault Mapping for MS2000 Series Node

The following criteria can be used for looking up information on specific faults for MS2000 Series Node.

Fault Correlation for MS2000 Series Node

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
MS2000 Series Node	logname and number	logname and number	logname and number	logname and number	NN10328-911 MS2000 Fault Management

Northbound Fault Formats for MS2000 Series Node

SCC2

The following is an example of a MS2000 Series Node log in SCC2 format:

```
34 AMS 501 0035 INFO MS2000 FAULT
  Location: 47.142.134.127
  State: Cleared
  Time: 1086806097963
```

**34 AMS 501 0036 FLT MS2000 FAULT

Location: 47.142.134.127

State: Raised

Category: processingError

Cause: 71

Time: 1086806097964

Component Id: System#0

Trap Name: 6

Description: Network element admin state change alarm. Gateway is locked

NTSTD

The following is an example of a MS2000 Series Node log in NTSTD format:

Nortel-JH ** AMS501 JUN10 09:21:12 5707 FLT MS2000 FAULT

Location: 47.142.134.127

State: Raised

Category: processingError

Cause: 71

Time: 1086873672171

Component Id: System#0

Trap Name: 6

Description: Network element admin state change alarm. Gateway is shuttingDown

Nortel-JH AMS501 JUN10 09:21:12 5708 INFO MS2000 FAULT

Location: 47.142.134.127

State: Cleared

Time: 1086873672172

Nortel-JH ** AMS501 JUN10 09:21:12 5709 FLT MS2000 FAULT

Location: 47.142.134.127

State: Raised

Category: processingError

Cause: 71

Time: 1086873672174

Component Id: System#0

Trap Name: 6

Description: Network element admin state change alarm. Gateway is locked

Nortel-JH AMS501 JUN10 09:21:25 5710 INFO MS2000 FAULT

Location: 47.142.134.127

State: Cleared

Time: 1086873685240

SNMP

The following is an example of a MS2000 Series Node log in SNMP format:

sysUpTime. => 1 day, 19:19:22

snmpTrapOID. => nnExtAlarmMessage

nnExtAlarmMessageResource => .0.0

nnExtAlarmMessageResourceDescription => IEMS=Unknown Device;

nnExtAlarmMessageDateAndTime => 2004-6-9,3:4:5.0

nnExtAlarmMessageDocumentationPointer => IEMS601

nnExtAlarmMessageInfo => 04 IEMS601 3350 INFO

Location: 10.5.0.17

Event: .1.3.6.1.6.3.1.1.5.3

Varbind0: .1.3.6.1.2.1.2.2.1.1.0: 132

Varbind1: .1.3.6.1.2.1.2.2.1.7.0: 1

Varbind2: .1.3.6.1.2.1.2.2.1.8.0: 2

sysUpTime. => 1 day, 19:19:25

snmpTrapOID. => nnExtAlarmMessage

nnExtAlarmMessageResource => .0.0

nnExtAlarmMessageResourceDescription => IEMS=Unknown Device;

nnExtAlarmMessageDateAndTime => 2004-6-9,3:4:7.9

```
nnExtAlarmMessageDocumentationPointer => IEMS601
```

```
nnExtAlarmMessageInfo => 04 IEMS601 3351 INFO
```

```
Location: 10.5.0.17
```

```
Event: .1.3.6.1.6.3.1.1.5.4
```

```
Varbind0: .1.3.6.1.2.1.2.2.1.1.0: 132
```

```
Varbind1: .1.3.6.1.2.1.2.2.1.7.0: 1
```

```
Varbind2: .1.3.6.1.2.1.2.2.1.8.0: 1
```

Syslog

The following is an example of a MS2000 Series Node log in Syslog format:

```
Jun  9 14:31:41 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=9643~~ AMS501 MAJOR FLT
MS2000 FAULT      Location: 47.142.134.127      State: Raised      Category:
processingError   Cause: 71      Time: 1086805901311      Component Id: System#0
Trap Name: 6      Description: Network element admin state change alarm. Gateway is
shuttingDown
```

```
Jun  9 14:31:41 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=9644~~ AMS501 NONE INFO
MS2000 FAULT      Location: 47.142.134.127      State: Cleared      Time:
1086805901313
```

```
Jun  9 14:31:41 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=9645~~ AMS501 MAJOR FLT
MS2000 FAULT      Location: 47.142.134.127      State: Raised      Category:
processingError   Cause: 71      Time: 1086805901314      Component Id: System#0
Trap Name: 6      Description: Network element admin state change alarm. Gateway is
locked
```

```
Jun  9 14:31:41 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=9646~~ IEMS601 NONE
```

```
Resetting board
```

Performance

OM and PM Documentation references for MS2000 Series Node

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided.

XML

The following is an example of Performance data for MS2000 Series Node in XML format:

XML

The following is an example of Performance data for MS2000 Series Node in XML format (5-minute collection):

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
- <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
  <FileCreationTime>2005-03-24T11:00:02EST</FileCreationTime>
- <System>
  <SystemId>NortelNetworks/IEMS</SystemId>
- <Entity Type="MS2000">
  <EntityId>172.17.40.230</EntityId>
- <SingleValues MeasurementKind="Snapshot" IntervalDuration="5">
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>sysDescr</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.system</MeasureSuppId1>
  <Value>Product: IPmedia 2000;SW Version: 4.60B.003</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpOutPkts</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>144</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInBadVersions</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInBadCommunityNames</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInTotalReqVars</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>460</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpOutTraps</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>4</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInBadCommunityUses</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInPkts</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
```



```
<Value>141</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInTotalSetVars</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInASNParseErrs</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>tcpOutSegs</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.tcp</MeasureSuppId1>
  <Value>24</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>tcpInSegs</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.tcp</MeasureSuppId1>
  <Value>7100</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>udpOutDatagrams</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.udp</MeasureSuppId1>
  <Value>156</Value>
```

```
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>udpInDatagrams</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.udp</MeasureSuppId1>
  <Value>5</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpSilentDrops</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfCpMessageSendErrors</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfCpNumDupsForCompletedTransactions</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfCpMessageMaxRetransmissionsExceeded</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
  <Reliability>Valid</Reliability>
```

```
</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
```

```
  <MeasureId>acPerfCpMessageReceiveErrors</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
  <Reliability>Valid</Reliability>
```

```
</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
```

```
  <MeasureId>acPerfCpMessageRetransmissions</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
  <Reliability>Valid</Reliability>
```

```
</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
```

```
  <MeasureId>acPerfCpNumDupsForOutstandingTransactions</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
  <Reliability>Valid</Reliability>
```

```
</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
```

```
  <MeasureId>acPerfCpMessagesFromUntrustedSources</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
```

```
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfCpProtocolSyntaxErrors</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfRtpRcvrLostPackets</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaGateway.acPerfRtp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfRtpFailedDueToLackOfResources</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaGateway.acPerfRtp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfIvrPlayCollectRequests</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfIvr</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
```

```
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfIvrPlayRequests</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfIvr</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfIvrPlayCollectFailedDueToLackOfResources</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfIvr</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfIvrPlayFailedDueToProvMismatch</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfIvr</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfIvrContDigitCollectRequests</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfIvr</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfIvrPlayFailedDueToLackOfResources</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaServices.acPerfIvr</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
  <Reliability>Valid</Reliability>
```

```
</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
```

```
  <MeasureId>acPerfIvrPlayCollectFailedDueToProvMismatch</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaServices.acPerfIvr</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
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```

```
</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
```

```
  <MeasureId>acPerfIvrContDigitCollectFailedDueToLackOfResources</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
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```

```
  <Value>0</Value>
```

```
  <Reliability>Valid</Reliability>
```

```
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```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
```

```
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```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaServices.acPerfBct</MeasureSuppId1>
```

```
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```

```
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- <SingleValue>
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```
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
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```
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```

```
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  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
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  <MeasureId>acPerfConfPortsUsed</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
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  <Value>0</Value>
  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfConfAddFailedDueToLackOfResources</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
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  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfConfFailedDueToLackOfResources</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
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  <Value>0</Value>
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  </SingleValue>
```

```

- <SingleValue>
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<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfTt</MeasureSuppId1>
  <Value>0</Value>
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- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfTtRequests</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
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  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>acPerfSystemPacketEndpointsInUse</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaGateway.acPerfSystem</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>

```

XML

The following is an example of Performance data for MS2000 Series Node in XML format (30-minute collection):

```

<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
- <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
  <FileCreationTime>2005-03-24T11:00:04EST</FileCreationTime>

```



```
- <System>
  <SystemId>NortelNetworks/IEMS</SystemId>
- <Entity Type="MS2000">
  <EntityId>172.17.40.230</EntityId>
- <SingleValues MeasurementKind="Snapshot" IntervalDuration="30">
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>sysDescr</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.system</MeasureSuppId1>
  <Value>Product: IPmedia 2000;SW Version: 4.60B.003</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpOutPkts</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>145</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInBadVersions</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInBadCommunityNames</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInTotalReqVars</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>469</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpOutTraps</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>4</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInBadCommunityUses</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInPkts</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>142</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInTotalSetVars</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>snmpInASNParseErrs</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
```

```
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>tcpOutSegs</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.tcp</MeasureSuppId1>
  <Value>24</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:01EST</CaptureTime>
  <MeasureId>tcpInSegs</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.tcp</MeasureSuppId1>
  <Value>7100</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>udpOutDatagrams</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.udp</MeasureSuppId1>
  <Value>166</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>udpInDatagrams</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.udp</MeasureSuppId1>
  <Value>5</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>snmpSilentDrops</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
```

```
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>acPerfCpMessageSendErrors</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>acPerfCpNumDupsForCompletedTransactions</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>acPerfCpMessageMaxRetransmissionsExceeded</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaGateway.acPerfCp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>acPerfCpMessageReceiveErrors</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
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  <Reliability>Valid</Reliability>
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<CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
<MeasureId>acPerfCpMessageRetransmissions</MeasureId>

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  <Value>0</Value>
  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>acPerfCpNumDupsForOutstandingTransactions</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
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  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>acPerfCpMessagesFromUntrustedSources</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
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  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>acPerfCpProtocolSyntaxErrors</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
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  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>acPerfRtpRcvrLostPackets</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaGateway.acPerfRtp</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
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```

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```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
```

```
  <MeasureId>acPerfRtpFailedDueToLackOfResources</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaGateway.acPerfRtp</MeasureSuppId1>
```

```
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```
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```
- <SingleValue>
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```
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
```

```
  <MeasureId>acPerfIvrPlayCollectRequests</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
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```

```
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```

```
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```

```
- <SingleValue>
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```
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<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
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```

```
  <Value>0</Value>
```

```
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```

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</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
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```
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```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
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```

```
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
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  <MeasureId>acPerfIvrPlayFailedDueToProvMismatch</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfIvr</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:02EST</CaptureTime>
  <MeasureId>acPerfIvrContDigitCollectRequests</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
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  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
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  <MeasureId>acPerfIvrPlayFailedDueToLackOfResources</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfIvr</MeasureSuppId1>
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  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
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  <MeasureId>acPerfIvrPlayCollectFailedDueToProvMismatch</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
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  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
```

```
- <SingleValue>
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  <MeasureId>acPerfIvrContDigitCollectFailedDueToLackOfResources</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfIvr</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:04EST</CaptureTime>
  <MeasureId>acPerfBctFailedDueToLackOfResources</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfBct</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:04EST</CaptureTime>
  <MeasureId>acPerfBctRequests</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfBct</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:04EST</CaptureTime>
  <MeasureId>acPerfConfRequests</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaServices.acPerfConf</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-24T11:00:04EST</CaptureTime>
  <MeasureId>acPerfConfPortsUsed</MeasureId>
```



```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaServices.acPerfConf</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
  <Reliability>Valid</Reliability>
```

```
</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:04EST</CaptureTime>
```

```
  <MeasureId>acPerfConfAddFailedDueToLackOfResources</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaServices.acPerfConf</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
  <Reliability>Valid</Reliability>
```

```
</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:04EST</CaptureTime>
```

```
  <MeasureId>acPerfConfFailedDueToLackOfResources</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaServices.acPerfConf</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
  <Reliability>Valid</Reliability>
```

```
</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:04EST</CaptureTime>
```

```
  <MeasureId>acPerfTtFailedDueToLackOfResources</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaServices.acPerfTt</MeasureSuppId1>
```

```
  <Value>0</Value>
```

```
  <Reliability>Valid</Reliability>
```

```
</SingleValue>
```

```
- <SingleValue>
```

```
  <CaptureTime>2005-03-24T11:00:04EST</CaptureTime>
```

```
  <MeasureId>acPerfTtRequests</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo  
rmances.acPerfMediaServices.acPerfTt</MeasureSuppId1>
```

```

    <Value>0</Value>
    <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
    <CaptureTime>2005-03-24T11:00:04EST</CaptureTime>
    <MeasureId>acPerfSystemPacketEndpointsInUse</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.audioCodes.acPerfo
rmances.acPerfMediaGateway.acPerfSystem</MeasureSuppId1>
    <Value>0</Value>
    <Reliability>Valid</Reliability>
  </SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>

```

CSV

The following is an example of Performance data for MS2000 Series Node in CSV format (5-minute collection):

```

System=Begin
SystemId
NortelNetworks/IEMS

Entity=Begin
EntityId,Type
172.17.40.230,MS2000

SingleValues=Begin
MeasurementKind,IntervalDuration
Snapshot,5
MeasureId,CaptureTime,MeasureSuppId1,Value,Reliability
sysDescr,2005-03-24T11:00:01EST,.iso.org.dod.internet.mgmt.mib-
2.system,Product: IPmedia 2000;SW Version: 4.60B.003,Valid
snmpOutPkts,2005-03-24T11:00:01EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,144,Valid
snmpInBadVersions,2005-03-24T11:00:01EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid

```

snmpInBadCommunityNames, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

snmpInTotalReqVars, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 460, Valid

snmpOutTraps, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 4, Valid

snmpInBadCommunityUses, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

snmpInPkts, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 141, Valid

snmpInTotalSetVars, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

snmpInASNParseErrs, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

tcpOutSegs, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.tcp, 24, Valid

tcpInSegs, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.tcp, 7100, Valid

udpOutDatagrams, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.udp, 156, Valid

udpInDatagrams, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.udp, 5, Valid

snmpSilentDrops, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

acPerfCpMessageSendErrors, 2005-03-24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpNumDupsForCompletedTransactions, 2005-03-24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpMessageMaxRetransmissionsExceeded, 2005-03-24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpMessageReceiveErrors, 2005-03-24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpMessageRetransmissions, 2005-03-24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpNumDupsForOutstandingTransactions, 2005-03-24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpMessagesFromUntrustedSources, 2005-03-24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpProtocolSyntaxErrors, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfRtpRcvrLostPackets, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfRtp, 0, Valid

acPerfRtpFailedDueToLackOfResources, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfRtp, 0, Valid

acPerfIvrPlayCollectRequests, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrPlayRequests, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrPlayCollectFailedDueToLackOfResources, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrPlayFailedDueToProvMismatch, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrContDigitCollectRequests, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrPlayFailedDueToLackOfResources, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrPlayCollectFailedDueToProvMismatch, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrContDigitCollectFailedDueToLackOfResources, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfBctFailedDueToLackOfResources, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfBct, 0, Valid

acPerfBctRequests, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfBct, 0, Valid

acPerfConfRequests, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfConf, 0, Valid

acPerfConfPortsUsed, 2005-03-
24T11:00:01EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfConf, 0, Valid

```
acPerfConfAddFailedDueToLackOfResources,2005-03-
24T11:00:01EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfConf,0,Valid
```

```
acPerfConfFailedDueToLackOfResources,2005-03-
24T11:00:01EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfConf,0,Valid
```

```
acPerfTtFailedDueToLackOfResources,2005-03-
24T11:00:01EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfTt,0,Valid
```

```
acPerfTtRequests,2005-03-
24T11:00:01EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfTt,0,Valid
```

```
acPerfSystemPacketEndpointsInUse,2005-03-
24T11:00:01EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfSystem,0,Valid
```

```
SingleValues=End
```

```
Entity=End
```

```
System=End
```

```
PMFile=End
```

CSV

The following is an example of Performance data for MS2000 Series Node in CSV format (30-minute collection):

```
PMFile=Begin
```

```
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
```

```
PM,commonFormat.xsd,2005-03-24T11:00:04EST
```

```
System=Begin
```

```
SystemId
```

```
NortelNetworks/IEMS
```

```
Entity=Begin
```

```
EntityId,Type
```

```
172.17.40.230,MS2000
```

```
SingleValues=Begin
```

```
MeasurementKind,IntervalDuration
```

Snapshot, 30

MeasureId, CaptureTime, MeasureSuppId1, Value, Reliability

sysDescr, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.system, Product: IPmedia 2000; SW Version: 4.60B.003, Valid

snmpOutPkts, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 145, Valid

snmpInBadVersions, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

snmpInBadCommunityNames, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

snmpInTotalReqVars, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 469, Valid

snmpOutTraps, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 4, Valid

snmpInBadCommunityUses, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

snmpInPkts, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 142, Valid

snmpInTotalSetVars, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

snmpInASNParseErrs, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

tcpOutSegs, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.tcp, 24, Valid

tcpInSegs, 2005-03-24T11:00:01EST, .iso.org.dod.internet.mgmt.mib-2.tcp, 7100, Valid

udpOutDatagrams, 2005-03-24T11:00:02EST, .iso.org.dod.internet.mgmt.mib-2.udp, 166, Valid

udpInDatagrams, 2005-03-24T11:00:02EST, .iso.org.dod.internet.mgmt.mib-2.udp, 5, Valid

snmpSilentDrops, 2005-03-24T11:00:02EST, .iso.org.dod.internet.mgmt.mib-2.snmp, 0, Valid

acPerfCpMessageSendErrors, 2005-03-24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpNumDupsForCompletedTransactions, 2005-03-24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpMessageMaxRetransmissionsExceeded, 2005-03-24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpMessageReceiveErrors, 2005-03-24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpMessageRetransmissions, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpNumDupsForOutstandingTransactions, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpMessagesFromUntrustedSources, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfCpProtocolSyntaxErrors, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfCp, 0, Valid

acPerfRtpRcvrLostPackets, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfRtp, 0, Valid

acPerfRtpFailedDueToLackOfResources, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfRtp, 0, Valid

acPerfIvrPlayCollectRequests, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrPlayRequests, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrPlayCollectFailedDueToLackOfResources, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrPlayFailedDueToProvMismatch, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrContDigitCollectRequests, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrPlayFailedDueToLackOfResources, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrPlayCollectFailedDueToProvMismatch, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfIvrContDigitCollectFailedDueToLackOfResources, 2005-03-
24T11:00:02EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfIvr, 0, Valid

acPerfBctFailedDueToLackOfResources, 2005-03-
24T11:00:04EST, .iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfBct, 0, Valid

```
acPerfBctRequests,2005-03-
24T11:00:04EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfBct,0,Valid

acPerfConfRequests,2005-03-
24T11:00:04EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfConf,0,Valid

acPerfConfPortsUsed,2005-03-
24T11:00:04EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfConf,0,Valid

acPerfConfAddFailedDueToLackOfResources,2005-03-
24T11:00:04EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfConf,0,Valid

acPerfConfFailedDueToLackOfResources,2005-03-
24T11:00:04EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfConf,0,Valid

acPerfTtFailedDueToLackOfResources,2005-03-
24T11:00:04EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfTt,0,Valid

acPerfTtRequests,2005-03-
24T11:00:04EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaServices.acPerfTt,0,Valid

acPerfSystemPacketEndpointsInUse,2005-03-
24T11:00:04EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerfor
mances.acPerfMediaGateway.acPerfSystem,0,Valid

SingleValues=End

Entity=End

System=End

PMFile=End
```

GUI/CLUI Documentation for MS2000 Series Node

GUI Launching and User procedures

- NN10323-111 MS2000 Basics

Related documents

- NN10340-511 MS2000 Configuration
- NN10337-611 MS2000 Security

Session Server Manager

This section contains IEMS Northbound log samples and device documentation references for the Session Server Manager.

Session Server Manager Fault Interface

This section will provide references to customer documentation for Fault, Performance, Topology, GUI/CLUI, and Security for Session Server Manager.

Fault documentation for Session Server Manager:

- NN10322-911 - Session Server Manager Fault Management

Fault Mapping for Session Server Manager

The following criteria can be used for looking up information on specific faults for Session Server Manager.

Fault Correlation for Session Server Manager

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
Session Server Manager	logname and number	logname and number	logname and number	logname and number	NN10322-911 Session Server Manager Fault Management

Northbound Fault Formats for Session Server Manager

SCC2

The following is an example of a Session Server Manager log in SCC2 format:

```
**57 SIPM302 2080 FLT SIPM Fault
Location: 47.142.123.43
Notification Id: 111
State: Raised
Category: communications
Cause: applicationSubsystemFailure
Time: Apr 12 21:57:55 2004
Component Id: NCGL=RTPF-SIP0;Unit=0;
Specific Problem: SIP Gateway Application State Not Synced With Mate
Description: SIP Gateway Application Mtc Out Of Sync
```

NTSTD

The following is an example of a Session Server Manager log in NTSTD format:

```
znc0s0jh ** SIPM302 APR12 21:57:55 2080 FLT SIPM Fault
Location: 47.142.123.43
Notification Id: 111
```

```

State: Raised
Category: communications
Cause: applicationSubsystemFailure
Time: Apr 12 21:57:55 2004
Component Id: NCGL=RTPF-SIP0;Unit=0;
Specific Problem: SIP Gateway Application State Not Synced With Mate
Description: SIP Gateway Application Mtc Out Of Sync

```

SNMP

The following is an example of a Session Server Manager log in SNMP format:

```

sysUpTime.0 => 2:34:22
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.
20.50.48.48.52.45.52.45.49.50.44.57.58.53.55.58.53.53.46.48.44.3070
alarmActiveDateAndTime => 2004-4-12,9:57:55.0
alarmActiveDescription => SIP Gateway Application Mtc Out Of Sync
nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 2
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SIPM302
nnExtAlarmActiveResourceDescription => IEMS=47.142.123.48-SP2000-Unit-
0;NCGL=RTPFSIP0;
Unit=0;
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 35

```

Syslog

The following is an example of a Session Server Manager log in Syslog format:

```

Apr 12 22:13:03 znc0s0jh IEMS: V2_~I=~H=znc0s0jh~A=IEMS~S=6213~~ SIPM302 MAJOR FLT
SIPM Fault^M      Locationon:47.142.123.43^M      Notification Id: 111^M      State:
Raised^M      Category: communications^M      Cause: applicationSubsystemFailure^M
Time: Apr 12 21:57:55 2004^M      Component Id: NCGL=RTPF-SIP0;Unit=0;^M      Specific
Problem: SIP Gateway Application State Not Synced With Mate^M      Description: SIP
Gateway Application Mtc Out Of Sync

```

Performance

OM and PM Documentation references for Session Server Manager

- NN10342-711 Session Server Manager Performance Management

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of Performance for Session Server Manager in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
_ <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM
```

```
<MeasureId>snmpInBadVersions</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpInBadCommunityNames</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>1</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpInTotalReqVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>9899</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpOutTraps</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpInBadCommunityUses</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpInPkts</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>8692</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpInTotalSetVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpInASNParseErrs</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>hrSystemDate</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
<MeasureId>hrSystemUptime</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem</MeasureSuppId1>
<Value>1316119</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
<MeasureId>hrSystemProcesses</MeasureId>
```

```

<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem</MeasureSuppId1>
<Value>170</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
<MeasureId>snmpSilentDrops</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>

```

CSV

The following is an example of Performance for Session Server Manager in CSV format:

```

PMFile=Begin
PM,commonFormat.xsd,2004-06-23T20:35:30EST
System=Begin
NortelNetworks/IEMS
Entity=Begin
47.174.74.179,Session Server
SingleValues=Begin
Snapshot,5
sysDescr,2004-06-23T20:30:01EST,.iso.org.dod.internet.mgmt.mib-
2.system,Linux sp2k-1 2.4.22-samxts #1 Thu May 13 01:48:09 EDT 2004 i686,Valid
snmpOutPkts,2004-06-23T20:30:01EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,9342,Valid
snmpInBadVersions,2004-06-23T20:30:02EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInBadCommunityNames,2004-06-
23T20:30:02EST,.iso.org.dod.internet.mgmt.mib-2.snmp,1,Valid

```

```
snmpInTotalReqVars,2004-06-23T20:30:02EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,13190,Valid
snmpOutTraps,2004-06-23T20:30:02EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInBadCommunityUses,2004-06-
23T20:30:02EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
snmpInPkts,2004-06-23T20:30:03EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,9355,Valid
snmpInTotalSetVars,2004-06-23T20:30:03EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInASNParseErrs,2004-06-23T20:30:03EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
hrSystemDate,2004-06-23T20:30:04EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,0,Valid
hrSystemUptime,2004-06-23T20:30:04EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,1326620,Valid
hrSystemProcesses,2004-06-23T20:30:04EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,170,Valid
SingleValues=End
Entity=End
System=End
PMFile=End
```

GUI/CLUI Documentation for Session Server Manager

GUI Launching and User procedures

- NN10333-111 Session Server Manager Basics

Related documents

- NN10338-511 - Session Server Manager configuration
- NN10346-611 - Session Server Manager Security and Administration

SAM21 Shelf Controller

This section contains IEMS Northbound log samples and device documentation references for the SAM21 Shelf Controller.

SAM21 Shelf Controller Fault Interface

Fault documentation for SAM21 Shelf Controller :

- NN10089-911 - SAM21 Shelf Controller Fault Management

Fault Mapping for SAM21 Shelf Controller

The following criteria can be used for looking up information on specific faults for SAM21 Shelf Controller.

Fault Correlation for SAM21 Shelf Controller

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
SAM21 Shelf Controller	logname and number	logname and number	logname and number	logname and number	NN10089-911 SAM21 Shelf Controller Fault Management

Northbound Fault Formats for SAM21 Shelf Controller

SCC2

The following is an example of a SAM21 Shelf Controller log in SCC2 format:

```
**37 SCU 350 0009 FLT Alarm Raised
Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:55:52 EST 2004
Reason:    Temperature in Sled 3 is high
```

NTSTD

The following is an example of a SAM21 Shelf Controller log in NTSTD format:

```
COMPACT06BT ** SCU350 Jan15 00:37:17 0009 FLT Alarm Raised
Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:55:52 EST 2004
Reason:    Temperature in Sled 3 is high
```


SNMP

The following is an example of a SAM21 Shelf Controller log in SNMP format:

```
sysUpTime.0 => 9:14:20
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.49.44.54.58.52.49.58.49.52.46.48.44.8995
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => DeviceSpecificInfo=;Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:57:48 EST 2004
Reason:    Temperature in Sled 3 is high
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SCU 350
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0kz.us.nortel.com-SAM21-Mgr;
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 1
```

Syslog

The following is an example of a SAM21 Shelf Controller log in Syslog format:

```
Feb 12 18:30:19 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=7929~~ SCU350 MAJOR FLT
Alarm Raised^M      Location: SAM21 1:CSAM01-01:sled 3^M      Time:      Mon Jan 12
12:49:06 EST 2004^M      Reason:    Temperature in Sled 3 is high
```

Performance

OM and PM Documentation references for SAM21 Shelf Controller

- NN10155-711, *SAM21 Shelf Controller Performance Management*

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided.

XML

The following is an example of Performance for the SAM21 Shelf Controller in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
- <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
  <FileCreationTime>2005-02-09T12:00:26EST</FileCreationTime>
- <System>
  <SystemId>NortelNetworks/IEMS</SystemId>
- <Entity Type="SAM21">
  <EntityId>47.142.106.30</EntityId>
- <SingleValues MeasurementKind="Snapshot" IntervalDuration="30">
- <SingleValue>
  <CaptureTime>2005-02-09T12:00:02EST</CaptureTime>
  <MeasureId>rxedTimeoutCount</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-09T12:00:02EST</CaptureTime>
  <MeasureId>bytesSentPerSec</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
  <Value>23</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-09T12:00:02EST</CaptureTime>
  <MeasureId>totalBytesRxed</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
  <Value>14792</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
```

```
- <SingleValue>
  <CaptureTime>2005-02-09T12:00:02EST</CaptureTime>
  <MeasureId>totalBytesSent</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
  <Value>16765</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-09T12:00:02EST</CaptureTime>
  <MeasureId>oversizedPDUCount</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-09T12:00:02EST</CaptureTime>
  <MeasureId>bytesRxdPerSec</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
  <Value>20</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-02-09T12:00:02EST</CaptureTime>
  <MeasureId>cellDropCount</MeasureId>

<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.se
rviceControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
```

</PMFile>

CSV

The following is an example of Performance for the SAM21 Shelf Controller in CSV format:

PMFile=Begin

MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime

PM,commonFormat.xsd,2005-02-09T12:00:26EST

System=Begin

SystemId

NortelNetworks/IEMS

Entity=Begin

EntityId,Type

47.142.106.30,SAM21

SingleValues=Begin

MeasurementKind,IntervalDuration

Snapshot,30

MeasureId,CaptureTime,MeasureSuppId1,Value,Reliability

rxedTimeoutCount,2005-02-

09T12:00:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.ipoaMIB,0,Valid

bytesSentPerSec,2005-02-

09T12:00:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.ipoaMIB,23,Valid

totalBytesRxed,2005-02-

09T12:00:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.ipoaMIB,14792,Valid

totalBytesSent,2005-02-

09T12:00:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.ipoaMIB,16765,Valid

oversizedPDUCount,2005-02-

09T12:00:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.ipoaMIB,0,Valid

bytesRxedPerSec,2005-02-

09T12:00:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.ipoaMIB,20,Valid

cellDropCount,2005-02-

09T12:00:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.ipoaMIB,0,Valid

SingleValues=End

Entity=End

System=End

PMFile=End

GUI/CLUI Documentation for SAM21 Shelf Controller

GUI Launching and User procedures

- NN10025-111 - SAM21 Shelf Controller Basics
- NN10089-911 - SAM21 Shelf Controller Fault Management
- NN10111-511 - SAM21 Shelf Controller Configuration Management
- NN10177-611 - SAM21 Shelf Controller Administration and Security
- NN10155-711 - SAM21 Shelf Controller Performance Management

Related documents

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics

Storage Manager (STORM)

This section contains IEMS Northbound log samples and device documentation references for the STORM.

STORM Fault Interface

Fault documentation for STORM :

- NN10024-111 - STORM Basics
- NN10088-911 - STORM Fault Management

Fault Mapping for STORM

The following criteria can be used for looking up information on specific faults for STORM.

Fault Correlation for STORM

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
STORM	logname and number eg: STM 800	logname and number	logname and number	logname and number	NN10088-911 STORM Fault Management

Northbound Fault Formats for STORM**SCC2**

The following is an example of a STORM log in SCC2 format:

Sample Clear:

```
19 STM 801 0595 INFO
    Location: 47.166.56.10
    Notification Id: 13
    State: Cleared
    Time: Jan 24 19:19:49 2004
```

Sample Raise:

```
**19 STM 801 0596 FLT STM Fault
    Location: 47.166.56.10
    Notification Id: 14
    State: Raised
    Category: qualityOfService
    Cause: thresholdCrossed
    Time: Jan 24 19:19:49 2004
    Component Id: STORMIA=langley1
    Specific Problem:
    Description: Status: Alarm raised. Used memory percentage is 18.24. Major alarm threshold value is 6.00.
```

NTSTD

The following is an example of a STORM log in NTSTD format:

Sample Clear:

```
RTPU07BR      STM801 Jan25 00:19:49 0041 INFO
    Location: 47.166.56.10
```

Notification Id: 13
State: Cleared
Time: Jan 24 19:19:49 2004

Sample Raise:

RTPU07BR ** STM801 Jan25 00:19:49 0042 FLT STM Fault
Location: 47.166.56.10
Notification Id: 14
State: Raised
Category: qualityOfService
Cause: thresholdCrossed
Time: Jan 24 19:19:49 2004
Component Id: STORMIA=langley1
Specific Problem:
Description: Status: Alarm raised. Used memory percentage is 18.24. Major alarm threshold value is 6.00.

SNMP

The following is an example of a STORM log in SNMP format:

Sample Clear:

system.sysUpTime.0 => 8:01:55
snmpTrapOID.0 => nnExtAlarmClear
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.52.44.55.58.49.57.58.52.57.46.48.44.312
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => DeviceSpecificInfo=;Status: Alarm cleared. A new alarm with higher severity will be raised.
nnExtAlarmActiveEventType => 2
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => STM 801
nnExtAlarmActiveResourceDescription => IEMS=zmdhh0jk.europe.nortel.com-STORM;STORMIA=langley1
nnExtAlarmActiveSequenceNumber => 24

Sample Raise:

system.sysUpTime.0 => 7:01:55
snmpTrapOID.0 => nnExtAlarmMajor

```

alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.52.44.55.58.49.57.58.52.57.46.48.44.329

alarmActiveDateAndTime => 2004-1-21,6:41:14.0,

alarmActiveDescription => Status: Alarm raised. Used memory percentage is 18.24. Major
alarm threshold value is 6.00.

nnExtAlarmActiveEventType => 2

nnExtAlarmActiveProbableCause => 51

nnExtAlarmActiveAdditionalText =>

nnExtAlarmActiveDocumentationPointer => STM 801

nnExtAlarmActiveResourceDescription => IEMS=zmdhh0jk.europe.nortel.com-
STORM;STORMIA=langley1

nnExtAlarmActiveManualClear => 2

nnExtAlarmActiveSequenceNumber => 25

```

Syslog

The following is an example of a STORM log in Syslog format:

Sample Clear:

```

Feb 24 19:19:43 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0618~~ STM801 NONE INFO
^M      Location: 47.166.56.10^M      Notification Id: 13^M      State: Cleared^M
Time: Jan 24 19:19:49 2004

```

Sample Raise:

```

Feb 24 19:19:43 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0619~~ STM801 MAJOR FLT
STM Fault^M      Location: 47.166.56.10^M      Notification Id: 14^M      State:
Raised^M      Category: qualityOfService^M      Cause: thresholdCrossed^M      Time:
Jan 24 19:19:49 2004^M      Component Id: STORMIA=langley1^M      Specific Problem:
^M      Description: Status: Alarm raised. Used memory percentage is 18.24. Majo^M
r alarm threshold value is 6.00.

```

Performance

OM and PM Documentation references for STORM

The SNMP based attributes that can be collected from the STORM device are documented in:

- NN10054-711 - STORM Performance Management Customer Document

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided.

XML

The following is an example of Performance data for STORM in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
- <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
  <FileCreationTime>2005-03-15T15:25:04EST</FileCreationTime>
- <System>
  <SystemId>NortelNetworks/IEMS</SystemId>
- <Entity Type="STORM">
  <EntityId>47.166.56.10</EntityId>
- <Table MeasurementKind="Snapshot" IntervalDuration="5">
  <TableId>.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTable.hrStorageEntry</TableId>
  <CaptureTime>2005-03-15T15:25:00EST</CaptureTime>
- <Labels>
  <Label>hrStorageIndex</Label>
  <Label>hrStorageType</Label>
  <Label>hrStorageDescr</Label>
  <Label>hrStorageAllocationUnits</Label>
  <Label>hrStorageSize</Label>
  <Label>hrStorageUsed</Label>
  <Label>hrStorageAllocationFailures</Label>
  </Labels>
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2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk</Value>
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```

```
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- <RowValue>
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2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk</Value>
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</RowValue>
- <RowValue>
  <Value>4096</Value>
</RowValue>
- <RowValue>
  <Value>924496</Value>
</RowValue>
- <RowValue>
  <Value>505263</Value>
</RowValue>
- <RowValue>
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```

```
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2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk</Value>
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```
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2.host.hrStorage.hrStorageTypes.hrStorageOther</Value>
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2.host.hrStorage.hrStorageTypes.hrStorageVirtualMemory</Value>
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```

```
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2.host.hrStorage.hrStorageTypes.hrStorageRam</Value>
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</RowValue>
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2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk</Value>
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2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk</Value>
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2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk</Value>
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- <RowValue>
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```

```
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2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk</Value>
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```

```
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- <RowValue>
  <Value>/nfsserv/3pc/1/cs</Value>
</RowValue>
- <RowValue>
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</RowValue>
- <RowValue>
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```



```
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2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk</Value>
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- <RowValue>
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- <RowValue>
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- <RowValue>
```

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- <RowValue>
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- <RowValue>
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- <RowValue>
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- <RowValue>
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- <RowValue>
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</RowValue>
- <RowValue>
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- <RowValue>
  <Value>/nfsserv/3pc/7/cs</Value>
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- <RowValue>
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```

```
</RowValue>
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- <RowValue>
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- <RowValue>
  <Value>/nfsserv/3pc/6/mtc</Value>
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- <RowValue>
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- <RowValue>
  <Value>260944</Value>
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- <RowValue>
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2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk</Value>
</RowValue>
- <RowValue>
  <Value>/nfsserv/3pc/6/cs</Value>
</RowValue>
- <RowValue>
```

```
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- <RowValue>
  <Value>875344</Value>
  </RowValue>
- <RowValue>
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- <RowValue>
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- <RowOfValues>
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- <RowValue>
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- <RowValue>
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- <RowValue>
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- <RowValue>
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- <RowValue>
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- <RowValue>
  <Value>.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk</Value>
  </RowValue>
- <RowValue>
  <Value>/nfsserv/3pc/5/mtc</Value>
  </RowValue>
```

```
- <RowValue>
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- <RowValue>
  <Value>260944</Value>
</RowValue>
- <RowValue>
  <Value>37457</Value>
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- <RowValue>
  <Value>0</Value>
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</Table>
- <SingleValues MeasurementKind="Snapshot" IntervalDuration="5">
- <SingleValue>
  <CaptureTime>2005-03-15T15:25:00EST</CaptureTime>
  <MeasureId>sysDescr</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.system</MeasureSuppId1>
  <Value>Linux langley40 2.4.19-xfs #1 SMP Fri Nov 7 11:18:05 EST 2003
i686</Value>
  <Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-15T15:25:00EST</CaptureTime>
  <MeasureId>snmpOutPkts</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
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  <Reliability>Valid</Reliability>
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  <MeasureId>snmpInBadCommunityNames</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>7</Value>
  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2005-03-15T15:25:00EST</CaptureTime>
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```

```
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- <SingleValue>
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- <SingleValue>
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- <SingleValue>
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  <MeasureId>snmpInTotalSetVars</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
  <CaptureTime>2005-03-15T15:25:00EST</CaptureTime>
  <MeasureId>snmpInASNParseErrs</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2005-03-15T15:25:00EST</CaptureTime>
  <MeasureId>snmpSilentDrops</MeasureId>
  <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
  <Value>0</Value>
  <Reliability>Valid</Reliability>
  </SingleValue>
- <SingleValue>
```

```

    <CaptureTime>2005-03-15T15:25:00EST</CaptureTime>
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    <MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem</MeasureSuppId1>
    <Value>2005-3-15,20:25:0.0,+0:0</Value>
    <Reliability>Valid</Reliability>
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- <SingleValue>
  <CaptureTime>2005-03-15T15:25:00EST</CaptureTime>
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2.host.hrSystem</MeasureSuppId1>
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</System>
</PMFile>

```

CSV

The following is an example of Performance data for STORM in CSV format:

```

PMFile=Begin
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2005-03-15T15:00:04EST

System=Begin
SystemId
NortelNetworks/IEMS

Entity=Begin
EntityId,Type
47.166.56.10,STORM

```


Table=Begin

TableId, MeasurementKind, IntervalDuration, CaptureTime

.iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTable.hrStorageEntry, Snapshot, 5, 2005-03-15T15:00:01EST

Label, Label, Label, Label, Label, Label, Label

hrStorageIndex, hrStorageType, hrStorageDescr, hrStorageAllocationUnits, hrStorageSize, hrStorageUsed, hrStorageAllocationFailures

Value, Value, Value, Value, Value, Value, Value

14, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk, /nfsserv/3pc/5/cs, 4096, 924496, 591998, 0

13, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk, /nfsserv/3pc/4/mtc, 4096, 260944, 71425, 0

12, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk, /nfsserv/3pc/4/cs, 4096, 924496, 505263, 0

11, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk, /nfsserv/3pc/3/mtc, 4096, 260944, 66722, 0

10, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk, /nfsserv/3pc/3/cs, 4096, 924496, 486565, 0

103, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageOther, Memory Buffers, 256, 53469, 0, 1026

102, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageVirtualMemory, Swap Space, 1024, 0, 0, 1025

101, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageRam, Real Memory, 1024, 514140, 381096, 769

22, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk, /nfsserv/3pc/8/mtc, 4096, 260944, 39831, 0

21, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk, /nfsserv/3pc/8/cs, 4096, 875344, 639076, 0

9, .iso.org.dod.internet.mgmt.mib-

2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk, /nfsserv/3pc/2/mtc, 4096, 260944, 41533, 0

```
20,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/3pc/7/mtc,4096,2
60944,37870,0

8,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/3pc/2/cs,4096,92
4496,627594,0

7,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/3pc/1/mtc,4096,2
60944,64172,0

6,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/3pc/1/cs,4096,92
4496,484559,0

5,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/3pc/0/mtc,4096,2
60944,41691,0

4,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/3pc/0/cs,4096,92
4496,667345,0

3,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/storm,4096,260944,298,0

2,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/boot,1024,101018,58993,0

1,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/,1024,59301,53469,0

19,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/3pc/7/cs,4096,87
5344,551564,0

18,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/3pc/6/mtc,4096,2
60944,41894,0

17,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/3pc/6/cs,4096,87
5344,600004,0

16,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/usp,4096,514896,
13886,0

15,.iso.org.dod.internet.mgmt.mib-
2.host.hrStorage.hrStorageTypes.hrStorageFixedDisk,/nfsserv/3pc/5/mtc,4096,2
60944,37447,0

Table=End
```

SingleValues=Begin

MeasurementKind,IntervalDuration

Snapshot,5

```
MeasureId,CaptureTime,MeasureSuppId1,Value,Reliability
sysDescr,2005-03-15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-
2.system,Linux langley40 2.4.19-xfs #1 SMP Fri Nov 7 11:18:05 EST 2003
i686,Valid
snmpOutPkts,2005-03-15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,105803,Valid
snmpInBadVersions,2005-03-15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInBadCommunityNames,2005-03-
15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-2.snmp,7,Valid
snmpInTotalReqVars,2005-03-15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,558666,Valid
snmpOutTraps,2005-03-15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,13396,Valid
snmpInBadCommunityUses,2005-03-
15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
snmpInPkts,2005-03-15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,96979,Valid
snmpInTotalSetVars,2005-03-15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInASNParseErrs,2005-03-15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpSilentDrops,2005-03-15T15:00:00EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
hrSystemDate,2005-03-15T15:00:01EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,2005-3-15,20:0:1.0,+0:0,Valid
hrSystemUptime,2005-03-15T15:00:01EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,1640131,Valid
hrSystemProcesses,2005-03-15T15:00:01EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,80,Valid
SingleValues=End

Entity=End

System=End

PMFile=End
```

GUI/CLUI Documentation for STORM

GUI Launching and User procedures

- NN10024-111 (STORM Basics)

Related documents

- NN10066-461 (Understanding STORM)
- NN10110-511 (STORM Configuration)
- NN10054-711 (STORM Performance)
- NN10176-611 (STORM Administration and Security)

Universal Audio Server (UAS)

This section contains IEMS Northbound log samples and device documentation references for the UAS.

UAS Fault Interface

Fault documentation for UAS :

- NN10073-911 UAS Fault Management

Fault Mapping for UAS

The following criteria can be used for looking up information on specific faults for UAS.

Fault Correlation for UAS

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
UAS	logname and number	logname and number	logname and number	logname and number	NN10073-911 UAS Fault Management

Northbound Fault Formats for UAS

SCC2

The following is an example of a UAS log in SCC2 format:

```
*C59 UAS 301 0723 TBL  UAS Fault
    Location: UAS12_Test
    NotificationID: 2109441
    State: Raise
    Category: Processing Error
    Cause: Software error
    Time: Jan 22 15:41:28 2004
    Component Id: UAS;UASUnit=MATTA-2;Software=Call_Engine_1
    Specific Problem: 12289
    Description: CallEngine test alarm critical number 1
```

NTSTD

The following is an example of a UAS log in NTSTD format:

```
COMPACT506BT ***  UAS301 Jan22 20:59:00 1149 TBL  UAS Fault
    Location: UAS12_Test
    NotificationID: 2109441
    State: Raise
    Category: Processing Error
    Cause: Software error
    Time: Jan 22 15:41:28 2004
    Component Id: UAS;UASUnit=MATTA-2;Software=Call_Engine_1
    Specific Problem: 12289
    Description: CallEngine test alarm critical number 1
```

SNMP

The following is an example of a UAS log in SNMP format:

```
sysUpTime.0 => 3:21:08
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.11
6.19.50.48.48.52.45.49.45.50.50.44.51.58.53.57.58.48.46.52.44.28556
alarmActiveDateAndTime => 2004-1-22,3:59:0.4,
alarmActiveDescription => DeviceSpecificInfo=Unavailable;Location: UAS12_Test
NotificationID: 2109441
State: Raise
```

Category: Processing Error

Cause: Software error

Time: Jan 22 15:41:28 2004

Component Id: UAS;UASUnit=MATTA-2;Software=Call_Engine_1

Specific Problem: 12289

Description: CallEngine test alarm critical number 1

Syslog

The following is an example of a UAS log in Syslog format:

```
Jan 22 15:59:00 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=3086~~ UAS301 CRIT TBL UAS
Fault^M      Location: UAS12_Test^M      NotificationID: 2109441^M      State:
Raise^M      Category: Processing Error^M      Cause: Software error^M      Time:
Jan 22 15:41:28 2004^M      Component Id: UAS;UASUnit=MATTA-
2;Software=Call_Engine_1^M      Specific Problem: 12289^M      Description:
CallEngine test alarm critical number 1
```

Performance

OM and PM Documentation references for UAS

- NTP NN10139-001 UAS Performance

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided
each of the Northbound formats provided

XML

The following is an example of performance data for UAS in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
<FileCreationTime>2005-01-13T14:15:01EST</FileCreationTime>
<System>
<SystemId>NortelNetworks/IEMS</SystemId>
<Entity Type="UAS">
<EntityId>47.142.89.82</EntityId>
<Table MeasurementKind="Snapshot" IntervalDuration="5">
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```

CSV

The following is an example of performance data for UAS in CSV format:

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MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime

PM,commonFormat.xsd,2005-02-09T15:30:20EST

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SystemId

NortelNetworks/IEMS

Entity=Begin

EntityId,Type

47.142.89.80,UAS

Table=Begin

TableId,MeasurementKind,IntervalDuration,CaptureTime

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Label,Label,Label

norUasResourceName,norUasRequestCount,norUasRequestsFailed

Value,Value,Value

EndpointIdPool3,0,0

EndpointIdPool2,0,0

EndpointIdPool1,0,0

EndpointIdPool0,0,0

Table=End

SingleValues=Begin

MeasurementKind,IntervalDuration

Snapshot,30

MeasureId,CaptureTime,MeasureSuppId1,Value,Reliability

norUasUdpSendErrors,2005-02-

09T15:30:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.uas.norUasCallEngineObjects,0,Valid

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09T15:30:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.uas.nor
UasCallEngineObjects,0,Valid

norUasCallControlMessageSendFailures,2005-02-
09T15:30:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.uas.nor
UasCallEngineObjects,0,Valid

norUasMgcpMessageRetransmissions,2005-02-
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UasCallEngineObjects,0,Valid

norUasAudioSegmentPlayed,2005-02-
09T15:30:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.uas.nor
UasCallEngineObjects,0,Valid

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09T15:30:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.uas.nor
UasCallEngineObjects,0,Valid

norUasRestart,2005-02-
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norUasProtocolMessageValidationErrors,2005-02-
09T15:30:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.uas.nor
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09T15:30:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.uas.nor
UasCallEngineObjects,0,Valid

norUasMgcpMessageRetransmissionFailures,2005-02-
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09T15:30:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.uas.nor
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09T15:30:02EST,.iso.org.dod.internet.private.enterprises.nortel.voip.uas.nor
UasCallEngineObjects,0,Valid

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UasConfServiceObjects,0,Valid

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UasConfServiceObjects,0,Valid

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Entity=End

System=End

PMFile=End
```

GUI/CLUI Documentation for UAS

GUI Launching and User procedures

- NTP NN10047-461 UAS Basics

Related documents

- NTP NN10095-511 UAS Configuration
- NTP NN10161-611 UAS Security
- NTP NN10047-461 UAS Upgrades

Universal Signaling Point (USP)

This section contains IEMS Northbound log samples and device documentation references for the USP.

USP Fault Interface

Fault documentation for USP :

- NN10071911 - USP Fault Management
- NN10072911 - USP-Compact Fault Management

Fault Mapping for USP

The following criteria can be used for looking up information on specific faults for USP.

Fault Correlation for USP

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
USP	Specific Problem: Log Group=<text> & Log Number=<num ber> Note: Log GroupID is not used	Specific Problem: Log Group=<text> & Log Number=<num ber> Note: Log GroupID is not used	Specific Problem: Log Group=<text> & Log Number=<num ber> Note: Log GroupID is not used	Specific Problem: Log Group=<text> & Log Number=<num ber> Note: Log GroupID is not used	NN10071911 USP Fault Management

Northbound Fault Formats for USP

SCC2

The following is an example of a USP log in SCC2 format:

```
**10 USP 398 0022 FLT  USP Fault
Location: 47.135.60.201
Notification Id: 526
State: Raised
Category: processingError
Cause: applicationSubsystemFailure(2)
Time: Jan 20 07:10:29 2004
Component Id: USP=autoimage;Shelf=0;Slot=15;ContextID=0x0
```

Specific Problem: Log GroupID=13;Log Group=System Node Maintenance;Log Number=3

Description: Transition to DISABLED Operational State.

NTSTD

The following is an example of a USP log in NTSTD format:

```
COMPACT06BT  ** USP398 Jan20 12:10:29 0022 FLT  USP Fault
Location: 47.135.60.201
Notification Id: 526
State: Raised
Category: processingError
Cause: applicationSubsystemFailure(2)
Time: Jan 20 07:10:29 2004
Component Id: USP=autoimage;Shelf=0;Slot=15;ContextID=0x0
Specific Problem: Log GroupID=13;Log Group=System Node Maintenance;Log Number=3
Description: Transition to DISABLED Operational State.
```

SNMP

The following is an example of a USP log in SNMP format:

```
sysUpTime.0 => 2:58:15
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.48.44.55.58.49.48.58.50.57.46.48.44.36582
alarmActiveDateAndTime => 2004-1-20,7:10:29.0,
alarmActiveDescription =>
DeviceSpecificInfo=applicationSubsystemFailure(2);Transition to DISABLED Operational
State.
nnExtAlarmActiveEventType => 3
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => USP 398
nnExtAlarmActiveResourceDescription => IEMS=usp_germany-1321-Unit-
0;USP=autoimage;Shelf=0;Slot=15;ContextID=0x0
nnExtAlarmActiveManualClear => 0
nnExtAlarmActiveSequenceNumber => 21
```

Syslog

The following is an example of a USP log in Syslog format:

```
Feb 22 01:50:39 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0088~~ USP398 MAJOR FLT
USP Fault^M      Location: 47.135.60.201^M      Notification Id: 526^M      State:
Raised^M      Category: processingError^M      Cause:
applicationSubsystemFailure(2)^M      Time: Jan 20 07:10:29 2004^M      Component
Id: USP=autoimage;Shelf=0;Slot=15;ContextID=0x0^M      Specific Problem: Log
GroupID=13;Log Group=System Node Maintenance;Log N^M      umber=3^M      Description:
Transition to DISABLED Operational State.
```

Performance

OM and PM Documentation references for USP

- NN10137711 - USP Performance Management
- NN10138711 - USP-Compact Performance Management
- USP Logs & OMs - USP Logs and OMs

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided.

Note that for SN08, the OMs/PMs are provided in raw CSV format.

XML

The following is an example of performance data for USP in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
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<SystemId>NortelNetworks/IEMS</SystemId>
<Entity Type="USP">
<EntityId>47.135.60.71</EntityId>
<Table MeasurementKind="Snapshot" IntervalDuration="5">
<TableId>Linkset Utilization</TableId>
<CaptureTime>2004-12-09T09:10:00EST</CaptureTime>
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<Label>RST Transmitted Count</Label>
<Label>TFA and TCA Received Count</Label>
<Label>TFA and TCA Transmitted Count</Label>
<Label>TFC Received Count</Label>
<Label>TFC Transmitted Count</Label>
<Label>TFP and TCP Received Count</Label>
<Label>TFP and TCP Transmitted Count</Label>
<Label>TFR and TCR Received Count</Label>
<Label>TFR and TCR Transmitted Count</Label>
```


<Label>UPU Received Count</Label>

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[illegible]

[illegible]


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```



```

<Labels>
<Label>Alt Routing on Cong Count</Label>
<Label>GTT Performed Count</Label>
<Label>Hop Counter Violation Count</Label>
<Label>No Translation for Addr Count</Label>
<Label>Trans Type Not Found Count</Label>
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<Value>0</Value>
</RowValue>
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<Value>0</Value>
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<Value>0</Value>
</RowValue>
</RowOfValues>
</Table>
</Entity>
</System>
</PMFile>

```

CSV

The following is an example of performance data for USP in CSV format:

```

PMFile=Begin
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2004-12-09T16:35:32EST

System=Begin
SystemId
NortelNetworks/IEMS

Entity=Begin
EntityId,Type
47.135.60.71,USP

Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
Linkset Utilization,Snapshot,5,2004-12-09T09:15:00EST
Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label
Linkset Inactivity Duration,RST Received Count,RST Transmitted Count,TFA and TCA
Received Count,TFA and TCA Transmitted Count,TFC Received Count,TFC Transmitted
Count,TFP and TCP Received Count,TFP and TCP Transmitted Count,TFR and TCR
Received Count,TFR and TCR Transmitted Count,UPU Received Count
Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value
0,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0

```

```
300,0,0,0,0,0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0
300,0,0,0,0,0,0,0,0,0,0,0,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
ASP Path Traffic,Snapshot,5,2004-12-09T09:15:00EST
Label,Label,Label,Label,Label,Label
Discarded MSUs Count,Discarded MTP3b MSUs Count,Originated MSUs Count,Received
MSUs Count,Sent MSUs Count,Terminated MSUs Count
Value,Value,Value,Value,Value,Value
,,0,,,0
0,0,,,0,0,
,,8376,,,0
,,8377,,,0
,,8378,,,0
,,8378,,,0
,,8378,,,0
,,8378,,,0
,,8378,,,0
,,0,,,0
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,,0,,,0
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0,0,,0,0,
,,0,,,0
,,0,,,0
,,0,,,0
,,0,,,0
0,0,,0,0,
,,0,,,0
,,0,,,0
0,0,,0,0,
0,0,,0,0,
,,0,,,0
0,0,,0,0,
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
SCCP System Totals,Snapshot,5,2004-12-09T09:15:00EST
Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,La
bel,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,La
bel,Label,Label,Label,Label
Conn-Orient IP Dist Viol Count,Conn-Orient Msg Handled Count,Conn-Orient Msg Rtg
Fail Count,LUDT Msg Rcvd Count,LUDT Msg Sent Count,LUDTS Msg Sent Count,MSUs Disc-
Unrec SCCP Msg Count,Msg Incompatibility,Msg too large for segmentation,Out of
sequence SCCP msg count,Reassembly Timer Expired,Reassembly buffer
unavailable,Reassembly failed,Routing Failure - Unequip.User,SCCP Routing Failure
Count,SSA Received Count,SSA Transmitted Count,SSP Received Count,SSP Transmitted
Count,SST Received Count,SST Transmitted Count,Segmentation failed,Total messages
handled,UDT Msg Rcvd Count,UDT Msg Sent Count,UDTS Msg Rcvd Count,UDTS Msg Sent
Count,XUDT Msg Rcvd Count,XUDT Msg Sent Count,XUDTS Msg Rcvd Count,XUDTS Msg Sent
Count
Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Va
lue,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Valu
e,Value,Value,Value,Value
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
Table=End
```



```
0,0,0,300,0,100
0,0,0,300,0,100
300,0,0,0,0,0
0,0,0,300,0,100
0,0,300,0,0,100
0,0,0,300,0,100
0,0,0,300,0,100
0,0,0,300,0,100
0,0,0,0,300,0
300,0,0,0,0,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
SCTP Management/Traffic Counts,Snapshot,5,2004-12-09T09:15:00EST
Label,Label,Label,Label,Label,Label,Label,Label
Association Aborted Count,Association Establish Attempts,Association Terminated
Count,Chunk Retransmitted Count,Chunks Received Count,Chunks Transmitted
Count,Established Association Count,Out of Blue SCTP Packet
Value,Value,Value,Value,Value,Value,Value,Value
0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
Log Server,Snapshot,5,2004-12-09T09:15:00EST
Label,Label,Label,Label,Label,Label,Label,Label,Label
Critical Alarms Ack Count,Critical Alarms Cleared Count,Critical Alarms Received
Count,Major Alarms Ack Count,Major Alarms Cleared Count,Major Alarms Received
Count,Minor Alarms Ack Count,Minor Alarms Cleared Count,Minor Alarms Received
Count
Value,Value,Value,Value,Value,Value,Value,Value,Value
0,0,0,0,0,0,0,0,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
UDP,Snapshot,5,2004-12-09T09:15:00EST
Label
Full Socket Count
Value
0
0
0
0
0
0
0
0
0
0
0
0
0
0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
Gateway Screening Results,Snapshot,5,2004-12-09T09:15:00EST
```


Table=End

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
ASP Path Management,Snapshot,5,2004-12-09T09:15:00EST
Label,Label,Label,Label,Label,Label
Path Down Time,Path Restore Time,Path Up Time,Path entered Down state,Path entered
Restoring state,Path entered Up state
Value,Value,Value,Value,Value,Value
300,0,0,0,0,0
300,0,0,0,0,0
300,0,0,0,0,0
300,0,0,0,0,0
300,0,0,0,0,0
300,0,0,0,0,0
300,0,0,0,0,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
Carrier,Snapshot,5,2004-12-09T09:15:00EST
Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,La
bel,Label,Label,Label,Label,Label
Far End Line - Errored Seconds,Far End P - Sev Err Frm/AIS Sec,Far End P - Severely
Err Secs,Far End P - Unavailable Seconds,Far End Path - Code Violations,Far End
Path - Controlled Slips,Far End Path - Errored Seconds,Far End Path - Failure
Count,Line - Code Violations,Line - Errored Seconds,Line - Loss of Signal
Seconds,Line - Severely Errored Seconds,P - Severely Err Frame/AIS Secs,Path - AIS
Seconds,Path - Code Violations,Path - Errored Seconds,Path - Failure Count,Path -
Severely Errored Seconds,Path - Unavailable Seconds
Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Va
lue,Value,Value,Value,Value,Value
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
ATM Driver Messaging,Snapshot,5,2004-12-09T09:15:00EST
Label,Label,Label,Label,Label,Label,Label,Label,Label,Label,Label
Duplicate Messages Count,IP Message Count,Plane 1 CRC Error Count,Plane 1 Messages
Count,Plane 2 CRC Error Count,Plane 2 Messages Count,Raw Cell Count,Raw Message
Count,SSCOP Message Count,Sequence Number Reset Count
Value,Value,Value,Value,Value,Value,Value,Value,Value,Value,Value
1725,636,0,1725,0,1725,0,0,1089,0
1730,636,0,1730,0,1730,0,0,1094,0
1723,636,0,1723,0,1723,0,0,1087,0
24364,636,0,24364,0,24364,0,0,23728,0
1995,871,0,1995,0,1995,0,0,1124,0
24364,636,0,24364,0,24364,0,0,23728,0
3066,3066,0,3066,0,3066,0,0,0,0
3066,3066,0,3066,0,3066,0,0,0,0
1723,636,0,1723,0,1723,0,0,1087,0
1124,36,0,1124,0,1124,0,0,1088,0
1123,36,0,1123,0,1123,0,0,1087,0
1731,636,0,1731,0,1731,0,0,1095,0
Table=End
```

```
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
ASP Path Utilization,Snapshot,5,2004-12-09T09:15:00EST
```

```
Label,Label,Label,Label,Label
DAUD Received Count,DAVA Transmitted Count,DUNA Transmitted Count,DUPU
Transmitted Count,SCON Transmitted Count
Value,Value,Value,Value,Value
0,0,0,0,0
0,0,0,0,0
0,0,0,0,0
0,0,0,0,0
0,0,0,0,0
0,0,0,0,0
0,0,0,0,0
Table=End

Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
SCCP GTT,Snapshot,5,2004-12-09T09:15:00EST
Label,Label,Label,Label,Label
Alt Routing on Cong Count,GTT Performed Count,Hop Counter Violation Count,No
Translation for Addr Count,Trans Type Not Found Count
Value,Value,Value,Value,Value
0,0,0,0,0
Table=End

Entity=End

System=End

PMFile=End
```

GUI/CLUI Documentation for USP

GUI Launching and User procedures

- NN10093511 - USP Configuration Management
- NN10094511 - USP-Compact Operation Configuration
- NN10159611 - USP Administration and Security
- NN10160611 - USP-Compact Administration and Security

Related documents

- NN10008111 - USP Basics
- NN10045461 - Upgrading the USP
- NN10009111 - USP-Compact Product and Technology Fundamentals

XACore

This section contains IEMS Northbound log samples and device documentation references for the XACore.

XACore Fault Interface

Fault documentation for XACore :

- 297-8991-510 - XA-Core Maintenance Manual
- 297-8991-511 - XA-Core Maintenance Guide
- NN10275-909 - Succession fault Management logs Reference
- NN10083-911 - Communication Server 2000 Fault Management

DMS Standard (North America)

- 297-8021-840P1 - North American DMS100 Log Report Reference Manual Volume 1 of 8
- 297-8021-840P2 - North American DMS100 Log Report Reference Manual Volume 2 of 8
- 297-8021-840P3 - North American DMS100 Log Report Reference Manual Volume 3 of 8
- 297-8021-840P4 - North American DMS100 Log Report Reference Manual Volume 4 of 8
- 297-8021-840P5 - North American DMS100 Log Report Reference Manual Volume 5 of 8
- 297-8021-840P6 - North American DMS100 Log Report Reference Manual Volume 6 of 8
- 297-8021-840P7 - North American DMS100 Log Report Reference Manual Volume 7 of 8
- 297-8021-840P8 - North American DMS100 Log Report Reference Manual Volume 8 of 8

International Succession

- 297-9051-8401 - DMS100 Log Report Reference Manual Volume 1 of 7
- 297-9051-8402 - DMS100 Log Report Reference Manual Volume 2 of 7
- 297-9051-8403 - DMS100 Log Report Reference Manual Volume 3 of 7
- 297-9051-8404 - DMS100 Log Report Reference Manual Volume 4 of 7
- 297-9051-8405 - DMS100 Log Report Reference Manual Volume 5 of 7
- 297-9051-8406 - DMS100 Log Report Reference Manual Volume 6 of 7
- 297-9051-8407 - DMS100 Log Report Reference Manual Volume 7 of 7

Fault Mapping for XACore

The following criteria can be used for looking up information on specific faults for XACore.

Fault Correlation for XACore

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
XACore	log name and log number	log name and log number	log name and log number	log name and log number	297-8991-510 - XA-Core Maintenance Manual

Northbound Fault Formats for XACore**SCC2**

The following is an example of a XACore log in SCC2 format:

```
* 47 XAC 305 0114 FLT RTIF (Reset Terminal Interface)
DESCRIPTION: State has changed from INSV to SYSB by FAULT action
PORT: Type State Site FL Row Bay Shf/Slt/Pk/Pt EqPEC/Serial
RTIF SYSB HOST 01 A00 DPCC:00 00 15R U 1 NTLX08AA/ NNTM17205KR8
REASON: Device Fault: RTIF IPC Protocol Error.
FAULT RECORD ID: 880166C7
```

NTSTD

The following is an example of a XACore log in NTSTD format:

```
COMPACT06BT * XAC305 Feb15 00:47:43 0114 FLT RTIF (Reset Terminal Interface)
DESCRIPTION: State has changed from INSV to SYSB by FAULT action
PORT: Type State Site FL Row Bay Shf/Slt/Pk/Pt EqPEC/Serial
RTIF SYSB HOST 01 A00 DPCC:00 00 15R U 1 NTLX08AA/ NNTM17205KR8
REASON: Device Fault: RTIF IPC Protocol Error.
FAULT RECORD ID: 880166C7
```

SNMP

The following is an example of a XACore log in SNMP format:

```
sysUpTime. => 0:28:39
snmpTrapOID. => nnExtAlarmMinor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.54.45.50.52.44.51.58.53.51.58.52.49.46.48.44.5248
```

```
alarmActiveDateAndTime => 2004-6-24,3:53:41.0
alarmActiveDescription => DeviceSpecificInfo=localTransmissionError;time: 2004 06 24
15 53 41
event: set
compId: EM MANTEO LP 3 SONET 2
severity: minor
faultcode: 70115203
alarmType: communications
commentData: Far end has raised a Line Remote Failure Indication alarm (rxRfiAlarm).
Check the operational attributes of the far-end.

nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => PPEM300
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0m3.us.nortel.com-MDM-Mgr;EM MANTEO
LP 3 SONET 2
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 1375

sysUpTime. => 0:28:47
snmpTrapOID. => nnExtAlarmMinor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.54.45.50.52.44.51.58.53.51.58.52.56.46.48.44.5249
alarmActiveDateAndTime => 2004-6-24,3:53:48.0
alarmActiveDescription => time: 2004 06 24 15 53 48
event: set
compId: EM MANTEO LP 3 SONET 2
severity: minor
faultcode: 70115210
alarmType: communications
commentData: Far end line: Entering unavailable state (10 consecutive SESs).
Check the provisioning or the hardware on the local and far end.

nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 12
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => PPEM300
```

```
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0m3.us.nortel.com-MDM-Mgr;EM MANTEO  
LP 3 SONET 2  
nnExtAlarmActiveManualClear => 1  
nnExtAlarmActiveSequenceNumber => 1376
```

Syslog

The following is an example of a XACore log in Syslog format:

```
Feb 14 19:47:43 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=9773~~ XAC305 MINOR FLT  
RTIF (Reset Terminal Interface)^M node CM ^M DESCRIPTION: State  
has changed from INSV to SYSB by FAULT action^M PORT: Type State Site FL Row  
Bay Shf/Slt/Pk/Pt EqPEC/Serial^M RTIF SYSB HOST 01 A00 DPCC:00 00  
15R U 1 NTLX08AA/ NNTM17205KR8^M REASON: Device Fault: RTIF IPC Protocol  
Error. ^M FAULT RECORD ID: 880166C7
```

Performance

OM and PM Documentation references for XACore

- 297-8991-810 - XA-Core Reference Manual
- NN10149-711 - Communications Server 2000 Performance Management

DMS Standard (North America)

- 297-8021-814P1 - North American DMS-100 Operational Measurements Reference Manual Volume 1 of 6
- 297-8021-814P2 - North American DMS-100 Operational Measurements Reference Manual Volume 2 of 6
- 297-8021-814P3 - North American DMS-100 Operational Measurements Reference Manual Volume 3 of 6
- 297-8021-814P4 - North American DMS-100 Operational Measurements Reference Manual Volume 4 of 6
- 297-8021-814P5 - North American DMS-100 Operational Measurements Reference Manual Volume 5 of 6
- 297-8021-814P6 - North American DMS-100 Operational Measurements Reference Manual Volume 6 of 6

International Succession

- 297-9051-8141 - DMS-100 Family Operational Measurements Reference Manual Volume 1 of 6
- 297-9051-8142 - DMS-100 Family Operational Measurements Reference Manual Volume 2 of 6

- 297-9051-8143 - DMS-100 Family Operational Measurements Reference Manual Volume 3 of 6
- 297-9051-8144 - DMS-100 Family Operational Measurements Reference Manual Volume 4 of 6
- 297-9051-8145 - DMS-100 Family Operational Measurements Reference Manual Volume 5 of 6
- 297-9051-8146 - DMS-100 Family Operational Measurements Reference Manual Volume 6 of 6

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

Performance measurements for XACore are available from the CS2K Core Manager. See NN10149-711 - Communications Server 2000 Performance Management for more information.

XML

The following is an example of Performance data for XACore in XML format:

***Note:** The IEMS northbound performance interface does not support this device.*

CSV

The following is an example of Performance data for XACore in CSV format:

***Note:** The IEMS northbound performance interface does not support this device.*

GUI/CLUI Documentation for XACore

The XACore provides both command-line and MAP-based interfaces accessed through the CS2000 Core Manager.

GUI/CLUI Launching and User procedures

- NN10018-111 - CS2000 Core Manager Basics
see section “Accessing the Core”

Related documents

- NN10197-111 - Communication Server 2000 Basics
- NN10193-511 - Communication Server 2000 Configuration Management
- NN10127-811 - Communication Server 2000 Accounting Management
- NN10171-611 - Communication Server 2000 Security and Administration

- 297-5051-921 - SuperNode Data Manager DDMS ASCII CI Gateway User Guide
- 297-5161-022P1 - Advanced Intelligent Network Service Enablers SIG Volume 1 of 3
- 297-5161-022P2 - Advanced Intelligent Network Service Enablers SIG Volume 2 of 3
- 297-5161-022P3 - Advanced Intelligent Network Service Enablers SIG Volume 3 of 3
- 297-8021-350P1 - North American DMS-100 Translations Guide Volume 1 of 25
- 297-8021-350P2 - North American DMS-100 Translations Guide Volume 2 of 25
- 297-8021-350P3 - North American DMS-100 Translations Guide Volume 3 of 25
- 297-8021-350P4 - North American DMS-100 Translations Guide Volume 4 of 25
- 297-8021-350P5 - North American DMS-100 Translations Guide Volume 5 of 25
- 297-8021-350P6 - North American DMS-100 Translations Guide Volume 6 of 25
- 297-8021-350P7 - North American DMS-100 Translations Guide Volume 7 of 25
- 297-8021-350P8 - North American DMS-100 Translations Guide Volume 8 of 25
- 297-8021-350P9 - North American DMS-100 Translations Guide Volume 9 of 25
- 297-8021-350P10 - North American DMS-100 Translations Guide Volume 10 of 25
- 297-8021-350P11 - North American DMS-100 Translations Guide Volume 11 of 25
- 297-8021-350P12 - North American DMS-100 Translations Guide Volume 12 of 25
- 297-8021-350P13 - North American DMS-100 Translations Guide Volume 13 of 25
- 297-8021-350P14 - North American DMS-100 Translations Guide Volume 14 of 25
- 297-8021-350P15 - North American DMS-100 Translations Guide Volume 15 of 25

- 297-8021-350P16 - North American DMS-100 Translations Guide
Volume 16 of 25
- 297-8021-350P17 - North American DMS-100 Translations Guide
Volume 17 of 25
- 297-8021-350P18 - North American DMS-100 Translations Guide
Volume 18 of 25
- 297-8021-350P19 - North American DMS-100 Translations Guide
Volume 19 of 25
- 297-8021-350P20 - North American DMS-100 Translations Guide
Volume 20 of 25
- 297-8021-350P21 - North American DMS-100 Translations Guide
Volume 21 of 25
- 297-8021-350P22 - North American DMS-100 Translations Guide
Volume 22 of 25
- 297-8021-350P23 - North American DMS-100 Translations Guide
Volume 23 of 25
- 297-8021-350P24 - North American DMS-100 Translations Guide
Volume 24 of 25
- 297-8021-350P25 - North American DMS-100 Translations Guide
Volume 25 of 25
- 297-8021-351P1 - DMS-100 Data Schema Reference Manual
- 297-8021-351P2 - DMS-100 Data Schema Reference Manual
- 297-8021-351P3 - DMS-100 Data Schema Reference Manual
- 297-8021-351P4 - DMS-100 Data Schema Reference Manual
- 297-8021-351P5 - DMS-100 Data Schema Reference Manual
- 297-8021-351P6 - DMS-100 Data Schema Reference Manual
- 297-8021-351P7 - DMS-100 Data Schema Reference Manual
- 297-8021-351P8 - DMS-100 Data Schema Reference Manual
- 297-8021-351P9 - DMS-100 Data Schema Reference Manual
- 297-8021-351P10 - DMS-100 Data Schema Reference Manual
- 297-8021-351P11 - DMS-100 Data Schema Reference Manual
- 297-8021-351P12 - DMS-100 Data Schema Reference Manual
- 297-8021-801 - DMS-100 Feature Guide
- 297-8021-808P1 - DMS-100 SERVORD Reference Manual
- 297-8021-808P2 - DMS-100 SERVORD Reference Manual

- 297-8021-814P1 - DMS-100 Operational Measurements Reference Manual
- 297-8021-814P2 - DMS-100 Operational Measurements Reference Manual
- 297-8021-814P3 - DMS-100 Operational Measurements Reference Manual
- 297-8021-814P4 - DMS-100 Operational Measurements Reference Manual
- 297-8021-814P5 - DMS-100 Operational Measurements Reference Manual
- 297-8021-814P6 - DMS-100 Operational Measurements Reference Manual
- 297-8021-840P1 - DMS-100 Logs Reference Manual
- 297-8021-840P2 - DMS-100 Logs Reference Manual
- 297-8021-840P3 - DMS-100 Logs Reference Manual
- 297-8021-840P4 - DMS-100 Logs Reference Manual
- 297-8021-840P5 - DMS-100 Logs Reference Manual
- 297-8021-840P6 - DMS-100 Logs Reference Manual
- 297-8021-840P7 - DMS-100 Logs Reference Manual
- 297-8021-840P8 - DMS-100 Logs Reference Manual
- 297-8021-855P1 - DMS-100 Office Parameters Reference Manual
- 297-8021-855P2 - DMS-100 Office Parameters Reference Manual
- 297-8021-855P3 - DMS-100 Office Parameters Reference Manual
- 297-8991-810 - XA-Core Reference Manual

Platforms

SDM Platform

This section contains IEMS Northbound log samples and device documentation references for the SDM Platform.

SDM Platform Fault Interface

Fault documentation for SDM Platform :

- NN10081-911 SDM Fault Management

Fault Mapping for SDM Platform

The following criteria can be used for looking up information on specific faults for SDM Platform.

Fault Correlation for SDM Platform

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
SDM (Platform) - AIX	logname and number	logname and number	logname and number	logname and number	NN10081-911 SDM Fault Management

Northbound Fault Formats for SDM Platform

SCC2

The following is an example of a SDM Platform log in SCC2 format:

```
* 52 SDM 317 0162 TBL
    node SDM          SDM Base Maintenance
DCE problem detected
Reason: SEC Master Server 47.142.94.49 is down.
```

NTSTD

The following is an example of a SDM Platform log in NTSTD format:

```
COMPACT06BT * SDM 317 Feb15 00:52:49 0162 TBL
    node SDM          SDM Base Maintenance
DCE problem detected
Reason: SEC Master Server 47.142.94.49 is down.
```


SNMP

The following is an example of a SDM Platform log in SNMP format:

```
sysUpTime.0 => 9:27:56
snmpTrapOID.0 => nnExtAlarmMinor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.49.44.54.58.52.49.58.49.52.46.48.44.8995
alarmActiveDateAndTime => 2004-1-14,7:52:49.1
alarmActiveDescription => DeviceSpecificInfo=Unavailable; node SDM      SDM Base
Maintenance
DCE problem detected
Reason: SEC Master Server 47.142.94.49 is down.

nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SDM 317
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0m0.us.nortel.com-SDM;
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 35
```

Syslog

The following is an example of a SDM Platform log in Syslog format:

```
Feb 14 19:52:49 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=9821~~ SDM317 MINOR TBL
^M      node SDM      SDM Base Maintenance^M      DCE problem detected^M      Reason:
SEC Master Server 47.142.94.49 is down.
```

Performance

OM and PM Documentation references for SDM Platform

- NN10147-711 SDM Performance Management

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of performance data for SDM Platform in XML format:

***Note:** The IEMS northbound performance interface does not support this device.*

CSV

The following is an example of performance data for SDM Platform in CSV format:

***Note:** The IEMS northbound performance interface does not support this device.*

GUI/CLUI Documentation for SDM Platform

SDM Platform has a command line user interface that can be accessed via a secure shell.

GUI/CLUI Launching and User procedures

- NN10017-111 SDM Basics (see User Interfaces Overview)

Related documents

- NN10059-461 Upgrading the SDM
- NN10103-511 SDM Configuration Management
- NN10125-811 SDM Accounting
- NN10169-611 SDM Security and Administration

Succession Server Platform Foundation Software (SSPFS)

This section contains IEMS Northbound log samples and device documentation references for the SSPFS platform.

SSPFS Fault Interface

Fault documentation for SSPFS

- NN10440-450 - Upgrading a Carrier VoIP Network

Fault Mapping for SSPFS

The following criteria can be used for looking up information on specific faults for SSPFS.

Fault Correlation for SSPFS

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
SSPFS	logname and number	logname and number	logname and number	logname and number	NN10440-450 Upgrading a Carrier VoIP Network

Northbound Fault Formats for SSPFS

The SSPFS SNMP interface is not implemented yet.

SCC2

The following is an example of a SSPFS log in SCC2 format:

Not available at time of publication

NTSTD

The following is an example of a SSPFS log in NTSTD format:

Not available at time of publication

SNMP

The following is an example of a SSPFS log in SNMP format:

Not available at time of publication

Syslog

The following is an example of a SSPFS log in Syslog format:

Not available at time of publication

Performance**OM and PM Documentation references for SSPFS**

The SSPFS platform does not generate and OMs or PMs, but it does collect such information from other network elements. For more information see:

- NN10276-500 - ATM/IP Configuration Management (Configuration of SNMP Poller)
- Upgrading a Carrier VoIP Network, NN10440-450.

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of performance data for SSPFS platform in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
<FileCreationTime>2004-12-14T13:20:20EST</FileCreationTime>
<System>
<SystemId>NortelNetworks/IEMS</SystemId>
<Entity Type="SSPFS">
<EntityId>47.142.106.220</EntityId>
<Table MeasurementKind="Snapshot" IntervalDuration="5">
<TableId>.iso.org.dod.internet.mgmt.mib-2.ip.ipAddrTable.ipAddrEntry</TableId>
<CaptureTime>2004-12-14T13:20:01EST</CaptureTime>
<Labels>
<Label>ipAdEntAddr</Label>
<Label>ipAdEntIfIndex</Label>
<Label>ipAdEntNetMask</Label>
<Label>ipAdEntBcastAddr</Label>
<Label>ipAdEntReasmMaxSize</Label>
</Labels>
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</RowValue>
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<Value>255.255.255.0</Value>
</RowValue>
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</RowValue>
<RowValue>
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</RowValue>
</RowOfValues>
<RowOfValues>
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</RowValue>
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<Value>255.255.255.0</Value>
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<Value>1</Value>
</RowValue>
<RowValue>
<Value>65535</Value>
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<RowOfValues>
<RowValue>
```

```
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</RowValue>
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<Value>1</Value>
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<RowValue>
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<Value>47.142.106.223</Value>
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<Value>255.255.255.0</Value>
</RowValue>
<RowValue>
<Value>1</Value>
</RowValue>
<RowValue>
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```

```
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</RowOfValues>
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<Value>21482658</Value>
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```

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</SingleValue>
<SingleValue>
<CaptureTime>2004-12-14T13:20:01EST</CaptureTime>
<MeasureId>rsDiskXfer2</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf
</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
```

```

<SingleValue>
<CaptureTime>2004-12-14T13:20:01EST</CaptureTime>
<MeasureId>rsVSwapOut</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf
</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
<SingleValue>
<CaptureTime>2004-12-14T13:20:01EST</CaptureTime>
<MeasureId>rsDiskXfer4</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf
</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
<SingleValue>
<CaptureTime>2004-12-14T13:20:01EST</CaptureTime>
<MeasureId>rsIfInPackets</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf
</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
<SingleValue>
<CaptureTime>2004-12-14T13:20:01EST</CaptureTime>
<MeasureId>rsUserProcessTime</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf
</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>
</PMFile>

```

CSV

The following is an example of performance data for SSPFS platform in CSV format:

```

PMFile=Begin
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2004-12-14T13:20:20EST

System=Begin
SystemId
NortelNetworks/IEMS

Entity=Begin
EntityId,Type
47.142.106.220,SSPFS

Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
.iso.org.dod.internet.mgmt.mib-2.ip.ipAddrTable.ipAddrEntry,Snapshot,5,2004-12-
14T13:20:01EST
Label,Label,Label,Label,Label
ipAdEntAddr,ipAdEntIfIndex,ipAdEntNetMask,ipAdEntBcastAddr,ipAdEntReasmMaxSize
Value,Value,Value,Value,Value
47.142.106.222,1,255.255.255.0,1,65535

```

```
47.142.106.220,2,255.255.255.0,1,65535
192.168.47.1,5,255.255.255.0,1,65535
127.0.0.1,6,255.0.0.0,1,65535
47.142.106.224,4,255.255.255.0,1,65535
47.142.106.223,3,255.255.255.0,1,65535
Table=End
```

```
SingleValues=Begin
MeasurementKind,IntervalDuration
Snapshot,5
MeasureId,CaptureTime,MeasureSuppId1,Value,Reliability
ipInUnknownProtos,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,0,Valid
ipFragCreates,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,418461,Valid
ipOutRequests,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,19623971,Valid
ipInDelivers,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,21482658,Valid
ipOutNoRoutes,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-2.ip,0,Valid
ipDefaultTTL,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,255,Valid
ipReasmReqds,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,137693,Valid
ipInHdrErrors,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-2.ip,0,Valid
ipReasmFails,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-2.ip,0,Valid
ipForwDatagrams,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,0,Valid
ipFragFails,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-2.ip,0,Valid
ipInDiscards,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-2.ip,0,Valid
ipOutDiscards,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-2.ip,4,Valid
ipForwarding,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-2.ip,2,Valid
ipReasmTimeout,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,60,Valid
ipInReceives,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,17207338,Valid
ipReasmOKs,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,137693,Valid
ipRoutingDiscards,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,0,Valid
ipInAddrErrors,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,0,Valid
ipFragOKs,2004-12-14T13:20:00EST,.iso.org.dod.internet.mgmt.mib-
2.ip,138590,Valid
rsIfInErrors,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsSystemProcessTime,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsIfCollisions,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsDiskXfer1,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsVSwapIn,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsDiskXfer3,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
```

```
rsVIntr,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsVPagesIn,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsIfOutPackets,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsNiceModeTime,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsIfOutErrors,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsIdleModeTime,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsVPagesOut,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsDiskXfer2,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsVSwapOut,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsDiskXfer4,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsIfInPackets,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
rsUserProcessTime,2004-12-
14T13:20:01EST,.iso.org.dod.internet.private.enterprises.sun.sunMib.sunHostPerf,
0,Valid
SingleValues=End

Entity=End

System=End

PMFile=End
```

GUI/CLUI Documentation for SSPFS

GUI Launching and User procedures

- NN10276-500 - ATM/IP Configuration Management

Note: Contains information on the SSPFS CLI interface

Related documents

- NN10281-600 - ATM/IP Administration and Security

Element Managers

CS2000 Core Manager

This section contains IEMS Northbound log samples and device documentation references for the CS2K Core Manager.

CS2K Core Manager Fault Interface

Fault documentation for CS2000 Core Manager :

- NN10275-909 - Succession fault Management logs Reference
- NN10082-911 - CS 2000 Core Manager Fault Management

Fault Mapping for CS2000 Core Manager

The following criteria can be used for looking up information on specific faults for CS2000 Core Manager.

Fault Correlation for CS2000 Core Manager

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
CS2000 Core Manager	log name and number	log name and number	log name and number	log name and number	NN10275-909 Succession fault Management logs Reference NN10082-911 CS 2000 Core Manager Fault Management

Northbound Fault Formats for CS2000 Core Manager

SCC2

The following is an example of a CS2000 Core Manager log in SCC2 format:

```
* 06 SDM 550 1506 INFO Node Status Change
```

```
Node:    SDM 0
Status:  ** ISTb      from  ** ISTb
Reason:  Application alarm set. SDM_ETA.eta
```

NTSTD

The following is an example of a CS2000 Core Manager log in NTSTD format:

```
COMPACT506BT  * SDM550 Feb15 03:07:00 1520 INFO Node Status Change
Node:    SDM 0
Status:   InSv      from  * ISTb
Reason:  Application alarm cleared. SDM_ETA.eta
```

SNMP

The following is an example of a CS2000 Core Manager log in SNMP format:

```
sysUpTime. => 1 day, 19:19:26
snmpTrapOID. => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr;
nnExtAlarmMessageDateAndTime => 2004-6-9,3:4:9.1
nnExtAlarmMessageDocumentationPointer => PM 610
nnExtAlarmMessageInfo => 04 PM 610 3352 INFO ABI XPM C-side Link State Change
```

```
Node: SMA2 0      Link: 0      Plane: 0      Port: 0
```

```
From: SYSB      To: INSV
```

```
Reason: Link opened by MG9K/ABI
```

```
sysUpTime.0 => 1 day, 19:19:27
snmpTrapOID.0 =>
alarmActiveResourceId => .0.0
alarmActiveDateAndTime => 2004-6-9,3:4:9.3
alarmActiveDescription => DeviceSpecificInfo=Unavailable;
Node:    SDM 0
Status:  ** ISTb      from  ** ISTb
```

Reason: Application alarm set. SDM_ETA.eta

Syslog

The following is an example of a CS2000 Core Manager log in Syslog format:

```
Feb 14 22:06:01 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=1165~~ SDM550 MINOR INFO
Node Status Change^M          node CM          ^M          Node:   SDM 0^M          Status:  **
ISTb          from  ** ISTb          ^M          Reason: Application alarm set. SDM_ETA.eta
```

Performance

OM and PM Documentation references for CS2000 Core Manager

- NN10148-711 - CS 2000 Core Manager Performance Management

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of performance data for CS2000 Core Manager in XML format:

***Note:** Northbound performance interface not supported for this component.*

CSV

The following is an example of performance data for CS2000 Core Manager in CSV format:

***Note:** Northbound performance interface not supported for this component.*

GUI/CLUI Documentation for CS2000 Core Manager

The CS2000 Core Manager provides both command-line and MAP-based interfaces.

GUI/CLUI Launching and User procedures

- NN10018-111 - CS2000 Core Manager Basics

Related documents

- NN10060-461 - Upgrading the CS 2000 Core Manager
- NN10082-911 - CS 2000 Core Manager Fault Management

- NN10104-511 - CS 2000 Core Manager Configuration Management
- NN10126-811 - CS 2000 Core Manager Accounting
- NN10170-611 - CS 2000 Core Manager Administration and Security

GWC Manager

This section contains IEMS Northbound log samples and device documentation references for the GWC Manager.

GWC Manager Fault Interface

Fault documentation for GWC Mgr :

- NN10325-900 - ATM/IP Fault Management

Fault Mapping for GWC Mgr

The following criteria can be used for looking up information on specific faults for GWC Mgr.

Fault Correlation for GWC Mgr

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
GWC Mgr	logname and number	logname and number	logname and number	logname and number	PLN-08AT OSS SN08 OSS Guide (ATM) PLN-08IPOSS SN08 OSS Guide (IP)

Northbound Fault Formats for GWC Mgr

SCC2

The following is an example of a GWC Mgr log in SCC2 format:

```
*C14 CMT 301 7248 TBL CMT Fault
Location: gwcem
NotificationID: 700
State: Raise
```


Category: Processing Error
Cause: Corrupt data
Time: Jan 23 15:14:38 2004
Component Id: SESM=GWCEMalarm;GWCEM=Recovery;GWC=GWC-2-UNIT-0
Specific Problem: FTP Problem
Description: Problem detected in GWC Recovery Subsystem

NTSTD

The following is an example of a GWC Mgr log in NTSTD format:

```
COMPACT06BT *** CMT301 Jan23 20:14:38 7248 TBL CMT Fault
Location: gwcem
NotificationID: 700
State: Raise
Category: Processing Error
Cause: Corrupt data
Time: Jan 23 15:14:38 2004
Component Id: SESM=GWCEMalarm;GWCEM=Recovery;GWC=GWC-2-UNIT-0
Specific Problem: FTP Problem
Description: Problem detected in GWC Recovery Subsystem
```

SNMP

The following is an example of a GWC Mgr log in SNMP format:

```
system.sysUpTime.0 => 23:10:15
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.
20.50.48
.48.52.45.49.45.50.51.44.51.58.49.52.58.51.56.46.48.44.42847
alarmActiveDateAndTime => 2004-1-23,3:14:38.0,
alarmActiveDescription => DeviceSpecificInfo=LANError;GWC is inaccessible
from GWCEM
nnExtAlarmActiveEventType => 2
nnExtAlarmActiveProbableCause => 1024
nnExtAlarmActiveAdditionalText => GWCEM fail to ping both GWC units of GWC-50
nnExtAlarmActiveDocumentationPointer => CMT301
```

```
nnExtAlarmActiveResourceDescription =>IEMS=rtp4cmt-GWC-  
Mgr;SESM=GWCEMalarm;GWCEM=DeviceInAccessible;GWC=GWC-50-UNIT-0  
  
nnExtAlarmActiveManualClear => 0  
  
nnExtAlarmActiveSequenceNumber => 9027
```

Syslog

The following is an example of a GWC Mgr log in Syslog format:

```
Feb 23 15:15:56 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=7305~~ CMT301 CRIT TBL CMT  
Fault^M      Location: gwcem^M      NotificationID: 700^M      State: Raise^M  
Category: Processing Error^M      Cause: Corrupt data^M      Time: Jan 23 15:14:38  
2004^M      Component Id: SESM=GWCEMalarm;GWCEM=Recovery;GWC=GWC-2-UNIT-0^M  
Specific Problem: FTP Problem^M      Description: Problem detected in GWC Recovery  
Subsystem^M
```

Performance

OM and PM Documentation references for GWC Mgr

GWC Mgr has no operational or performance measurements.

- See NN10156-711 - GWC Performance Management for PM information.

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of performance data for GWC Mgr in XML format:

***Note:** Northbound performance interface not supported for this component.*

CSV

The following is an example of performance data for GWC Mgr in CSV format:

***Note:** Northbound performance interface not supported for this component.*

GUI/CLUI Documentation for GWC Mgr

GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10276-500 - ATM/IP Configuration Management
- NN10281-600 - ATM/IP Administration and Security
- NN10325-900 - ATM/IP Fault Management

Related documents

Integrated Element Management System (IEMS)

This section contains IEMS Northbound log samples and device documentation references for the IEMS.

IEMS Fault Interface

Fault documentation for IEMS :

- NN10334-911 - IEMS Fault Management

Fault Mapping for IEMS

The following criteria can be used for looking up information on specific faults for IEMS.

Fault Correlation for IEMS

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
IEMS	logname and logNumber	logname and logNumber	logname and logNumber	logname and logNumber	NN10334-911 IEMS Fault Management Guide

Northbound Fault Formats for IEMS

SCC2

The following is an example of a IEMS log in SCC2 format:

```
36 IEMS603 0001 INFO Missed Notifications
    Location: 47.142.122.202
    Component Id: IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr
    Time: Feb 14 19:36:32 2004
    Description: Notification(s) missed in ML 5050 - 5149
```

NTSTD

The following is an example of a IEMS log in NTSTD format:

```
RTPU07BU      IEMS603 Feb15 00:36:32 0001 INFO Missed Notifications
    Location: 47.142.122.202
    Component Id: IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr
    Time: Feb 14 19:36:32 2004
    Description: Notification(s) missed in ML 5050 - 5149
```

SNMP

The following is an example of a IEMS log in SNMP format:

```
sysUpTime.0 => 9:34:06
snmpTrapOID.0 => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr;
nnExtAlarmMessageDateAndTime => 2004-1-14,7:58:59.2
nnExtAlarmMessageDocumentationPointer => IEMS603
nnExtAlarmMessageInfo => 58 IEMS603 0234 INFO Missed Notifications
    Location: 47.142.122.202
    Component Id: IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr
    Time: Feb 14 19:58:59 2004
    Description: Notification(s) missed in ML 5050 - 5149
```

Syslog

The following is an example of a IEMS log in Syslog format:

```
Feb 14 18:42:42 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=9198~~ IEMS603 NONE INFO
Missed Notifications^M      Location: 47.142.122.202^M      Component Id:
IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr^M      Time: Feb 14 18:42:41 2004^M
Description: Notification(s) missed in ML 5050 - 5149
```

Performance

OM and PM Documentation references for IEMS

- NN10327-711 IEMS Performance Monitoring

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of performance data for IEMS in XML format:

Note: Northbound performance interface not supported for this component.

CSV

The following is an example of performance data for IEMS in CSV format:

Note: Northbound performance interface not supported for this component.

GUI/CLUI Documentation for IEMS

GUI Launching and User procedures

- NN10329-111 - IEMS Basics

Related documents

- NN10336-611 - IEMS Administration and Security
- NN10330-511 - IEMS Operational Configuration
- NN10326-461 - IEMS Upgrades

MG9000 Manager

This section contains IEMS Northbound log samples and device documentation references for the MG9000 Mgr.

MG9000 Mgr Fault Interface

Fault documentation for MG9000 Mgr :

- NN10074-911 MG9000 Fault Management

- NN10325-900 ATM/IP Fault Management
- NN10275-909 Succession Fault Management Logs Reference

Fault Mapping for MG9000 Mgr

The following criteria can be used for looking up information on specific faults for MG9000 Mgr.

Fault Correlation for MG9000 Mgr

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
MG9000 Mgr	logname and number	logname and number	logname and number	logname and number	NN10074-911 MG9000 Fault Management

Northbound Fault Formats for MG9000 Mgr

SCC2

The following is an example of a MG9000 Mgr log in SCC2 format:

```
49 MGEM302 4260 TBL MG9K InvalidEMIPAddress
  Location: MG9k EM Comm Network
  Notification Id: 17180020453
  State: Cleared
  Category: communications
  Cause: Communications Subsystem Failure
      Invalid EM IP Address - An invalid EM IP address has been set on the GW
  Component Id: MG9k EM Comm Network
  specificProblem: Invalid EM IP Address - An invalid EM IP address has be
en set on the GW
  Description: An invalid EM IP address has been set on the GW
```

NTSTD

The following is an example of a MG9000 Mgr log in NTSTD format:

```
RTPU07BR      MGEM302 Jan20 06:49:09 4260 TBL MG9K InvalidEMIPAddress
  Location: MG9k EM Comm Network
  Notification Id: 17180020453
```

```

State: Cleared
Category: communications
Cause: Communications Subsystem Failure
      Invalid EM IP Address - An invalid EM IP address has been set on the GW
Component Id: MG9k EM Comm Network
specificProblem: Invalid EM IP Address - An invalid EM IP address has be
en set on the GW
Description: An invalid EM IP address has been set on the GW

```

SNMP

The following is an example of a MG9000 Mgr log in SNMP format:

```

system.sysUpTime.0 => 20:33:14
iso.org.dod.internet.snmpV2.snmpModules.snmpMIB.snmpMIBObjects.snmpTrap.snmpTrapOID.0 => nnExtAlarmClear
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.19.50.48
.48.52.45.49.45.50.48.44.49.58.52.57.58.57.46.51.44.37279
alarmActiveDateAndTime => 2004-1-20,1:49:9.3,
alarmActiveDescription => Communications Subsystem Failure
Invalid EM IP Address - An invalid EM IP address has been set on the GW

nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 6
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => MGEM302
nnExtAlarmActiveResourceDescription => IEMS=cco4;MG9k EM Comm Network
nnExtAlarmActiveSequenceNumber => 7768

```

Syslog

The following is an example of a MG9000 Mgr log in Syslog format:

```

Feb 23 12:38:54 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=4317~~ MGEM302 NONE TBL
MG9K InvalidEMIPAddress^M      Location: MG9k EM Comm Network^M      Notification
Id: 17180020453^M      State: Cleared^M      Category: communications^M      Cause:
Communications Subsystem Failure^M      Invalid EM IP Address - An invalid EM IP
address has been set on the GW^M      Component Id: MG9k EM Comm Network^M
specificProblem: Invalid EM IP Address - An invalid EM IP address has be^M      en
set on the GW^M      Description: An invalid EM IP address has been set on the GW

```

Performance

XML

The following is an example of performance data for IEMS in XML format:

```

System=Begin
SystemId
NortelNetworks/IEMS

Entity=Begin
EntityId Type
47.142. MG9K Mgr

SubEntity=Begin
SubEntityId
CC04
SubEntity=End

SubEntity=Begin
SubEntityId
CC03
SubEntity=End

SubEntity=Begin
SubEntityId
CC02
SubEntity=End

SubEntity=Begin
SubEntityId
Sefik_CCO1
SubEntity=End

SubEntity=Begin
SubEntityId
cco6

Table=Begin
TableId MeasureInterval CaptureTime
nnPmUtil Snapshot 5 2004-11-18T15:45:00EST
Label Label Label Label Label Label Label Label Label
Source nnPmUtil nnPmUtil nnPmUtil nnPmUtil nnPmUtil nnPmUtil nnPmUtil nnPmUtil IntervRamPeak
Value Value Value Value Value Value Value Value Value
Frame0 0 0 0 0 0 0 0 0 0
Frame0 0 0 0 0 0 0 0 0 0
Frame0 0 0 0 0 0 0 0 0 0
Frame0 0 0 0 0 0 0 0 0 0
Frame0 0 0 0 0 0 0 0 0 0
Frame0 0 0 0 0 0 0 0 0 0
Frame0 0 0 0 0 0 0 0 0 0
Frame0 0 0 0 0 0 0 0 0 0
Frame0 0 0 0 0 0 0 0 0 0
Table=End

```


OM and PM Documentation references for MG9000 Mgr

There are no OMs or PMs associated with this component.

GUI/CLUI Documentation for MG9000 Mgr

GUI Launching and User procedures

- NN10096-511 MG9000 Configuration Management

Related documents

- NN10221105 VoA OSS Guide
- NN10162-611 MG9000 Administration and Security
- NN10048-461 Upgrading the MG9000
- NN10276-500 ATM/IP Configuration Management
- NN10325-900 ATM/IP Fault Management

Multi-Service Data Manager (MDM)

This section contains IEMS Northbound log samples and device documentation references for the MDM.

Information in this section also applies to the following Media Gateways : MSS 7400, 15000, 20000. All these devices are closely related and are covered by the same set of customer documentation.

MDM Fault Interface

Fault documentation for MDM:

- 241-6001-011 - MDM Fault Management User Guide
- NN10092-911 - Passport 15000 and MDM in Succession Networks Fault Management
- NN10600-500 - Nortel Networks Multiservice Switch 7400/15000/20000 Alarms Reference
- 241-6001-501 - MDM Proxy Alarms Reference Guide

Fault Mapping for MDM

The following criteria can be used for looking up information on specific faults for MDM.

MDM and Media Gateway devices (6400, 7480, 15000, 20000) use fault code to identify different alarms. Fault codes are eight digits or letters and are grouped by type (first four digits of fault code). Documentation for each fault code group is provided in the following table.

Fault Documentation for MDM

Fault Code Group	Document Reference
0000	NN10600-500 - Nortel Networks Multiservice Switch 7400/15000/20000 Alarms Reference
1100	NN10600-500 - Nortel Networks Multiservice Switch 7400/15000/20000 Alarms Reference
70xx	NN10600-500 - Nortel Networks Multiservice Switch 7400/15000/20000 Alarms Reference
0999	241-6001-501 - MDM Proxy Alarms Reference Guide
301x	241-6001-501 - MDM Proxy Alarms Reference Guide
50xx	241-6001-501 - MDM Proxy Alarms Reference Guide
600x	241-6001-501 - MDM Proxy Alarms Reference Guide
A0xx	241-6001-501 - MDM Proxy Alarms Reference Guide
B000	241-6001-501 - MDM Proxy Alarms Reference Guide
CDxx	241-6001-501 - MDM Proxy Alarms Reference Guide

The faults that are fed northbound from the IEMS use log name and number for distinction. The mapping between log name/number and fault code can be found in the Succession Solution document.

- NN10092-911 - Passport 15000 and MDM in Succession Networks Fault Management (PT-AAL1/UA-AAL1).

Fault Correlation for MDM

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
Multi-Service Data manager (MDM)	log name and number	log name and number	log name and number	log name and number	NN10092-911 Passport 15000 and MDM in Succession Networks Fault Management (PT-AAL1/UA-AAL1)

Northbound Fault Formats for MDM**SCC2**

The following is an example of a MDM log in SCC2 format:

```
*C22 MDM 303 7891 TBL
time: 2004 01 25 09 22 32
event: set
compId: EM PP14
severity: critical
faultcode: 09990001
alarmType: equipment
commentData: FMDR_SURV@rt pimdm has lost connection to EM PP14. Please in
vestigate.
```

NTSTD

The following is an example of a MDM log in NTSTD format:

```
RTPU07BU *** MDM303 Jan25 14:22:32 7345 TBL
time: 2004 01 25 09 22 32
event: set
compId: EM PP14
severity: critical
faultcode: 09990001
alarmType: equipment
commentData: FMDR_SURV@rt pimdm has lost connection to EM PP14. Please in
vestigate.
```

SNMP

The following is an example of a MDM log in SNMP format:

```
system.sysUpTime.0 => 3 days, 0:41:03
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.53.44.57.58.50.50.58.51.50.46.48.44.13270
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => DeviceSpecificInfo=equipmentFailure;FMDR_SURV@rtipmdm has
lost connection to EM PP14. Please investigate.

nnExtAlarmActiveEventType => 4
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => MDM 303
nnExtAlarmActiveResourceDescription => IEMS=47.142.116.75-MDM-Mgr_PP14;EM PP14
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 17433
```

Syslog

The following is an example of a MDM log in Syslog format:

```
Feb 27 11:16:54 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0402~~ MDM303 CRIT TBL ^M
time: 2004 01 27 11 15 32^M          event: set^M          compId: EM PP14^M          severity:
critical^M          faultcode: 09990001^M          alarmType: equipment^M          commentData:
FMDR_SURV@rtipmdm has lost connection to EM PP14. Please in^M          vestigate.
```

Performance

OM and PM Documentation references for MDM

- 241-6001-806 - MDM MDP Data Formats Reference Guide

Northbound OM/PM Formats

Performance measurements for MDM are available only from the MDM directly. For more information on MDM, MSS 7000, and MSS 15000 OMs, see 241-6001-806 - MDM MDP Data Formats Reference Guide

XML

The following is an example of Performance data for MDM in XML format:

Related documents

Numerous documents are available on MDM installation, configuration, and planning. All the documents in the **241-6001-xxx** series are related to the MDM and its operations.

- NN10028-111 - Passport 15000 and MDM in Succession Networks Product and Technology Fundamentals (PT-AAL1/U)
- NN10070-461 - Passport 15000 and MDM in Succession Networks Upgrade Guide (PT-AAL1/UA-AAL1)
- NN10092-911 - Passport 15000 and MDM in Succession Networks Fault Management Overview (PT-AAL1/UA-AAL1)
- NN10114-511 - Passport 15000 and MDM in Succession Networks Configuration Overview (PT-AAL1/UA-AAL1)
- NN10158-711 - Passport 15000 and MDM in Succession Networks Performance (PT-AAL1/UA-AAL1)
- NN10180-611 - Passport 15000 and MDM in Succession Networks Security and Administration (PT-AAL1/UA-AAL1)
- NN10185-461 - MDM in Succession Networks Upgrade Guide (PT-AAL1/UA-AAL1)
- NN10198-912 - Passport 15000 and MDM in Succession Networks Fault Management Troubleshooting (PT-AAL1/UA-A)
- NN10225-512 - Passport 15000 and MDM in Succession Networks Configuration Attribute Summary (PT-AAL1/UA-AA)

SAM21 Element Manager

This section contains IEMS Northbound log samples and device documentation references for the SAM21 EM.

SAM21 EM Fault Interface

Fault documentation for SAM21 EM :

The SAM 21 Manager reports faults for the SAM 21 Shelf Controller. Please refer to the SAM 21 SC documents below for details about SAM 21 faults.

- NN10089-911 - SAM21 Shelf Controller Fault Management

Fault Mapping for SAM21 EM

The following criteria can be used for looking up information on specific faults for SAM21 EM.

Fault Correlation for SAM21 EM

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
SAM21 Mgr	logname and number	logname and number	logname and number	logname and number	NN10089-911 SAM21 Shelf Controller Fault Management

Northbound Fault Formats for SAM21 EM

SCC2

The following is an example of a SAM21 EM log in SCC2 format:

```
**37 SCU 350 0009 FLT Alarm Raised
Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:55:52 EST 2004
Reason:    Temperature in Sled 3 is high
```

NTSTD

The following is an example of a SAM21 EM log in NTSTD format:

```
COMPACT06BT ** SCU350 Jan15 00:37:17 0009 FLT Alarm Raised
Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:55:52 EST 2004
Reason:    Temperature in Sled 3 is high
```

SNMP

The following is an example of a SAM21 EM log in SNMP format:

```
sysUpTime.0 => 9:14:20
snmpTrapOID.0 => nnExtAlarmMajor
```

```

alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.51.44.51.58.49.52.58.51.56.46.48.44.42847

alarmActiveDateAndTime => 2004-1-23,3:14:38.0,

alarmActiveDescription => DeviceSpecificInfo=;Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:57:48 EST 2004
Reason:    Temperature in Sled 3 is high

nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SCU 350
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0kz.us.nortel.com-SAM21-Mgr;
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 1

```

Syslog

The following is an example of a SAM21 EM log in Syslog format:

```

Feb 12 18:30:19 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=7929~~ SCU350 MAJOR FLT
Alarm Raised^M      Location: SAM21 1:CSAM01-01:sled 3^M      Time:      Mon Jan 12
12:49:06 EST 2004^M      Reason:    Temperature in Sled 3 is high

```

Performance

OM and PM Documentation references for SAM21 EM

The SNMP based attributes that can be collected from the STORM device are documented in:

- NN10155-711 - SAM21 Shelf Controller Performance Management

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of performance data for SAM21 EM in XML format:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
<FileCreationTime>2005-01-07T14:50:12EST</FileCreationTime>
<System>
<SystemId>NortelNetworks/IEMS</SystemId>

```



```
<Entity Type="SAM21">
<EntityId>172.16.144.134</EntityId>
<SingleValues MeasurementKind="Snapshot" IntervalDuration="5">
<SingleValue>
<CaptureTime>2005-01-07T14:50:00EST</CaptureTime>
<MeasureId>cellDropCount</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.servic
eControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
<SingleValue>
<CaptureTime>2005-01-07T14:50:00EST</CaptureTime>
<MeasureId>oversizedPDUCount</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.servic
eControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
<SingleValue>
<CaptureTime>2005-01-07T14:50:00EST</CaptureTime>
<MeasureId>bytesRxdPerSec</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.servic
eControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
<Value>292</Value>
<Reliability>Valid</Reliability>
</SingleValue>
<SingleValue>
<CaptureTime>2005-01-07T14:50:00EST</CaptureTime>
<MeasureId>totalBytesSent</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.servic
eControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
<Value>570458</Value>
<Reliability>Valid</Reliability>
</SingleValue>
<SingleValue>
<CaptureTime>2005-01-07T14:50:00EST</CaptureTime>
<MeasureId>totalBytesRxd</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.servic
eControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
<Value>959297</Value>
<Reliability>Valid</Reliability>
</SingleValue>
<SingleValue>
<CaptureTime>2005-01-07T14:50:00EST</CaptureTime>
<MeasureId>rxedTimeoutCount</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.servic
eControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
<SingleValue>
<CaptureTime>2005-01-07T14:50:00EST</CaptureTime>
<MeasureId>bytesSentPerSec</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.servic
eControl.scu.scuMessaging.ipoaMIB</MeasureSuppId1>
<Value>190</Value>
<Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>
```

CSV

The following is an example of performance data for SAM21 EM in CSV format:

```
PMFile=Begin
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2005-01-07T14:50:13EST

System=Begin
SystemId
NortelNetworks/IEMS

Entity=Begin
EntityId,Type
172.16.144.134,SAM21

SingleValues=Begin
MeasurementKind,IntervalDuration
Snapshot,5
MeasureId,CaptureTime,MeasureSuppId1,Value,Reliability
cellDropCount,2005-01-
07T14:50:00EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service
Control.scu.scuMessaging.ipoaMIB,0,Valid
oversizedPDUCount,2005-01-
07T14:50:00EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service
Control.scu.scuMessaging.ipoaMIB,0,Valid
bytesRxdPerSec,2005-01-
07T14:50:00EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service
Control.scu.scuMessaging.ipoaMIB,292,Valid
totalBytesSent,2005-01-
07T14:50:00EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service
Control.scu.scuMessaging.ipoaMIB,570458,Valid
totalBytesRxd,2005-01-
07T14:50:00EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service
Control.scu.scuMessaging.ipoaMIB,959297,Valid
rxedTimeoutCount,2005-01-
07T14:50:00EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service
Control.scu.scuMessaging.ipoaMIB,0,Valid
bytesSentPerSec,2005-01-
07T14:50:00EST,.iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service
Control.scu.scuMessaging.ipoaMIB,190,Valid
SingleValues=End

Entity=End

System=End

PMFile=End
```

GUI/CLUI Documentation for SAM21 EM

GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10281-600 - ATM/IP Administration and Security

Related documents

- NN10089-911 - SAM21 Shelf Controller Fault Management
- NN10325-900 - ATM/IP Fault Management
- NN10276-500 - ATM/IP Configuration Management

Applications

Audio Provisioning Server (APS)

This section contains IEMS Northbound log samples and device documentation references for the APS.

APS Fault Interface

Fault documentation for APS :

- NN10328-911 - MS 2000 Series Fault Management

Fault Mapping for APS

The following criteria can be used for looking up information on specific faults for APS.

Fault Correlation for APS

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
APS	SpecificProblem	SpecificProblem	SpecificProblem	SpecificProblem	NN10328-911 MS 2000 Series Fault Management

Northbound Fault Formats for APS

SCC2

The following is an example of a APS log in SCC2 format:

```
*C02 APS 398 2759 TBL APS Fault
Location: rtp2aps
Notification Id: 28673
```

State: Raise
Category: communications
Cause: softwareError
Time: Jan 27 07:02:30 2004
Component Id: APS;APSUnit=nc0rtp170;Software=Audio_Management_0
Specific Problem: 28673
Description: DB is not available, or the user cannot get a connection to
the DB

NTSTD

The following is an example of a APS log in NTSTD format:

```
RTPU07BR *** APS398 Jan27 12:02:30 2207 TBL APS Fault
Location: rtp2aps
Notification Id: 28673
State: Raise
Category: communications
Cause: softwareError
Time: Jan 27 07:02:30 2004
Component Id: APS;APSUnit=nc0rtp170;Software=Audio_Management_0
Specific Problem: 28673
Description: DB is not available, or the user cannot get a connection to
the DB
```

SNMP

The following is an example of a APS log in SNMP format:

```
sysUpTime.0 => 2 days, 18:44:37
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.18.50.48
.48.52.45.49.45.50.55.44.5
5.58.49.58.54.46.48.44.11202
alarmActiveDateAndTime => 2004-1-27,7:1:6.0
alarmActiveDescription => DeviceSpecificInfo=;DB is not available, or the user cannot
get a connection to
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
```

```
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => APS 398
nnExtAlarmActiveResourceDescription => IEMS=znc0s0j6-SSPFS-Unit-
0;APS;APSUnit=nc0rtp170;Software=Audio_Management_0
nnExtAlarmActiveManualClear => 4
nnExtAlarmActiveSequenceNumber => 13458
```

Syslog

The following is an example of a APS log in Syslog format:

```
Feb 27 07:02:24 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=6645~~ APS398 CRIT TBL APS
Fault^M      Location: rtp2aps^M      NotificationID: 28673^M      State: Raise^M
Category: Communications^M      Cause: Software error^M      Time: Jan 27 07:02:30
2004^M      Component Id: APS;APSUnit=nc0rtp170;Software=Audio_Management_0^M
Specific Problem: 28673^M      Description: DB is not available, or the user cannot
get a connection to^M      the DB^M
```

Performance

OM and PM Documentation references for APS

- NN10331-711 - MS 2000 Series Performance Monitoring

Northbound OM/PM Formats

XML

The following is an example of performance data for APS in XML format:

Note: Northbound performance interface not supported for this component.

CSV

The following is an example of performance data for APS in CSV format:

Note: Northbound performance interface not supported for this component.

GUI/CLUI Documentation for APS

GUI Launching and User procedures

- NN10340-511 - MS 2000 Series Configuration Management

Related documents

- NN10320-100 - ATM Solutions Basics

- NN10300-100 - IP Solutions Basics

Line Maintenance Manager (LMM)

This section contains IEMS Northbound log samples and device documentation references for LMM.

LMM Fault Interface

Fault documentation for LMM :

There are no faults or logs associated with this application.

Fault Mapping for LMM

There are no faults or logs associated with this application.

Performance

There are no OMs or PMs associated with this application.

GUI/CLUI Documentation for LMM

GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics

Related documents

Network Patch Manager (NPM)

This section contains IEMS Northbound log samples and device documentation references for the Network Patch Manager (NPM).

NPM Fault Interface

Fault documentation for NPM :

- NN10325-900 - ATM/IP Fault Management

Fault Mapping for NPM

The following criteria can be used for looking up information on specific faults for NPM.

Fault Correlation for NPM

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
NPM	logname and number	logname and number	logname and number	logname and number	NN10325-900 ATM/IP Fault Management

Northbound Fault Formats for NPM**SCC2**

The following is an example of an NPM log in SCC2 format:

```
38 NPM 360 6012 INFO Alarm Raised
Alarm ACT_NOT_APP has been raised.
Alarm Description: Activatable patches not applied.
```

NTSTD

The following is an example of an NPM log in NTSTD format:

```
RTPU07BU      NPM360 Jan27 15:38:44 5466 INFO Alarm Raised
Alarm ACT_NOT_APP has been raised.
Alarm Description: Activatable patches not applied.
```

SNMP

The following is an example of an NPM log in SNMP format:

```
system.sysUpTime.0 => 2 days, 22:22:15
snmpTrapOID.0 => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=znc0s0j6-SSPFS-Unit-0;
nnExtAlarmMessageDateAndTime => 2004-1-27,10:38:44.0
nnExtAlarmMessageDocumentationPointer => NPM 360
nnExtAlarmMessageInfo => 38 NPM 360 6012 INFO Alarm Raised           Alarm
ACT_NOT_APP has been raised.

Alarm Description: Activatable patches not applied.
```

Syslog

The following is an example of an NPM log in Syslog format:

```
Feb 27 10:40:03 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0201~~ NPM360 NONE INFO
Alarm Raised^M          Alarm ACT_NOT_APP has been raised.^M      Alarm Description:
Activatable patches not applied.
```

Performance

OM and PM Documentation references for NPM

There are no OMs or PMs associated with this application.

GUI/CLUI Documentation for NPM

GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10276-500 - ATM/IP Configuration Management

Related documents

- NN10281-600 - ATM/IP Administration and Security
- NN10440-450 - Upgrading a Carrier VoIP Network

OSSGate

This section contains IEMS Northbound log samples and device documentation references for the OSSGate.

OSSGate Fault Interface

Fault documentation for OSSGate :

There are no faults or logs associated with this application.

Fault Mapping for OSSGate

There are no faults or logs associated with this application.

Performance

OM and PM Documentation references for OSSGate

There are no OMs or PMs associated with this application.

Northbound OM/PM Formats

There are no OMs or PMs associated with this application.

GUI/CLUI Documentation for OSSGate

GUI Launching and User procedures

- NE10004-512 OSSGate User's Guide

Related documents

- 297-9051-8081 SERVORD Reference Manual Vol 1 of 2
- 297-9051-8082 SERVORD Reference Manual Vol 2 of 2

Trunk Maintenance Manager (TMM)

This section contains IEMS Northbound log samples and device documentation references for TMM.

TMM Fault Interface

Fault documentation for TMM :

There are no faults or logs associated with this application.

Fault Mapping for TMM

There are no faults or logs associated with this application.

Performance

OM and PM Documentation references for TMM

There are no OMs or PMs associated with this application.

GUI/CLUI Documentation for TMM

GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics

Related documents

Non-Topology Elements

This section contains references to applications that do not appear in the IEMS topology, but still report faults to the Northbound log streams.

Data Audit System

This section contains IEMS Northbound log samples and device documentation references for the Data Audit System.

Data Audit System Fault Interface

Fault documentation for Data Audit System :

- NN10325-900 - ATM/IP Fault Management

Fault Mapping for Data Audit System

The following criteria can be used for looking up information on specific faults for Data Audit System.

Fault Correlation for Data Audit System

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
Data Audit System	logname and number	logname and number	logname and number	logname and number	NN10325-900 ATM/IP Fault Management

Northbound Fault Formats for Data Audit System

SCC2

The following is an example of a Data Audit System log in SCC2 format:

```
*C43 CMT 300 5341 TBL CMT Fault
  Location: Audit
  NotificationID: 1001
  State: Raise
  Category: Processing Error
  Cause: Corrupt data
  Time: Jan 23 13:43:37 2004
  Component Id: SESM=AuditSystem;Audit=CS2K Data Integrity Audit
  Specific Problem: Data mismatches detected
  Description: The SESM audit: CS2K Data Integrity Audit, has 59 unresolved problems. To view and correct the problems, open the audit problem report from the Audit System found under the SESM Maintenance menu item.
```

NTSTD

The following is an example of a Data Audit System log in NTSTD format:

```
COMPACT06BT *** CMT300 Jan23 18:43:37 5341 TBL CMT Fault
Location: Audit
NotificationID: 1001
State: Raise
Category: Processing Error
Cause: Corrupt data
Time: Jan 23 13:43:37 2004
Component Id: SESM=AuditSystem;Audit=CS2K Data Integrity Audit
Specific Problem: Data mismatches detected
Description: The SESM audit: CS2K Data Integrity Audit, has 59 unresolv
e d problems. To view and correct the problems, open the audit problem rep
ort from the Audit System found under the SESM Maintenance menu item.
```

SNMP

The following is an example of a Data Audit System log in SNMP format:

```
system.sysUpTime.0 => 21:39:13
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.51.44.49.58.52.51.58.51.55.46.48.44.42485
alarmActiveDateAndTime => 2004-1-23,1:43:37.0,
alarmActiveDescription => DeviceSpecificInfo=;Event from Unknown Syslog Device
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => CMT 300
nnExtAlarmActiveResourceDescription => IEMS=znc0s0j6;SESM=AuditSystem;Audit=CS2K Data
Integrity Audit
nnExtAlarmActiveManualClear => 0
nnExtAlarmActiveSequenceNumber => 8390
```

Syslog

The following is an example of a Data Audit System log in Syslog format:

```
Feb 23 13:44:54 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=5398~~ CMT300 CRIT TBL CMT
Fault^M Location: Audit^M NotificationID: 1001^M State: Raise^M Category: Processing
Error^M Cause: Corrupt data^M Time: Jan 23 13:43:37 2004^M Component Id:
SESM=AuditSystem;Audit=CS2K Data Integrity Audit^M Specific Problem: Data mismatches
detected^M Description: The SESM audit: CS2K Data Integrity Audit, has 59 unresolv
e d problems. To view and correct the problems, open the audit problem rep^M ort from
the Audit System found under the SESM Maintenance menu item.^M
```

Performance

OM and PM Documentation references for Data Audit System

There are no OMs or PMs associated with this application.

Northbound OM/PM Formats

There are no OMs or PMs associated with this application.

GUI/CLUI Documentation for Data Audit System

GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10276-500 - ATM/IP Configuration Management
- NN10325-900 - ATM/IP Fault Management

Related documents

IW-SPM IP

This section contains IEMS Northbound log samples and device documentation references for the IW-SPM IP.

IW-SPM IP Fault Interface

Fault documentation for IW-SPM IP :

- NN10078-911 - IW SPM IP Fault Management
- NN10275-909 - Succession Fault Management Logs Reference

Fault Mapping for IW-SPM IP

The following criteria can be used for looking up information on specific faults for IW-SPM IP.

Fault Correlation for IW-SPM IP

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
IW-SPM IP	Logname and number	Logname and number	Logname and number	Logname and number	NN10078-911 IW SPM IP Fault Management

Northbound Fault Formats for IW-SPM IP

SCC2

The following is an example of a IW-SPM IP log in SCC2 format:

```
**17 SPM 313 4488 TBL Fault
      SPM 0 CEM 0 : A                               Time: 12:16:13.890
      Source: None           State: Insv           Type: None
      Reason:      Loadname mismatch.
      Diagnostic: Autonomous fault detection
      Comp:MCM           RegAddr:0           Exp:0           Act:0
```

NTSTD

The following is an example of a IW-SPM IP log in NTSTD format:

```
RTPU07BU ** SPM313 Feb28 00:06:14 9091 TBL Fault
      SPM 0 CEM 1 : A                               Time: 19:05:14.820
      Source: None           State: Insv           Type: None
      Reason:      SYNC OOSpec: prim. ref. NA.
      Diagnostic: Autonomous fault detection
      Comp:TIC           RegAddr:0           Exp:0           Act:0
```

SNMP

The following is an example of a IW-SPM IP log in SNMP format:

```
system.sysUpTime.0 => 3 days, 6:54:40
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.50.45.50.55.44.55.58.49.50.58.50.55.46.54.44.14023
alarmActiveDateAndTime => 2004-2-27,7:12:27.6
alarmActiveDescription => DeviceSpecificInfo=Unavailable;SPM 0 CEM 0 : A
Time: 19:11:31.010
Source: None           State: Insv           Type: None
Reason:      SYNC OOSpec: prim. ref. NA.
Diagnostic: Autonomous fault detection
Comp:TIC           RegAddr:0           Exp:0           Act:0
```

```

nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SPM 313
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr;
nnExtAlarmActiveManualClear => 3
nnExtAlarmActiveSequenceNumber => 18489

```

Syslog

The following is an example of a IW-SPM IP log in Syslog format:

```

Feb 28 12:11:09 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=7983~~ SPM313 MAJOR TBL
Fault^M          SPM 0 CEM 1 : I          Time: 12:10:11.080^M          Source:
None             State: Insv          Type: None ^M          Reason:      No frame pulse from
DS-512 #0        ^M          Diagnostic: Autonomous fault detection      ^M          Comp:TIC
RegAddr:0        Exp:0          Act:0

```

Performance

OM and PM Documentation references for IW-SPM IP

- NN10144-711 - IW SPM IP Performance Management

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of Performance data for IW-SPM IP in XML format:

***Note:** The IEMS northbound performance interface does not support this device.*

CSV

The following is an example of Performance data for IW-SPM IP in CSV format:

***Note:** The IEMS northbound performance interface does not support this device.*

GUI/CLUI Documentation for IW-SPM IP

GUI Launching and User procedures

- NN10015-111 - IW SPM IP Basics

Related documents

- NN10056-461 - Upgrading the IW SPM IP
- NN10100-511 - IW SPM IP Configuration Management
- NN10166-611 - IW SPM IP Administration and Security

MG9000 Manager Mid-Tier

This section contains IEMS Northbound log samples and device documentation references for the MG9000 Mgr Mid-Tier.

MG9000 Mgr Mid-Tier Fault Interface

Fault documentation for MG9000 Mgr Mid-Tier :

All MG9000 Mgr Mid-Tier faults are delivered via MG9000 Mgr. See document(s)

- NN10074-911 MG9000 Fault Management
- NN10325-900 ATM/IP Fault Management
- NN10275-909 Succession Fault Management Logs Reference

Fault Mapping for MG9000 Mgr Mid-Tier

The following criteria can be used for looking up information on specific faults for MG9000 Mgr Mid-Tier.

Fault Correlation for MG9000 Mgr Mid-Tier

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
MG9K Mid-Tier	log name and number	log name and number	log name and number	log name and number	NN10074-911 MG9000 Fault Management

Northbound Fault Formats for MG9000 Mgr Mid-Tier

SCC2

The following is an example of a MG9000 Mgr Mid-Tier log in SCC2 format:

```
52 MGEM703 0193 INFO Shutdown_Event
Status: Shutting MG 9K Midtier Server down ...
```

NTSTD

The following is an example of a MG9000 Mgr Mid-Tier log in NTSTD format:

```
RTPU07BT      MGEM703 Feb02 20:52:08 0197 INFO Shutdown_Event
Status: Shutting MG 9K Midtier Server down ...
```

SNMP

The following is an example of a MG9000 Mgr Mid-Tier log in SNMP format:

```
sysUpTime.0 => 1:30:14
snmpTrapOID.0 => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=wnc0y0nr.us.nortel.com-SSPFS-Unit-0;
nnExtAlarmMessageDateAndTime => 2004-2-2,3:52:8.0
nnExtAlarmMessageDocumentationPointer => MGEM703
nnExtAlarmMessageInfo => 52 MGEM703 0193 INFO Shutdown_Event          Status:
Shutting MG 9K Midtier Server down ...
```

Syslog

The following is an example of a MG9000 Mgr Mid-Tier log in Syslog format:

```
Mar  4 15:27:47 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0682~~ MGEM703 NONE INFO
Shutdown_Event
Status: Shutting MG 9K Midtier Server down ...
```

Performance

OM and PM Documentation references for MG9000 Mgr Mid-Tier

There are no OMs or PMs associated with this component.

GUI/CLUI Documentation for MG9000 Mgr Mid-Tier

GUI Launching and User procedures

The MG9000 Mgr Mid-Tier is an application that runs on an SSPFS machine. See SSPFS platform for client launch details.

- NN10096-511 MG9000 Configuration Management

Related documents

- NN10221105 VoA OSS Guide
- NN10048-461 Upgrading the MG9000
- NN10276-500 ATM/IP Configuration Management
- NN10325-900 ATM/IP Fault Management
- NN10162-611 MG9000 Administration and Security

OM Collector

OM Collector Fault Interface

This section contains IEMS Northbound log samples and device documentation references for the OM Collector.

Fault documentation for OM Collector :

- NN10074-911 MG9000 Fault Management

Fault Mapping for OM Collector

- NN10074-911 MG9000 Fault Management

The following criteria can be used for looking up information on specific faults for OM Collector.

Fault Correlation for OM Collector

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
OM Collector	logname and number	logname and number	logname and number	logname and number	NN10074-911 MG9000 Fault Management

Northbound Fault Formats for OM Collector

SCC2

The following is an example of a OM Collector log in SCC2 format:

```
27 OMC 700 0470 INFO Startup_Event
Status: OMCLTR_Process: OMCollector Process was started with PSID 17585
```

NTSTD

The following is an example of a OM Collector log in NTSTD format:

```
RTPU07BR      OMC700 Jan28 21:27:53 9923 INFO Startup_Event
Status: OMCLTR_Process: OMCollector Process was started with PSID 17585
```

SNMP

The following is an example of a OM Collector log in SNMP format:

```
system.sysUpTime.0 => 4 days, 4:10:00
snmpTrapOID.0 => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=wnc0s0kq.us.nortel.com-SSPFS-Unit-0;
nnExtAlarmMessageDateAndTime => 2004-1-28,4:27:53.0
nnExtAlarmMessageDocumentationPointer => OMC 700
nnExtAlarmMessageInfo => 27 OMC 700 0470 INFO Startup_Event
Status: OMCLTR_Process: OMCollector Process was started with PSID 17585
```

Syslog

The following is an example of a OM Collector log in Syslog format:

```
Feb 28 16:27:48 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=4656~~ OMC700 NONE INFO
Startup_Event^M      Status: OMCLTR_Process: OMCollector Process was started with
PSID 17585
```

Performance

OM and PM Documentation references for OM Collector

There are no OMs or PMs associated with this application. For MG9000 performance information see:

- NN10140-711 MG9000 Performance Management

Northbound OM/PM Formats

There are no OMs or PMs associated with this application.

GUI/CLUI Documentation for OM Collector

GUI Launching and User procedures

- NN10140-711 MG9000 Performance Management
- NN10096-511 MG9000 Configuration Management

Related documents

- NN10276-500 ATM/IP Configuration Management

V5.2 Data Audit

This section contains IEMS Northbound log samples and device documentation references for the V5.2 Data Audit.

V5.2 Data Audit Fault Interface

Fault documentation for V5.2 Data Audit :

The V5.2 Data Integrity Audit Module of V5.2 Data Audit will raise CMT300 faults, and it will be covered in **DataAudit**'s Fault Management.

The Data Audit system will generate CMT300 logs when problems are found during any of its audits. The component ID of the log can be used to identify the specific audit that encountered a problem.

- NN10275-909 - Succession Fault Management Logs Reference
- NN10325-900 - ATM/IP Fault Management

Fault Mapping for V5.2 Data Audit

The following criteria can be used for looking up information on specific faults for V5.2 Data Audit.

Fault Correlation for V5.2 Data Audit

NB format -> Device/EM	SCC2	NTSTD	SNMP	Syslog	Document Reference
V5.2 Data Audit	log name and log number. Seen as component ID in generic CMT300 Audit log. example: componentid = SESM=AuditSystem;Audit=V5.2 Data Integrity Audit	log name and log number. Seen as component ID in generic CMT300 Audit log. example: componentid = SESM=AuditSystem;Audit=V5.2 Data Integrity Audit	log name and log number. Seen as component ID in generic CMT300 Audit log. example: componentid = SESM=AuditSystem;Audit=V5.2 Data Integrity Audit	log name and log number. Seen as component ID in generic CMT300 Audit log. example: componentid = SESM=AuditSystem;Audit=V5.2 Data Integrity Audit	NN10275-909 Succession Fault Management Logs Reference

Northbound Fault Formats for V5.2 Data Audit**SCC2**

The following is an example of a V5.2 Data Audit log in SCC2 format:

```
*C12 CMT 300 0002 TBL CMT Fault
Location: Audit
NotificationID: 1002
State: Raise
Category: Processing Error
Cause: Corrupt data
Time: Feb 14 23:12:48 2004
Component Id: SESM=AuditSystem;Audit=V5.2 Data Integrity Audit
Specific Problem: Data mismatches detected
Description: The SESM audit: V5.2 Data Integrity Audit, has 5 unresolved
problems. To view and correct the problems, open the audit problem report
from the Audit System found under the SESM Maintenance menu item.
```

NTSTD

The following is an example of a V5.2 Data Audit log in NTSTD format:

```
COMPACT06BT *** CMT300 Feb15 07:12:48 0002 TBL CMT Fault
```

```

Location: Audit
NotificationID: 1002
State: Raise
Category: Processing Error
Cause: Corrupt data
Time: Feb 14 23:12:48 2004
Component Id: SESM=AuditSystem;Audit=V5.2 Data Integrity Audit
Specific Problem: Data mismatches detected
Description: The SESM audit: V5.2 Data Integrity Audit, has 5 unresolved
problems. To view and correct the problems, open the audit problem repo
rt from the Audit System found under the SESM Maintenance menu item.

```

SNMP

The following is an example of a V5.2 Data Audit log in SNMP format:

```

system.sysUpTime.0 => 3:05:01
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.49.44.54.58.52.49.58.49.52.46.48.44.8995
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => DeviceSpecificInfo=;Event from Unknown Syslog Device
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => CMT 300
nnExtAlarmActiveResourceDescription => IEMS=zsups228;SESM=AuditSystem;Audit=V5.2 Data
Integrity Audit
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 1

```

Syslog

The following is an example of a V5.2 Data Audit log in Syslog format:

```

Feb 14 23:12:50 zsups228 IEMS: _V2_~I=~H=zsups228~A=IEMS~S=0008~~ CMT300 CRIT TBL CMT
Fault^M      Location: Audit^M      NotificationID: 1002^M      State: Raise^M
Category: Processing Error^M      Cause: Corrupt data^M      Time: Feb 14 23:12:48
2004^M      Component Id: SESM=AuditSystem;Audit=V5.2 Data Integrity Audit^M
Specific Problem: Data mismatches detected^M      Description: The SESM audit: V5.2
Data Integrity Audit, has 5 unresolved^M      problems. To view and correct the

```

problems, open the audit problem repo^M
the SESM Maintenance menu item.^M

rt from the Audit System found under

Performance

OM and PM Documentation references for V5.2 Data Audit

- There are no performance measurements for V5.2 Data Audit V5.2 Data Audit

Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

XML

The following is an example of Performance data for V5.2 Data Audit in XML format:

***Note:** Northbound performance interface not supported for this component.*

CSV

The following is an example of Performance data for V5.2 Data Audit in CSV format:

***Note:** Northbound performance interface not supported for this component.*

GUI/CLUI Documentation for V5.2 Data Audit

GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics

Related documents

- NN10083-911 - CS2000 Fault Management
- NN10281-600 - ATM/IP Administration and Security
- NN10276-500 - ATM/IP Configuration Management
- NIS V208-1 - DMS-100 International Switching V5: CS2K Interface Specification to Support V5.2 Protocol

References

Fault Specifications

- [1] Syslog Protocol (RFC 3164): <http://www.ietf.org/rfc/rfc3164.txt>
- [2] Alarm MIB (draft): <http://www.ietf.org/html.charters/disman-charter.html>
- [3] Notification Log MIB (RFC 3014):
<http://www.ietf.org/rfc/rfc3014.txt?number=3014>

OAM&P Security

- [4] NN10281-600 - ATM/IP Administration and Security

Network Engineering

- [5] <SN08 SEB number> - IAC Engineering Guidelines
- [6] <SN08 SEB number> - IAW Engineering Guidelines
- [7] <SN08 SEB number> - UAIP Engineering Guidelines
- [8] <SN08 SEB number> - PT-IP Engineering Guidelines
- [9] <SN08 SEB number> - VoATM Engineering Guidelines
- [10] <SN08 SEB number> - TRIMODAL Engineering Guidelines

Industry Standards

PAM

- [11] Introduction to PAM: <http://docs.sun.com/db/doc/805-7229/6j6q8svdi?q=pam.conf&a=view>
- [12] PAM RFC from OpenGroup: <http://www.opengroup.org/tech/rfc/mirror-rfc/rfc86.0.txt>
- [13] pam.conf (Solaris 8): <http://docs.sun.com/db/doc/806-0633/6j9vn6q5t?q=pam.conf&a=view>

NSSwitch

- [14] Solaris Name Services: <http://docs.sun.com/db/doc/806-1387/6jam6926b?q=nsswitch&a=view>
- [15] nsswitch.conf (Solaris 8): <http://docs.sun.com/db/doc/806-0633/6j9vn6q5m?q=nsswitch&a=view>

Secure Shell (SSH)

- [16] Secure Shell (secsh) Internet Drafts: <http://www.ietf.org/html.charters/secsh-charter.html>
- [17] OpenSSH: <http://www.openssh.org>

SNMP V3/USM

- [18] An Architecture for Describing SNMP Management Frameworks (RFC3411): <http://www.ietf.org/rfc/rfc3411.txt?number=3411>
- [19] User-based Security Model (RFC3414): <http://www.ietf.org/rfc/rfc3414.txt?number=3414>
- [20] View-based Access Control Model (RFC3415): <http://www.ietf.org/rfc/rfc3415.txt?number=3415>

HTTPS

- [21] The SSL Protocol V3.0: <http://wp.netscape.com/eng/ssl3/ssl-toc.html>
- [22] Transport Layer Security (TLS) Extensions (RFC2246): <http://www.ietf.org/rfc/rfc3546.txt>
- [23] HTTP over TLS (RFC 2818): <http://www.ietf.org/rfc/rfc2818.txt>
- [24] OpenSSL: <http://www.openssl.org>

IEMS Appendix 1: Northbound OSS Configurations

Depending on customer requirements, a single-source OSS interface can be provided from the IEMS server. As an alternate configuration, to support customer transition, some NE specific OSS interfaces can be provided via SDM in parallel with the interfaces provided by IEMS.

For some existing Nortel Networks ATM customers with no new equipment (such as VTOA-AAL1 solutions with only MG4K, PP15K-MSS and XA-Core), the SDM can provide the complete set external interface to third party OSSs. This configuration is only supported for solutions frozen in the SN06 hardware configuration.

In normal configuration, the IEMS is configured to forward all of its collected faults to the OSS through its aggregated interface. The aggregated interface can supply the feed in NTSTD, SCC2, Syslog or SNMP (v2 or v3) format.

The alternate SDM feed can optionally, in addition to the IEMS feed, provide fault streams equivalent to the SN06 streams for the following devices. Use of the optional SDM feed is not required:

- GWC - via GWC Mgr (SESM) on SSPFS via custlog to SDM
- SAM21 - via SAM21 Mgr on SSFPS via custlog to SDM
- UAS - via UAS Mgr (SESM) on SSPFS via custlog to SDM
- PVG (MG7K, MG15K) - via MDM to passport log streamer to SDM
- Passport 15K MSS - via MDM to passport log streamer to SDM

Note: All of the streams above also go into IEMS for proper IEMS GUI and security operation. OSSs will still connect to IEMS for any of the other equipment in the portfolio. IEMS can block OSS delivery of the alternate feeds northbound if the same OSS is also connected to the SDM to prevent duplication.

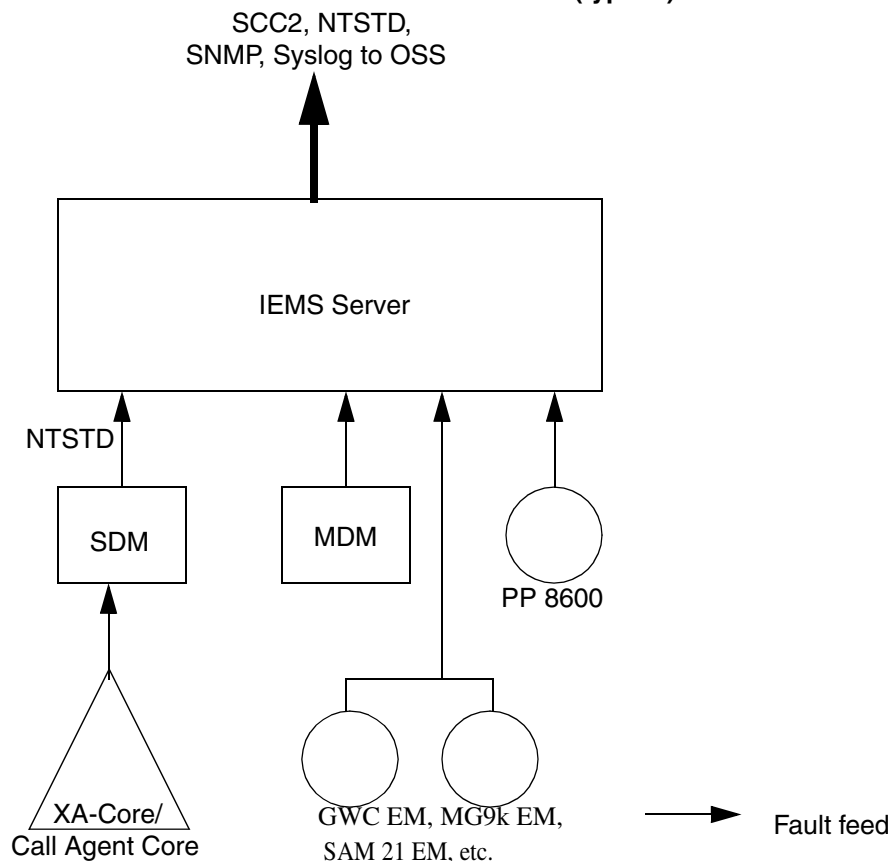
These are in addition to fault streams which can originate from SDM and are supported in all configurations, including TDM only and VTOA-AAL1 solutions:

- CM (XA-Core or Compact) - via SDM
- SDM platform and applications - via SDM

All other fault streams are only supported via IEMS as of SN07. (including but not limited to STORM, CICM, SSPFS Platforms, MS20x0, NGSS)

(SSTrunks), SSLines, RTP MP (BCP 7100), MAS, PP8600, MCS System Manager).

Fault flow with IEMS as Northbound interface (typical)



Note: The SDM SCC2 and NTSTD logroute streams must be configured for SCC2_old or NTstd_old. This is a change from SN06.2

This figure shows the fault flows in an office where the IEMS will be the northbound interface. In this configuration, all the devices that have been implemented in IEMS forward their fault information to IEMS. The SDM will only be responsible for forwarding core faults to the IEMS.

Note: The SDM logroute stream must be configured from tcpin.

IEMS Appendix 2: Nortel Alarm Extension MIB

-- Draft Version

NORTEL-ALARM-EXT-MIB

DEFINITIONS ::= BEGIN

IMPORTS

nortelGenericMIBs FROM NORTEL-GENERIC-MIB

alarmActiveEntry, alarmActiveResourceId, alarmActiveDescription,
ResourceId, alarmActiveDateAndTime

FROM ALARM-MIB

IANAItuEventType, IANAItuProbableCause

FROM IANA-ITU-ALARM-TC

AdminState, OperState, UsageState,

AlarmStatus, StandbyStatus FROM ENTITY-STATE-MIB

nlnLogName, nlnLogIndex FROM NOTIFICATION-LOG-MIB

NOTIFICATION-GROUP FROM SNMPv2-CONF

DateAndTime, DisplayString FROM SNMPv2-TC

SnmpAdminString FROM SNMP-FRAMEWORK-MIB

MODULE-IDENTITY, OBJECT-IDENTITY,

OBJECT-TYPE, NOTIFICATION-TYPE,

Unsigned32

FROM SNMPv2-SMI;

nnExtAlarmMIB MODULE-IDENTITY

LAST-UPDATED "200401270000Z"

ORGANIZATION "Nortel Networks"

CONTACT-INFO

" Nortel Networks
8200 Dixie Road
Brampton, Ontario L6T 5P6
Canada

1-800-4Nortel

```
www.nortelnetworks.com "

DESCRIPTION
    "This module contains objects that extend the IETF Alarm MIB, including
    notifications."

-- Revision history

REVISION "200401270000Z"
DESCRIPTION
    " Initial version"

::= { nortelGenericMIBs 6 }

nnExtAlarmObjects OBJECT IDENTIFIER ::= { nnExtAlarmMIB 1 }
nnExtAlarmConformance OBJECT IDENTIFIER ::= { nnExtAlarmMIB 2 }
nnExtAlarmCompliances OBJECT IDENTIFIER ::= { nnExtAlarmConformance 1 }
nnExtAlarmGroups OBJECT IDENTIFIER ::= { nnExtAlarmConformance 2 }

-- Textual Conventions

NnAvailabilityStatus ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "Represents the availability status"
    SYNTAX INTEGER {
        notSupported (1),
        inTest (2),
        failed (3),
        powerOff (4),
        offLine (5),
        offDuty (6),
        dependency (7),
        degraded (8),
        notInstalled (9),
        logFull (10)
    }

NnControlStatus ::= TEXTUAL-CONVENTION
```

```
STATUS          current

DESCRIPTION

    "Represents the control status"

SYNTAX INTEGER {
    notSupported (1),
    subjectToTest (2),
    partOfServiceLocked (3),
    reservedForTest (4),
    suspended (5)
}

NnProceduralStatus ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION

        "Represents the procedural status"

    SYNTAX INTEGER {
        notSupported (1),
        initializationRequired (2),
        notInitialized (3),
        initializing (4),
        reporting (5),
        terminating (6)
    }

NnUnknownStatus ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION

        "The unknown status attribute is used to indicate that
        the state of the resource represented by the managed object
        is unknown. When the unknown status attribute value is
        true, the value of the state attributes may not reflect
        the actual state of the resource."

    SYNTAX          INTEGER {
        false(1),
        true(2)
    }
}
```

-- Nortel Extended Active Alarm Table

nnExtAlarmActiveTable OBJECT-TYPE

SYNTAX SEQUENCE OF NnExtAlarmActiveEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains additional information about active alarms than what is found in the IETF Alarm MIB."

::= { nnExtAlarmObjects 1 }

nnExtAlarmActiveEntry OBJECT-TYPE

SYNTAX NnExtAlarmActiveEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An active alarm entry"

AUGMENTS { alarmActiveEntry }

::= { nnExtAlarmActiveTable 1 }

NnExtAlarmActiveEntry ::= SEQUENCE {

nnExtAlarmActiveEventType IANAItuEventType,

nnExtAlarmActiveProbableCause IANAItuProbableCause,

nnExtAlarmActiveAdditionalText SnmpAdminString,

nnExtAlarmActiveDocumentationPointer SnmpAdminString,

nnExtAlarmActiveResourceDescription SnmpAdminString,

nnExtAlarmActiveManualClear INTEGER,

nnExtAlarmActiveSequenceNumber Integer32

}

nnExtAlarmActiveEventType OBJECT-TYPE

SYNTAX IANAItuEventType

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Represents the per active alarm instance event type values."

REFERENCE

"ITU Recommendation M.3100, 'Generic Network Information

```
Model', 1995
ITU Recommendation X.733, 'Information Technology - Open
Systems Interconnection - System Management: Alarm
Reporting Function', 1992
ITU Recommendation X.736, 'Information Technology - Open
Systems Interconnection - System Management: Security
Alarm Reporting Function', 1992"
 ::= { nnExtAlarmActiveEntry 1 }

nnExtAlarmActiveProbableCause OBJECT-TYPE
    SYNTAX      IANAItuProbableCause
    MAX-ACCESS  read-write
    STATUS      current

    DESCRIPTION
        "Per active alarm instance ITU probable cause values."

    REFERENCE
        "ITU Recommendation M.3100, 'Generic Network Information
        Model', 1995
        ITU Recommendation X.733, 'Information Technology - Open
        Systems Interconnection - System Management: Alarm
        Reporting Function', 1992
        ITU Recommendation X.736, 'Information Technology - Open
        Systems Interconnection - System Management: Security
        Alarm Reporting Function', 1992"
    ::= { nnExtAlarmActiveEntry 2 }

nnExtAlarmActiveAdditionalText OBJECT-TYPE
    SYNTAX  SnmpAdminString
    MAX-ACCESS read-write
    STATUS  current

    DESCRIPTION
        "Represents the per active alarm instance additional text
        field."

    REFERENCE
        "ITU Recommendation M.3100, 'Generic Network Information
        Model', 1995
```


ITU Recommendation X.733, 'Information Technology - Open
Systems Interconnection - System Management: Alarm
Reporting Function', 1992"

```
::= { nnExtAlarmActiveEntry 3 }
```

nnExtAlarmActiveDocumentationPointer OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object services as a pointer to documentation related to this problem.

If there is no specific document pointer for this alarm, this object is a null length string."

```
::= { nnExtAlarmActiveEntry 4 }
```

nnExtAlarmActiveResourceDescription OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is a textual description of the resource under under alarm.

The format of the string is as follows:

```
Ntype=Nename;componentType=componentInstanceId;subcompType=subcompInstanceId;....
```

With NE as the root, the entire containment with the list of Relative Distinguished Names (RDNs) is presented upto the

point where the alarming component is clearly identified.

Semicolon is the delimiter between a 'category=value' pair.

The string can only contain alphanumeric characters and underscores. No commas, spaces, slashes, hyphens, or dollar signs are allowed

"

```
::= { nnExtAlarmActiveEntry 5 }
```

nnExtAlarmActiveManualClear OBJECT-TYPE

```
SYNTAX      INTEGER {  
    other (1),  
    forbidden (2),  
    required (3),  
    optional (4)  
}
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object provides guidance to a mid-level manager on the handling of this alarm. A value of forbidden indicates that a mid-level manager MUST NOT allow this alarm to be manually cleared. A value of required indicates that this alarm has no corresponding clear so MUST always be manually cleared. A value of optional indicates that this alarm does have a corresponding clear, but that is MAY also be cleared manually. A value of other indicates that the manual clear status is either unknown or not one of the specified values."

::= { nnExtAlarmActiveEntry 6 }

nnExtAlarmActiveSequenceNumber OBJECT-TYPE

```
SYNTAX      Integer32
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The sequence number of this notification. This object MUST have a value of 0 for notifications without sequence numbers or solutions that don't support sequence numbers."

DEFVAL { 0 }

::= { nnExtAlarmActiveEntry 7 }

-- Nortel Extended Alarm State Information

nnExtAlarmStateTable OBJECT-TYPE

```
SYNTAX      SEQUENCE OF NnExtAlarmStateEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This table contains state information about active alarms than
    what is found in the IETF Alarm MIB."
::= { nnExtAlarmObjects 2 }
```

nnExtAlarmStateEntry OBJECT-TYPE

```
SYNTAX      NnExtAlarmStateEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "An active alarm state entry"
AUGMENTS { alarmActiveEntry }
::= { nnExtAlarmStateTable 1 }
```

NnExtAlarmStateEntry ::= SEQUENCE {

```
    nnExtAlarmStateAdministrative    AdminState,
    nnExtAlarmStateOperational       OperState,
    nnExtAlarmStateUsage              UsageState,
    nnExtAlarmStateAlarm              AlarmStatus,
    nnExtAlarmStateAvailability       NnAvailabilityStatus,
    nnExtAlarmStateControl            NnControlStatus,
    nnExtAlarmStateProcedural         NnProceduralStatus,
    nnExtAlarmStateStandby            StandbyStatus,
    nnExtAlarmStateUnknown            NnUnknownStatus
}
```

nnExtAlarmStateAdministrative OBJECT-TYPE

```
SYNTAX      AdminState
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    " "
::= { nnExtAlarmStateEntry 1 }
```

nnExtAlarmStateOperational OBJECT-TYPE

```
SYNTAX      OperState
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    " "
 ::= { nnExtAlarmStateEntry 2 }
```

nnExtAlarmStateUsage OBJECT-TYPE

```
SYNTAX      UsageState
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    " "
 ::= { nnExtAlarmStateEntry 3 }
```

nnExtAlarmStateAlarm OBJECT-TYPE

```
SYNTAX      AlarmStatus
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    " "
 ::= { nnExtAlarmStateEntry 4 }
```

nnExtAlarmStateAvailability OBJECT-TYPE

```
SYNTAX      NnAvailabilityStatus
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    " "
 ::= { nnExtAlarmStateEntry 5 }
```

nnExtAlarmStateControl OBJECT-TYPE

```
SYNTAX      NnControlStatus
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    " "
 ::= { nnExtAlarmStateEntry 6 }
```

nnExtAlarmStateProcedural OBJECT-TYPE

SYNTAX NnProceduralStatus

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" "

::= { nnExtAlarmStateEntry 7 }

nnExtAlarmStateStandby OBJECT-TYPE

SYNTAX StandbyStatus

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" "

::= { nnExtAlarmStateEntry 8 }

nnExtAlarmStateUnknown OBJECT-TYPE

SYNTAX NnUnknownStatus

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" "

::= { nnExtAlarmStateEntry 9 }

-- Table of Information related to Messages

nnExtAlarmMessageTable OBJECT-TYPE

SYNTAX SEQUENCE OF NnExtAlarmMessageEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table of information on messages. Entries are added to this table when their corresponding notifications have been sent. Entries will be removed from this table as outlined in the Notification Log MIB [RFC3014]. Implementations that do not support the Notification Log MIB should

```

        provide behaviour for nlmLogName, nlmLogIndex and
        this table as if they did."
 ::= { nnExtAlarmObjects 3 }

```

nnExtAlarmMessageEntry OBJECT-TYPE

```

SYNTAX      NnExtAlarmMessageEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "An alarm message entry."
INDEX       { nlmLogName, nlmLogIndex }
 ::= { nnExtAlarmMessageTable 1 }

```

NnExtAlarmMessageEntry ::= SEQUENCE {

```

    nnExtAlarmMessageResource      ResourceId,
    nnExtAlarmMessageResourceDescription SnmpAdminString,
    nnExtAlarmMessageDateAndTime    DateAndTime,
    nnExtAlarmMessageDocumentationPointer SnmpAdminString,
    nnExtAlarmMessageInfo           SnmpAdminString

```

```

}

```

nnExtAlarmMessageResource OBJECT-TYPE

```

SYNTAX      ResourceId
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This object identifies the resource that this message pertains to

    If there is no corresponding resource, then
    the value of this object MUST be 0.0."
 ::= { nnExtAlarmMessageEntry 1 }

```

nnExtAlarmMessageResourceDescription OBJECT-TYPE

```

SYNTAX      SnmpAdminString
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This is a textual description of the resource this message

```

pertains to.

The format of the string is as follows:

NEtype=NName;componentType=componentInstanceId;subcompType=subcompInstanceId;....

With NE as the root, the entire containment with the list of Relative Distinguished Names (RDNs) is presented upto the

point where the messaging component is clearly identified.

Semicolon is the delimiter between a 'category=value' pair.

The string can only contain alphanumeric characters and underscores. No commas, spaces, slashes, hyphens, or dollar signs are allowed

"

::= { nnExtAlarmMessageEntry 2 }

nnExtAlarmMessageDateAndTime OBJECT-TYPE

SYNTAX DateAndTime

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The local date and time when the message originated.

Implementations MUST include the offset from UTC, if available. Implementation in environments in which the UTC offset is not available is NOT RECOMMENDED."

::= { nnExtAlarmMessageEntry 3 }

nnExtAlarmMessageDocumentationPointer OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object serves as a pointer to documentation related to this problem.

If there is no specific document pointer for this alarm, this object

```

        is a null length string."
 ::= { nnExtAlarmMessageEntry 4 }

nnExtAlarmMessageInfo OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A textual discription of the event that has occurred,
        suitable to display to an operator. "
 ::= { nnExtAlarmMessageEntry 5 }

-- all notification OIDs would be prefixed with a zero OID to
-- facilitate snmp v1<->v2 conversion

nnExtNotificationPrefix OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
        "This OID represents the prefix branch for all Nortel ITU
        Alarm Notifications.
        The last but one sub identifier in the OID of
        any Notification must have the value zero to facilitate
        v2<-->v1 conversion."
 ::= {nnExtAlarmObjects 0 }

-- Alarm Notifications

nnExtAlarmClear NOTIFICATION-TYPE
    OBJECTS { alarmActiveResourceId,
              alarmActiveDateAndTime,
              alarmActiveDescription,
              nnExtAlarmActiveEventType,
              nnExtAlarmActiveProbableCause,
              nnExtAlarmActiveAdditionalText,
              nnExtAlarmActiveDocumentationPointer,
              nnExtAlarmActiveResourceDescription,
              nnExtAlarmActiveSequenceNumber
    }

```



```
    }

    STATUS    current
    DESCRIPTION
        "This notification indicates that one or more previously
        reported alarms have been cleared and the previously reported
        alarms are identified via the correlation id list field.
        The varbinds include alarm context via the ComponentId field
        and other additional useful information."

 ::= { nnExtNotificationPrefix 301 }

nnExtAlarmWarning NOTIFICATION-TYPE
    OBJECTS { alarmActiveResourceId,
               alarmActiveDateAndTime,
               alarmActiveDescription,
               nnExtAlarmActiveEventType,
               nnExtAlarmActiveProbableCause,
               nnExtAlarmActiveAdditionalText,
               nnExtAlarmActiveDocumentationPointer,
               nnExtAlarmActiveResourceDescription,
               nnExtAlarmActiveManualClear,
               nnExtAlarmActiveSequenceNumber
            }

    STATUS    current
    DESCRIPTION
        "This notification indicates that an alarm of 'Warning' severity
        has been raised on a NE.
        The varbinds include alarm context via the ComponentId field
        and other additional useful information on the alarm condition."

 ::= { nnExtNotificationPrefix 302 }

nnExtAlarmMinor NOTIFICATION-TYPE
    OBJECTS { alarmActiveResourceId,
```

```
        alarmActiveDateAndTime,
        alarmActiveDescription,
        nnExtAlarmActiveEventType,
        nnExtAlarmActiveProbableCause,
        nnExtAlarmActiveAdditionalText,
        nnExtAlarmActiveDocumentationPointer,
        nnExtAlarmActiveResourceDescription,
        nnExtAlarmActiveManualClear,
        nnExtAlarmActiveSequenceNumber
    }

STATUS    current
DESCRIPTION
    "This notification indicates that an alarm of 'Minor' severity
    has been raised on a NE.
    The varbinds include alarm context via the ComponentId field
    and other additional useful information on the alarm condition."

::= { nnExtNotificationPrefix 303 }


nnExtAlarmMajor NOTIFICATION-TYPE
    OBJECTS { alarmActiveResourceId,
        alarmActiveDateAndTime,
        alarmActiveDescription,
        nnExtAlarmActiveEventType,
        nnExtAlarmActiveProbableCause,
        nnExtAlarmActiveAdditionalText,
        nnExtAlarmActiveDocumentationPointer,
        nnExtAlarmActiveResourceDescription,
        nnExtAlarmActiveManualClear,
        nnExtAlarmActiveSequenceNumber
    }

STATUS    current
DESCRIPTION
    "This notification indicates that an alarm of 'Major' severity
    has been raised on a NE."
```

The varbinds include alarm context via the ComponentId field and other additional useful information on the alarm condition."

```
::= { nnExtNotificationPrefix 304 }
```

```
nnExtAlarmCritical NOTIFICATION-TYPE
```

```
    OBJECTS { alarmActiveResourceId,  
               alarmActiveDateAndTime,  
               alarmActiveDescription,  
               nnExtAlarmActiveEventType,  
               nnExtAlarmActiveProbableCause,  
               nnExtAlarmActiveAdditionalText,  
               nnExtAlarmActiveDocumentationPointer,  
               nnExtAlarmActiveResourceDescription,  
               nnExtAlarmActiveManualClear,  
               nnExtAlarmActiveSequenceNumber  
            }
```

```
STATUS    current
```

```
DESCRIPTION
```

"This notification indicates that an alarm of 'Critical' severity has been raised on a NE.

The varbinds include alarm context via the ComponentId field and other additional useful information on the alarm condition."

```
::= { nnExtNotificationPrefix 305 }
```

```
nnExtAlarmMessage NOTIFICATION-TYPE
```

```
    OBJECTS {  
        nnExtAlarmMessageResource,  
        nnExtAlarmMessageResourceDescription,  
        nnExtAlarmMessageDateAndTime,  
        nnExtAlarmMessageDocumentationPointer,  
        nnExtAlarmMessageInfo  
    }
```

```
STATUS    current
```

```
DESCRIPTION
    "An informational message. This notification does not
    correspond to an alarm so would not be stored in the
    active alarm table and it does not have a corresponing
    clear."
::= { nnExtNotificationPrefix 306 }

-- Notification group definitions

nnExtAlarmNotificationsGroup NOTIFICATION-GROUP
    NOTIFICATIONS {
        nnExtAlarmClear,
        nnExtAlarmWarning,
        nnExtAlarmMinor,
        nnExtAlarmMajor,
        nnExtAlarmCritical
    }
    STATUS    current
    DESCRIPTION
        " Nortel alarm notification group."
    ::= { nnExtAlarmGroups 1}

nnExtAlarmGroup OBJECT-GROUP
    OBJECTS {
        nnExtAlarmActiveEventType,
        nnExtAlarmActiveProbableCause,
        nnExtAlarmActiveAdditionalText,
        nnExtAlarmActiveDocumentationPointer,
        nnExtAlarmActiveResourceDescription,
        nnExtAlarmActiveManualClear,
        nnExtAlarmActiveSequenceNumber
    }
    STATUS    current
    DESCRIPTION
        " Nortel alarm group."
    ::= { nnExtAlarmGroups 2}
```

```
nnExtAlarmStateGroup OBJECT-GROUP
    OBJECTS {
        nnExtAlarmStateAdministrative,
        nnExtAlarmStateOperational,
        nnExtAlarmStateUsage,
        nnExtAlarmStateAlarm,
        nnExtAlarmStateAvailability,
        nnExtAlarmStateControl,
        nnExtAlarmStateProcedural,
        nnExtAlarmStateStandby,
        nnExtAlarmStateUnknown
    }
    STATUS current
    DESCRIPTION
        " Nortel alarm state group."
    ::= { nnExtAlarmGroups 3}

nnExtAlarmMessageGroup OBJECT-GROUP
    OBJECTS {
        nnExtAlarmMessageResource,
        nnExtAlarmMessageInfo,
        nnExtAlarmMessageDocumentationPointer,
        nnExtAlarmMessageDateAndTime,
        nnExtAlarmMessage
    }
    STATUS current
    DESCRIPTION
        " Nortel alarm message group."
    ::= { nnExtAlarmGroups 4}

-- Compliance
nnExtAlarmCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for entities which implement
        the Nortel Alarm MIB."
    MODULE -- this module
    MANDATORY-GROUPS {
```

```
        nnExtAlarmGroup
    }
    ::= { nnExtAlarmCompliances 1}
END
```




SN08 Feature Deltas

Product = CS 2000

A00006226--NTPOLL: Restructuring and Table Control

Functional Description

1.1 Applicable Solution(s)

DMS

1.2 Description

This feature, “NTPOLL: RESTRUCTURING and TABLE CONTROL” (A00006226), is scheduled for release in SN08.

1.2.1 NTPOLL Background

NTPOLL is an existing DMS feature which automatically polls various data from the switch and stores the results in data files on either SFDEV or NTDEV. NTDEV is a virtual type DMS disk similar to SFDEV but which has been set aside specifically for storage of the poll data files. Typically, NTDEV stores the results of the polling, although the option to use SFDEV exists.

The output of the polling is one or several poll data files named POLLDATA, POLLDATA1, POLLDATA2, POLLDATA3, etc. The maximum size of each file is limited (to approximately 30,000 lines), so when a poll data file reaches its maximum length, it is closed and a new file (named with the next number in the numbering scheme) is opened. A small switch might only output one POLLDATA file during a polling. However, large switches have been known to output as many as four or five POLLDATA files. Optionally, these poll data files may be compressed automatically. Compressed files are denoted by the letter “Z” (ex. POLLDATAZ, POLLDATA1Z, POLLDATA2Z, etc.).

The data polled and collected by the system is currently defined by the system. There are two types of poll steps done during the polling. A “table step” is simply the collection of data from a DMS table (either listings of tuples or a count of tuples in the table). A “complex step” involves the collection of

various other types of data from the switch, for example software version, patch, SOC, DMSMON, memory, and other configuration information. In a full polling, there are currently over 440 total polling steps. Approximately 85% of the steps are table steps.

Two CI commands are used in the administration of polling:

- **POLLSCHD** - used for the weekly scheduling of pollings, defining polling parameters (e.g. date and time of the polling, disk devices to use and whether to compress or not), and querying scheduled polls
- **POLL** - used to do an immediate poll, define the parameters thereof (e.g. disk devices to use and whether to compress or not), or query certain information about the polling system.

1.2.1.1 Script file background

Because the polling steps are defined internally within the polling code, it can be expensive (i.e. requires a patch) to add a new desired polling step once a load is released. Special scripts have been designed, used, and maintained to supplement the base polling data. Special demarcations within the script files allow the polling code to recognize, run, and collect the output of these scripts as part of the regular polling when the script is placed on NTDEV.

1.2.2 New Feature Functionality

The purpose of this feature is to allow the user the ability to modify the NTPOLL data collection template and address known software deficiencies. Currently, the poll steps performed during a polling are set in stone at initialization time and are not subject to changes, additions, or deletions of steps by the crafts person. To enhance the NTPOLL polling system, the following will be implemented:

- Creation of a new table, NTPOLL, which contains a visual representation of the poll steps to be done during the next polling, as well as the ability to modify, add, or delete poll steps at the user's discretion via Table Control.
- Consolidate existing polling scripts into the NTPOLL tool.
- A series of smaller, internal fixes within the polling code to improve the robustness and security of the polling system.

Note 1: This feature is being done in conjunction with feature "NTDEV POLLING DEVICE and FTP ACCESSIBILITY FROM SDM" (A00006219). The two features are independent and can stand alone, but the ability to FTP to NTDEV (where poll files are stored) is an enhancement to the overall polling functionality.

Note 2: It is suggested that access to Table NTPOLL be privclassed so that only certain administrative users may change it.

1.2.2.1 Table NTPOLL

This feature adds a new table to the system, Table NTPOLL.

This table can be used to view or customize the poll steps that will be taken the next time a polling occurs (NOTE: the “pollschd qsched” command can be used to query when the next polling is scheduled for).

Assuming there are n polling steps, when a polling begins, it will start at tuple 0 (zero), in Table NTPOLL, execute that step, and proceed through tuple n-1 to complete the polling.

Table NTPOLL is automatically datafilled with the default polling template by the system upon initialization. It reflects the internal data structures which track all of the poll steps to be taken.

Because the polling steps will now be stored in a DMS table instead of just in internal data structures, any changes made by the user to the polling steps will be preserved over system restarts and upgrades (ONP).

The following shows sample portions of Table NTPOLL (NOTE: initially there may be more than 430 steps in the table). The table’s keys are kept in order from 0 to n-1 (n=total # of poll steps), even if changes are made to the table (i.e. steps added or deleted).

The key contains the step number and an “insert bool”. The insert bool is only necessary when a new step is being added between existing steps. For example, if a new step is being added as step 33, the current step 33 becomes step 34, 34 becomes 35, 35 becomes 36, and so on.

The next four bools determine whether or not that step is included in each of the four report types (LONG, SHORT, USAGE, and MEMCALC).

Finally, the step type and associated data are listed:

- **CMPLX** = complex step. A string name of the step is listed. A complex step involves a single or series of CI commands which are executed. Please see the explanation below of complex step fields for more information.
- **TABLE** = table step. The name of the table and the option whether to list out the table or count it is included. Please see the explanation below of table step fields for more information.

NTPOLLCI:

>list 50

TOP

NTPOLLKEY

NTPDATA

0	N					N	Y	N	N	CMPLX	INT	Display	BCS	Number
1	N					N	Y	N	N	CMPLX	INT	Display	IMAGENAME	
2	N					N	Y	N	N	CMPLX	INT	Display	Log	Message
3	N					N	Y	N	N	CMPLX	INT		CPID	counts
4	N					N	Y	N	N	CMPLX	INT	PRSM	List	ACT Patches Turned On
5	N					N	Y	N	N	CMPLX	INT	PRSM	List	Act Patches
6	N					Y	Y	N	N	CMPLX	INT	PRSM	INFORMLIST	
7	N					Y	N	N	N	CMPLX	INT	PRSM	INFORMSITE	
8	N					Y	N	N	N	CMPLX	INT	PRSM	INFORMLOAD	
9	N					Y	Y	N	Y	CMPLX	INT	Dynamic	Memory	Size Information
10	N					Y	Y	N	N	CMPLX	INT	Display	PM	Loads
11	N					Y	Y	Y	N	CMPLX	INT	Display	SOC	Data
						.								
						.								
						.								
33	N	Y	Y	N	N	TABLE				OFCENG	LIST		ALL	
34	N	Y	Y	N	N	TABLE				OFCOPT	LIST		ALL	
35	N	Y	Y	N	N	TABLE				OFCSTD	LIST		ALL	
36	N	Y	Y	N	N	TABLE				OFCVAR	LIST		ALL	
37	N									N	N	N	Y	CMPLX INT Display MEMCALC Office Parm
38	N	Y	Y	N	Y	TABLE				OFCAUT	LIST		ALL	
39	N									Y	Y	N	Y	CMPLX INT Gathering Table Counts Header
40	N					Y	N	N	N	TABLE		ACDAGENTS	COUNT	
41	N					Y	Y	N	N	TABLE		ACSCRN1	COUNT	
42	N					Y	Y	N	Y	TABLE		ACSCRN2	COUNT	

1.2.2.1.1 Table NTPOLL fields

Four types of tuples can be added to Table NTPOLL:

- Table step (COUNT) - counts the number of tuples in the table.
- Table step (LIST) - lists tuples in the table. There are several list options. Typically, a table step is simply to LIST ALL tuples in the table. However, options exist also to list the first or last n tuples in the table (e.g. LIST FIRST 20 or LIST LAST 200).
- Complex step (INT) - an “internal” complex step. These are added to the table by the system and are not modifiable by the user (although they may be deleted). These complex steps execute a procedure internal to the code.

- **Complex step (EXT)** - an “external” complex step. These are defined by the user. The DMS command interface will attempt to execute, as a CI command, whatever string the user enters in the tuple.

The following fields are common to every tuple in Table NTPOLL:

NTPOLLKY - The key for Table NTPOLL. It is a two-part key:

- STEPNUM - The step number. The system will keep these numbered from 0 to n-1 (n = the total number of steps) whenever tuples are added or deleted.
- INSERT - This is a bool which is only used when a tuple is being inserted between two existing tuples. It should be set to ‘Y’ in that case, and ‘N’ any other time.

LONG - A bool which tells the system if this step is part of a long format polling report.

SHORT - A bool which tells the system if this step is part of a short format polling report.

USAGE - A bool which tells the system if this step is part of a usage format polling report.

MEMCALC - A bool which tells the system if this step is part of a memcalc format polling report.

STPTYP - The step type, either table or complex: {TABLE, CMPLX}

The following fields appear in the table based on the step type (STPTYP):

- **Table step fields**

TABNAME - The string name of the table

TSOPER - Table step operation - either list or count: {COUNT, LIST}

LISTOP - a LIST operation: {ALL, FIRST, LAST}

HOWMANY - If LISTOP is FIRST or LAST, this field will be prompted for and the number of tuples to be listed should be entered in this field

- **Complex step fields**

CMPLXTYP - An “internal” (code-defined) or “external” (user-defined) complex step: {INT, EXT}

CMPLXNAME - The string name of the complex step. For an internal complex step, this is just a name and the actual internal procedure which gets run is stored in internal data structures. For an external complex step, this string is actually run as if it was a CI command entered by the user.

NOTES on external complex steps: The maximum length string the user can enter is 40 characters. Also, because table control prompting only accepts everything up to the first space, the underscore, “_”, should be used where spaces are desired. If a true underscore is desired, enter two consecutive underscores and the code will interpret this as an underscore rather than two spaces. For example, if “OPEN SWER” is the complex command the user wishes to be executed, “OPEN_SWER” should be entered.

1.2.2.1.2 Table NTPOLL datafill examples

Ex. 1 - Datafilling a “table count” step in Table NTPOLL

TABLE: NTPOLL

```
>
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
NTPOLLKY:
>441 n
LONG: N
>y
SHORT: N
>y
USAGE: N
>
MEMCALC: N
>
STPTYP:
>table
TABNAME:
>MNATMIF
TSOPER:
>count
TUPLE TO BE ADDED:
    441 N      Y Y N N TABLE      MNATMIF COUNT
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

Ex. 2 - Datafilling a “table list all” step in Table NTPOLL

TABLE: NTPOLL

```
>
>add
```

```
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
NTPOLLKEY:
>442
INSERT: N
>n
LONG: N
>y
SHORT: N
>
USAGE: N
>
MEMCALC: N
>
STPTYP:
>table
TABNAME:
>e911psap
TSOPER:
>list
LISTOP:
>all
TUPLE TO BE ADDED:
    442 N    Y N N N TABLE    E911PSAP LIST  ALL
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

Ex. 3 - Datafilling a “internal complex” step in Table NTPOLL

Internal complex commands are added by the system, but a “change” on a complex command tuple is illustrated below to show the different fields. For an internal complex command, the string name (CMPLXNAME) is merely a description of the command. The actual CI command(s) and/or procedure(s) to be run are stored internal to the code.

```
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
LONG: N
>
SHORT: Y
>
```

```
USAGE: N
>
MEMCALC: N
>
STPTYP: CMPLX
>
CMPLXTYP: INT
>
CMPLXNAME: Display_IMAGENAME
>
TUPLE TO BE CHANGED:
      1 N          N Y N N CMPLX Display_IMAGENAME
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>n
DMO REJECTED
```

Ex. 4 - Datafilling a “external complex” step in Table NTPOLL

When a complex step is datafilled as EXT (external), the user is actually defining the exact CI command(s) which will run. The CMPLXNAME field will be run as a CI command at polling time. Note that due to table control prompting functionality, underscores must be used where spaces would normally be on the CI command line. Internally, the underscore will be converted to spaces. If a true underscore is desired in the CMPLXNAME, the user should enter a double underscore (i.e. two consecutive underscores).

The following example shows the addition of the “OPEN SWER” command to Table NTPOLL. This command is executed within the LOGUTIL CI level, so presumably the previous user-added step (step # 443) was an external complex command “LOGUTIL” to get into the LOGUTIL level so that OPEN SWER could be executed.

```
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
NTPOLLKEY:
>444
INSERT: N
>n
LONG: N
>y
SHORT: N
>
USAGE: N
>
MEMCALC: N
```

```

>
STPTYP:
>cmplx
CMPLXTYP:
>ext
CMPLXNAME:
>open_swer
TUPLE TO BE ADDED:
    444 N          Y N N N CMPLX    OPEN_SWER
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE

```

Figure 1 NTPOLL fields.fields.

TABLE STEP TUPLES

<u>NTPOLLKEY</u>	<u>LONG</u>		<u>USAGE</u>	<u>STPTYP</u>	<u>TSOPER</u>	<u>HOWMANY</u>				
<u>INSERT</u>	<u>SHORT</u>	<u>MEMCALC</u>	<u>TABNAME</u>	<u>LISTOP</u>						
33	N	Y	Y	N	N	TABLE	OFCENG	LIST	ALL	
34	N	Y	N	N	N	TABLE	MNHSCARR	LIST	LAST	400
35	N	Y	N	N	N	TABLE	HUNTMEM	LIST	FIRST	20
36	N	Y	Y	Y	Y	TABLE	LNINV	COUNT		

COMPLEX STEP TUPLES

<u>NTPOLLKEY</u>		<u>LONG</u>		<u>USAGE</u>		<u>STPTYP</u>	<u>CMPLXNAME</u>	
<u>INSERT</u>		<u>SHORT</u>		<u>MEMCALC</u>		<u>CMPLXTYP</u>		
33	N	Y	Y	N	N	CMPLX	INT	Display_IMAGENAME
34	N	Y	N	N	N	CMPLX	EXT	OPEN_SWERR

1.2.2.2 Consolidation of polling scripts into polling code

An official set of polling script files currently exists. These script files augment the data collection template for each release. With this feature, the functionality of these official polling script files will be replaced by polling steps executed from within the internal polling code. Thus, the script files should no longer be necessary. However, the polling system will continue to look for polling scripts applicable to this load and release and if found, will execute the script. Care should be taken by script writers not to duplicate commands in the scripts which are already done by the internal code.

1.2.2.3 Restore Default Steps

A new option to the POLL CI command is added so that the user can return the state of the polling system to its system default. For example, if tuples are accidentally deleted from Table NTPOLL, the associated poll steps will no longer be executed during polling. The “POLL RESTORE_DEFAULTS” command can be used to restore the list of polling steps (and thus Table NTPOLL) to the way it was at system initialization time.

The steps for restoring the polling defaults are:

- (1) Delete all existing tuples from Table NTPOLL.

HINT: There are several ways to do this. If the “override” and “verify off” commands are available, the simplest way to do this would be the following:.

```
TABLE: NTPOLL
> count
BOTTOM
SIZE = 437
> ove;ver off
> repeat 437 (del;up)
```

With most tables, only the “del” part would be required. The “up” is included for this table because for every tuple delete, the tuples are renumbered. A repeat loop like this would only delete half of the tuples because the next tuple to be deleted actually gets moved up in the ordering, and the delete happens on the next tuple.

- (2) Perform the POLL RESTORE_DEFAULTS command.

```
>poll restore_defaults
Deleting any existing poll steps and recreating from defaults...
Done - default poll_steps restored.
```

1.2.2.4 Execute a step in Table NTPOLL

A new option to the POLL CI command is added so that the user can execute a single step from Table NTPOLL. For example, using the sample NTPOLL table in section 1.2.2.1 “Table NTPOLL” on page 621, step number 33 (a “list all” on Table OFCENG) is executed:

```
> POLL DOSTEP 33
```

1.2.2.5 Minor changes to default polling template

Several minor changes are made to the default polling template defined internally by the system.

- Existing steps that are not currently part of the LONG report are added to the LONG report. The LONG report is the mostly commonly gathered poll report, and certain steps that desired in the LONG report were only in the SHORT report in the past. The names of these steps are:

Display BCS Number

Display IMAGENAME

Display Log Message

DMSMON - LOGCOUNT,

DMSMON - RESTARTINFO,

DMSMON - PMCONFIG,

DMSMON - PMLOADS,

DMSMON - ASSESS,

Display CM/MS IDPROM

The output of all of these commands is relatively short and should not increase the length of the LONG report by much.

- The “SOC DBAUDIT” command is added to the complex step that gathers various SOC information (the “Display SOC Data” complex step).
- The processor type the polling is running on is queried so that only commands applicable to that processor type (ex. 88k vs. XA-Core) will be executed.

1.2.2.6 NTPOLL Robustness

While mostly invisible to the user, a number of internal robustness fixes have gone into the polling code for SN08. Among them are:

- A security fix for the POLLUSER remaining permitted after the polling. Each time a scheduled polling occurs, a new DMS user called POLLUSER is permitted to the system, is logged in, and the work of the polling is done under this login session. Problems in the field have been seen where POLLUSER is not properly unpermitted after the polling. A new fix that

has gone into the TL21 stream addresses this and ensures the POLLUSER is unpermitted after polling occurs.

- The file compression algorithm will be changed so as to avoid disk space issues on NTDEV. For example, suppose that there is enough data on the switch that a polling has created three data files, POLLDATA, POLLDATA1, and POLLDATA2 and that the compression option was chosen when the polling was scheduled. Currently, the system will create the three files and then compress all three after the polling is done. Under the new algorithm, each file will be automatically compressed as soon as it is closed. This will allow more space for new files to be created and guard against running out of disk space.
- An issue has been discovered where a polling may prematurely halt under certain conditions when one of the poll data files reaches its maximum line limit (approx. 30,000 lines). Rather than close the file and create a new poll data file (as is normally the case), the polling simply stops. Safeguards will be put in the code to monitor for this condition and properly close the file and create a new one in order to allow the polling to continue.

1.2.2.7 “Push” poll data files to a network location

A desired functionality of the polling system is for the code to automatically FTP the poll data files to a pre-specified network location once a polling has completed. The PUSH option is added to the POLL command. By default, poll pushing is OFF, but it may be turned on and configured with the IP address, userid, password, and remote directory that FTP would need to properly store the files at the remote location.

Ex. Turn automatic file pushing off.

```
> POLL PUSH OFF
```

Ex. Turn automatic file pushing on.

The format is:

```
POLL PUSH ON <ip_addr> <remote_userid> <passwd> <directory>
```

```
> POLL PUSH ON 47.142.211.3 myuserid mypasswd/home/polldude  
/polldata
```

Entering valid parameters for the POLL PUSH command is entirely up to the user. The polling system will do no error checking on the parameters and if any of them are invalid, the FTP storing of the files on the remote system will simply fail.

1.3 Hardware Requirements or Dependencies

No new dependencies.

1.4 Software Requirements or Dependencies

This feature is being developed for SN08 (built on CSP21, which contains TL21 and BAS22).

1.5 Limitations and restrictions

N/A

1.6 Interactions

N/A

1.7 Glossary

Term	Description
DMS	Digital Multiplexing System
FTP	File Transfer Protocol
NTDEV	Nortel device (memory resident disk device)
NTPOLL	DMS polling system which gathers various information about the switch and stores results in POLLDATA files. Pollings can be scheduled.
POLL	CI command to do a polling or query polling parameters
POLLSCHD	CI command to schedule a polling or query poll schedule parameters

Configuration for A00006226

1.8 Hardware and Software Requirements

1.9 Initial Configuration

1.10 Office/Subnet parameters (OP/SP) (CM & SESM)

1.11 Upgrade Considerations

1.12 Data schema (DS) (CM, MIBS, RDB)

1.12.1 New/modified tables, MIBs, or Database Schema

Table 1 New or modified tables

Table/MIB name	NEW/CHANGED/ or DELETED/	Table Control (NEW/ OLD/UNCHANGED)
NTPOLL	New	New

1.12.2 Table/MIB/Remote Database Schema information

1.12.2.1 Name: NTPOLL

1.12.2.1.1 Functional description

Table NTPOLL is a new table which contains the steps (one per tuple) taken by the DMS polling system (administered by the POLL and POLLSCHD CI commands). This type of polling is existing functionality which gathers various information about the switch and stores the results in output files on either SFDEV or NTDEV. Previously, the user could not add, delete, or manipulate the polling steps as they were defined internally by the system at initialization time. This table allows the user that flexibility. Initially, the polling steps are still defined by the system. These system defined steps will be automatically entered into Table NTPOLL by the system. After that, the user is free to add, delete, or manipulate the polling steps. The system defines over 430 polling steps, so initially Table NTPOLL will have that many tuples.

1.12.2.1.2 Usage sequence and implications (CM Only)

Table NTPOLL has no dependencies on other tables.

1.12.2.1.3 Size

Table 2 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
NTPOLL	0	1023	SEGSTOR and FREEMAPS are used to manage memory.

1.12.2.1.4 Fields/OIDs

The following table lists fields/OIDs for Table NTPOLL.

The following fields exist in all tuples.

Table 3 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
STEPNUM	new	n/a	{0..1023}	Step number. With the INSERT field, this is part of the key for the table. If there are n polling steps, STEPNUM will range from 0 to n-1. The step numbers in the table will be kept in order and consecutive by the system.
INSERT	new	n/a	{N, Y}	This bool is only meaningful and should only be set to Yes if the user wishes to add a new tuple between two existing tuples.
LONG	new	n/a	{N, Y}	A bool which tells the system if this step is part of a long format polling report.
SHORT	new	n/a	{N, Y}	A bool which tells the system if this step is part of a short format polling report.
USAGE	new	n/a	{N, Y}	A bool which tells the system if this step is part of a usage format polling report.
MEMCALC	new	n/a	{N, Y}	A bool which tells the system if this step is part of a memcalc format polling report.

Table 3 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
STPTYP	new	This field has a refinement for TABLE and a refinement for CMPLX.	{TABLE, CMPLX}	The step type, either table or complex. Table steps gather information from other DMS tables. Complex steps gather information from the switch by executing one or more CI commands.

The following fields apply when STPTYP=TABLE.

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
TABNAME	new	n/a	String (1 to 8 chars)	The name of the DMS table to gather information from.
TSOPER	new	Refinement if TSOPER = LIST	{COUNT, LIST}	Denotes whether to list tuples from, or count the tuples of the table denoted stored in the TABNAME field.

IF TSOPER = LIST

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
LISTOP	new	Refinement if LISTOP = FIRST or LAST	{ALL, FIRST, LAST}	Determines whether all the tuples should be listed, or the FIRST or LAST n tuples (if FIRST or LAST, see the next field, HOWMANY).

IF LISTOP = FIRST or LISTOP = LAST

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
HOWMANY	new	n/a	unsigned INT	The number of tuples to be listed from the table should be entered here. If LISTOP = FIRST, the first HOWMANY tuples are listed, and if LISTOP = LAST, the last HOWMANY tuples are listed.

The following fields apply when STPTYP = CMPLX.

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
CMPLXTYP	new	n/a	{INT, EXT}	INT denotes an “internal” complex step. These tuples can ONLY be datafilled by the system and not by the user. EXT denotes an “external” complex step, i.e. one that is defined by the user. When an internal complex step is executed, an internal procedure in the code is run. When an external complex step is executed, the exact string in the CMPLXNAME field is executed as if it was a CI command typed by the user.

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
CMPLXNAME	new	n/a	String (1 to 40 chars)	This string denotes the name of the complex step. In the case of an internal complex step, it is merely a name denoting the step. In the case of an external complex step, it is the actual command that will run at polling time.

1.12.2.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>.

The following example shows about 20 sample tuples from Table NTPOLL. Four types of tuples are shown:

- Table step (list)
- Table step (count)
- Complex step (internal)
- Complex step (external)

NOTES:

(1) Note that in the CMXPLXNAME field (i.e. the string associated with complex steps), spaces are represented as underscores. Internally, these underscores are converted to spaces but since space is the field separator in table control, this is necessary to keep the whole CMPLXNAME in one field.

(2) The system keeps the steps in order and consecutive. If there are n steps in the polling, the table keys will always be numbered 0 to n-1.

25 N N Y N N CMPLX INT DMSMON_-_PMLOADS

26 N N Y N N CMPLX INT DMSMON_-_ASSESS

27 N Y Y N N CMPLX INT DMSMON_-_HIGHPARMS

28 N Y Y N N CMPLX INT DMSMON_-_HIGHCAP

29 N Y Y N N CMPLX INT DMSMON_-_MEMORY

30 N Y Y N N CMPLX INT DMSMON_-_DBLOCKS
31 N Y Y Y Y CMPLX INT Exit_DMSMON
32 N Y Y N N CMPLX INT Display_Office_Parms_Header
33 N Y Y N N TABLE OFCENG LIST ALL
34 N Y Y N N TABLE OFCOPT LIST ALL
35 N Y Y N N TABLE OFCSTD LIST ALL
36 N Y Y N N TABLE OFCVAR LIST ALL
37 N N N N Y CMPLX INT Display_MEMCALC_Office_Parms
38 N Y Y N Y TABLE OFCAUT LIST ALL
39 N Y Y N Y CMPLX INT Gathering_Table_Counts_Header
40 N Y Y N Y CMPLX EXT LOGUTIL
41 N Y Y N Y CMPLX EXT OPEN_SWER
42 N Y Y N Y CMPLX EXT QUIT
43 N Y N N Y TABLE EDRAMINV COUNT
44 N Y N N N TABLE E911PSAP COUNT

1.12.2.1.6 Table release history update

This is a new table in SN08/CSP21.

1.12.2.1.7 Supplementary information

N/A

1.12.2.1.8 Translation verification and other tools

N/A

1.13 Service Orders (SO) (CM & SESM)**1.14 Software optionality control (SOC)****1.15 Element Management****1.16 User interface changes****1.17 OSSGate Interface Changes****1.18 Security****1.19 Configuration Walkthrough*****Product = CS 2000*****A00006693--XA-Core IO Capacity Monitoring Toolset*****Functional Description*****1.1 Applicable Solution(s)**

DMS

1.2 Description

The IO Capacity monitoring toolset (IOCAP) provides the customer telemetry for messaging over HIOP and HCMIC.

XA-Core counts messages and bytes for each service. Software on the XA-Core accesses the measurements, calculates the messaging occupancy level, and displays the results on the IOCAP MAPCI level and the IOCAP OM group.

This feature will cause no more than 3% capacity degradation in IO capacity.

1.2.1 IOCAP MAPCI display

The following is a prototype of the IOCAP MAPCI display, which will subsume from the CAPACITY level. The display will be updated once per minute.

CATMP/HR	SMS/HR	VLR_UPD/HR	CAP	ENGBHCA	CCOVRD	CMICOVRD	PESC
303001	180	398700	128	233643	OFF	OFF	NO

Service	IOUTIL%	TxMsg/s	TxSize	RxMsg/s	RxSize
ETHR	64	15324	107	13234	91
CMIC	17	4102	202	1254	102
AMDI	0	0	0	0	0

The Service column identifies the type of IO service (Ethernet, CMIC, or AMDI). IOUTIL is the calculated percentage utilization of the available system messaging capacity, based on the known IO system capacity, the average rate through other services on the same card, and the throughput on other cards. TxMsg/s, TxSize, RxMsg/s and RxSize report average transmit and receive message rates and sizes through that service. Because the MAPCI display is updated once per minute, high water mark information will not be displayed.

1.2.2 IOCAPCI tool

The information in the MAP display is also available through the IOCAPCI tool, in addition to the following tools:

- one month's history of hourly high water mark percent utilization for each service (Ethernet, CMIC, and AMDI), similar to DMSMON HIGHCAP.
- one month's history of hourly average percent utilization for each service.
- current hour and last hour utilization and throughput for each service

An example of the CMIC high water mark data follows. A similar output will be available for each service.

```
> iomax cmic
Maximum CMIC Utilization
```

Date	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21
2/2	8	7	9	10	4	5	9	12	16	21	27	29	39	49	53	43	51	56	57	61	57	41	29	18
2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18

```

2/29      8   7   8  10   8   9   7
1/30      3   8   7   6   9   8   4  12 16  21  27  29  39  49  47  45  55  53  57  56  51  49  29  14
1/31      8   6   5   7   8   7   6   9  11  19  27  31  39  49  53  43  51  55  53  57  56  51  31  21

```

1.2.3 IO capacity OM

The information displayed in the IOCAP MAP command is also recorded in the IOCAP operational measurement, as shown below.

IOCAP

CLASS: HOLDING

START:2003/12/03 09:30:00 WED; STOP: 2003/12/03 09:45:00 WED;

SLOWSAMPLES: 9 ; FASTSAMPLES: 90 ;

INFO (IO_SERVICE_TYPE)

	IOUTIL RXMSG/S	IOHWM RXSIZE	TXMSG/S IOTHRESH	TXSIZE
1 ETHR	64 13234	72 84	15204 0	105
2 CMIC	17 1254	18 63	1254 0	102
3 AMDI	0 0	0 0	0 0	0

The IOCAP OM provides measurements of messaging rates and sizes for each service. The IO_SERVICE_TYPE indicates the service provided. IOUTIL refers to percentage utilization of the services on the switch. IOHWM refers to the highest level that the corresponding utilization has reached in the sample period. TxMSG/S, TxSIZE, RxMSG/S and RxSIZE report the average transmit and receive message rates and sizes through the service. The IOTHRESH register is pegged every time the service average utilization for one minute exceeds the value of new OFCENG office parameter IO_WARNING_THRESHOLD. This register is intended to give the customer a flexible warning that they are approaching the need to upgrade their IO system.

1.2.4 Office parameter

A new office parameter in table OFCENG, IO_WARNING_THRESHOLD, indicates the minimum IO service utilization at which the IOTHRESH register in the IOCAP OM will be pegged.

1.3 Hardware Requirements or Dependencies

This feature is unavailable for CMIC, Ethernet and AMDI packetlets (NTLX05AB, NTLX09AA, NTLX05BA respectively).

This feature is supported on all versions of NTLX04 HIOP cards and NTLX17 HCMIC cards.

1.4 Software Requirements or Dependencies

None.

1.5 Limitations and restrictions

This feature will be submitted into CSP21 and patched back to CSP20.

When the system is in transition from IOP to HIOP, the utilization of all IO services will not be available.

1.6 Interactions

The MAPCI level display will subtend from the CAPACITY MAP level. It will be shown as an option from that level.

1.7 Applicable customer facing sections

Fault Management

Logs ☐ NA ☐

Alarms ☐ NA ☐

Configuration

Data Schema ☐ NA ☐

User Interface ☐ X ☐

Element Management ☐ NA ☐

Security ☐ NA ☐

Service Order ☐ NA ☐

Office Parameters ☐ X ☐

Accounting (includes AMA billing) ☐ NA ☐

Performance (includes operational measurements) ☐ X ☐

1.8 Glossary

Term	Description
New term	Definition

2: Configuration for A00006693

2.1 Hardware and Software Requirements

Not applicable.

2.2 Initial Configuration

Not applicable.

2.3 Office/Subnet parameters (OP/SP) (CM & SESM)

2.3.1 New/modified office/subnet parameters

Table 1 New or modified parameter

Parm table	Parameter name	NEW/ CHANGED/ DELETED/ RELOCATED	Domain (CM or Subnet Management)
OFCENG	IO_WARNING_THRESHOLD	NEW	XA-Core

2.3.2 Parameter information

2.3.2.1 IO_WARNING_THRESHOLD

IO_WARNING_THRESHOLD

2.3.2.1.1 Functional description

This parameter defines a utilization warning threshold for all IO service types (CMIC, ETHR, AMDI) in the system. The IOCAP monitoring toolset uses the value of this parameter to peg the IOTHRESH register of the IOCAP OM whenever the IO utilization level of any IO service has exceeded this threshold on the switch.

2.3.2.1.2 Provisioning rules

There is no formula for provisioning this office parameter. However, this office parameter should be set by the customer in such a manner that will allow sufficient advance warning time for their maintenance personnel to upgrade or reconfigure their IO devices in case the condition re-occurs often.

2.3.2.1.3 Range information

Table 2 Range Information

Minimum	Maximum	Default
1	100	100

2.3.2.1.4 Activation

Any change activation for this office parameter is immediate.

2.3.2.1.5 Dependencies

Not applicable.

2.3.2.1.6 Consequences

If this office parameter is set low, the IOTHRESH register might be in pegged more often than necessary. If this office parameter is set high, the customer may not have enough advance notice to upgrade their IO configuration.

2.3.2.1.7 Verification

To verify, users can modify and display the value of IO_WARNING_THRESHOLD on table OFCENG via table control.

2.3.2.1.8 Memory requirements

No memory impact.

Units per memory block = <10>

Words per memory block = <510>

If the parameter value = <25>

words required = (((parameter value - 1)/units per block) + 1) * words per block = <>

2.3.2.1.9 Parameter release history update

New office parameter in CSP20.

2.4 Upgrade Impact

Not applicable.

2.5 Data schema (DS) (CM, MIBS, RDB)

Not applicable.

2.6 Service Orders (SO) (CM & SESM)

Not applicable.

2.7 Software optionality control (SOC)

Not applicable.

2.8 Element Management

Not applicable.

2.9 Command interface changes

The following new directories will be provided in this feature.

2.9.1 Directory: CAPACITY

This existing CAPACITY MAPCI level will be modified to provide a new IOCAP MAPCI level in XA-Core only. The new IOCAP level will provide IO utilization and IO messaging throughput information for HCMIC and HIOP IO cards.

2.9.1.1 Directory description

This new IOCAP MAPCI level will be giving the IO utilization values and messaging throughput information for each IO service type (CMIC, ETHR and AMDI). The information on this new MAPCI level will be updated once every minute.

2.9.1.2 Accessing directory: CAPACITY

2.9.1.2.1 Access to directory or MAP level and return to CI

To access this directory, type:

> MAPCI; MTC; CAPACITY

To return to the CI environment, type:

> QUIT ALL

2.9.2 Command: IOCAP

This is a new command available under the CAPACITY MAPCI level in XA-Core only.

2.9.2.1 Command type: Listed MENU

2.9.2.2 Command target: XA-Core only

2.9.2.3 Command availability: RES

2.9.2.4 Command description

This new IOCAP MAPCI level will be giving the IO utilization values and messaging throughput information for each IO service type (CMIC, ETHR and AMDI). The information on this new MAPCI level will be updated once every minute.

2.9.2.5 Command syntax

Table 3 IOCAP command parameters and variables

Command	Parameters and variables
IOCAP	none
Parameters and variables	Description

2.9.2.6 Qualifications and warnings

Not applicable.

2.9.2.7 Responses

2.9.2.7.1 IOCAP response

Table 4 MAP outputs with associated meanings and actions

Command
Service: The type of IO service of the values shown on the same line is captured. Meaning: Possible IO service types are CMIC, ETHR and AMDI. System or user actions: Not applicable
IOUTIL%: The average utilization of all active links in the system captured in the previous minute. Meaning: The value is given as a percent of total system and can take up to 3 digits. System or user actions: Not applicable
TxMsg/s: The average number of transmitted messages captured in the last minute for this IO service type. Meaning: The unit is number of transmitted messages per second. System or user actions: Not applicable
TxSize: The average size (in bytes) of all transmitted messages in the last minute. Meaning: The unit is in bytes. System or user actions: Not applicable
RxMsg/s: The average number of received messages captured in the last minute for this IO service type. Meaning: The value unit is the number of received messages per second. System or user actions: Not applicable
RxSize: The average size (in bytes) of all received messages in the last minute. Meaning: The unit is in bytes. System or user actions: Not applicable

This MAPCI level can be used for monitoring current IO throughput. Under normal condition, there is no response required from maintenance personnel. The descriptions of all fields displayed under this level are given above. These responses are seen in XA-core only.

2.9.2.8 Example

Table 5 Usage examples for IOCAP command

Description of task:	This new IOCAP MAPCI level will be giving the IO utilization values and messaging throughput information for each IO service type (CMIC, ETHR and AMDI). The information on this new MAPCI level will be updated once every minute.
Command: MAP response:	MAPCI; MTC; CAPACITY; IOCAP See example output below.

An example output of this new MAPCI level is given below.

IOCAP MAPCI Level

XACM	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
.	.	.	.	.	.	.	.	.	.
IOCAP									
0 Quit	CATMP/HR	UTIL	ENGCATMP	MAXCATMP	ENGLEVEL	CCOVRD	CMICOVRD	PESC	
2	120000	75	160000	200000	BELOW	OFF	OFF	NO	
3									
4	Service	IOUTIL%	TxMsg/s	TxSize	RxMsg/s	RxSize			
5									
6	AMDI	64	15324	107	13234	91			
7	CMIC	17	4102	202	1254	102			
8	ETHR	10	8967	123	3456	123			
9									
10	IOCAP:								
11									
12									
13									
14									
15									
16									
17									
18									
XMAP0									
Time 14:12 >									

2.9.3 Command: QUIT

This command will allow the user to exit IOCAP MAPCI level and to return to IOCAP higher MAPCI level (CAPACITY MAPCI level).

2.9.3.1 Command type: Listed MENU

This QUIT command is listed in IOCAP menu.

2.9.3.2 Command target: XA-Core only

This new IOCAP QUIT command is available in XA-Core only.

2.9.3.3 Command availability: RES

2.9.3.4 Command description

This command will allow the user to exit IOCAP MAPCI level and to return to IOCAP higher MAPCI level (CAPACITY MAPCI level).

2.9.3.5 Command syntax

Table 6 QUIT command parameters and variables

Command	Parameters and variables
QUIT	none

2.9.3.6 Qualifications and warnings

Not applicable.

2.9.3.7 Responses

2.9.3.7.1 QUIT

Table 7 MAP outputs with associated meanings and actions

Command
If QUIT is issued, the user will be returned to one MAPCI level higher than their current MAPCI level. If QUIT ALL is issued, the user will be returned to CI level. Meaning: Not applicable. System or user actions: Not applicable. Meaning: The IOCAP MAPCI level is exited and the user is returned to one MAPCI level higher or to CI level. System or user actions: Not applicable.

2.9.3.8 Example

Table 8 Usage examples for QUIT command

Description of task	Exit the IOCAP MAPCI level and return the user to CI level or one MAPCI level higher.
Command: MAP response:	Example: QUIT ALL Example: >

2.9.4 Directory: IOCAPCI

2.9.4.1 Directory description

This new IOCAPCI is provided to allow customers to display the IO utilization history data.

2.9.4.2 Accessing directory: IOCAPCI

2.9.4.2.1 Access to directory or MAP level and return to CI

To access this directory type:

```
> IOCAPCI
```

To return to CI environment, type:

```
> QUIT
```

2.9.5 Command: IOMAX

2.9.5.1 Command type: NON-MENU

2.9.5.2 Command target: XA-Core only

2.9.5.3 Command availability: RES

2.9.5.4 Command description

This command displays the hourly high watermark value captured for each IO service type (CMIC, ETHR or AMDI). The value is captured every hour of day for the last 31 days. The data survives all types of restarts (warm, cold and reload).

The date of the month will be in sequence. For every hour in the future (there is no data collected yet), a blank character will be displayed.

2.9.5.5 Command syntax

The command syntax for this command is as follows.

```
> q iomax
Display IO high watermark report.
Parms: <service> {CMIC,
                  ETHR,
                  ATM,
                  ALL}
```

Table 9 IOMAX command parameters and variables

Command	Parameters and variables
IOMAX	service
IOMAX	<Service> (CMIC, ETHR, AMDI, ALL)

Table 9 IOMAX command parameters and variables

Command	Parameters and variables
Parameters and variables	Description
Service	Possible values are CMIC, ETHR, AMDI or ALL
CMIC	Displays only CMIC hourly max history data
ETHR	Displays only ETHR hourly max history data
AMDI	Displays only AMDI hourly max history data
All	Displays all hourly.max history data for CMIC, ETHR, and AMDI.

2.9.5.6 Qualifications and warnings

Not applicable.

2.9.5.7 Responses**2.9.5.7.1 IOMAX response**

The following is the response if IOMAX CMIC is issued.

Table 10 MAP outputs with associated meanings and actions

Command
IOMAX CMIC: history data of CMIC hourly maximum utilization are displayed. Meaning: CMIC hourly maximum history data are displayed. System or user actions: Not applicable.
IOMAX ETHR: history data of ETHR hourly maximum utilization are displayed. Meaning: history data of ETHR hourly maximum utilization are displayed. System or user actions: Not applicable.
IOMAX AMDI: history data of AMDI hourly maximum utilization are displayed. Meaning: history data of AMDI hourly maximum utilization are displayed. System or user actions: Not applicable.
IOMAX ALL: history data of CMIC, ETHR, AMDI hourly maximum utilization are displayed. Meaning: history data of CMIC, ETHR, AMDI hourly maximum utilization are displayed. System or user actions: Not applicable.

2.9.5.8 Example

Table 11 Usage examples for IOMAX command

Description of task	Display the history data of IO hourly max utilization.																								
Command: MAP response:	Example: IOMAX CMIC Example: Maximum CMIC Utilization																								
		Hour																							
	Date	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21
	2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/29	8	7	8	10	8	9	7																		
1/30	3	8	7	6	9	8	4	12	16	21	27	29	39	49	47	45	55	53	57	56	51	49	29	14	
1/31	8	6	5	7	8	7	6	9	11	19	27	31	39	49	53	43	51	55	53	57	56	51	31	21	

Table 11 Usage examples for IOMAX command

Command: MAP response:	Example: IOMAX ETHR																										
	Example: Maximum ETHR Utilization																										
	Date	0	1	2	3	4	5	6	7	8	9	10	11	Hour		12	13	14	15	16	17	18	19	20	21	22	23
2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21			
2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/29	8	7	8	10	8	9	7																				
1/30	3	8	7	6	9	8	4	12	16	21	27	29	39	49	47	45	55	53	57	56	51	49	29	14			
1/31	8	6	5	7	8	7	6	9	11	19	27	31	39	49	53	43	51	55	53	57	56	51	31	21			

Command: MAP response:	Example: IOMAX AMDI																										
	Example: Maximum AMDI Utilization																										
	Date	0	1	2	3	4	5	6	7	8	9	10	11	Hour		12	13	14	15	16	17	18	19	20	21	22	23
2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21			
2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/29	8	7	8	10	8	9	7																				

Table 11 Usage examples for IOMAX command

Command: MAP response:	Example: IOMAX ALL																								
	Example: Maximum CMIC Utilization																								
		Hour																							
	Date	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21
	2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/29	8	7	8	10	8	9	7																		
1/30	3	8	7	6	9	8	4	12	16	21	27	29	39	49	47	45	55	53	57	56	51	49	29	14	
1/31	8	6	5	7	8	7	6	9	11	19	27	31	39	49	53	43	51	55	53	57	56	51	31	21	
	Maximum ETHR Utilization																								
	Hour																								
Date	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21	
2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21	
2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14	
2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18	
2/29	8	7	8	10	8	9	7																		
1/30	3	8	7	6	9	8	4	12	16	21	27	29	39	49	47	45	55	53	57	56	51	49	29	14	
1/31	8	6	5	7	8	7	6	9	11	19	27	31	39	49	53	43	51	55	53	57	56	51	31	21	

Table 11 Usage examples for IOMAX command

	Maximum AMDI Utilization																							
	Date	Hour																						
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21
2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/29	8	7	8	10	8	9	7																	
1/30	3	8	7	6	9	8	4	12	16	21	27	29	39	49	47	45	55	53	57	56	51	49	29	14
1/31	8	6	5	7	8	7	6	9	11	19	27	31	39	49	53	43	51	55	53	57	56	51	31	21

2.9.6 Command: IOAVG

2.9.6.1 Command type: NON-MENU

2.9.6.2 Command target: XA-Core only

2.9.6.3 Command availability: RES

2.9.6.4 Command description

This command displays the hourly average value captured for each IO service type (CMIC, ETHR or AMDI). The value is captured every hour of day for the last 31 days. The data survives all types of restarts (warm, cold and reload).

The date of the month will be in sequence. For every hour in the future (there is no data collected yet), a blank character will be displayed.

2.9.6.5 Command syntax

The command syntax for this command is as follows.

```
> q ioavg
Display IO average report.
Parms: <service> {CMIC,
                  ETHR,
                  ATM,
```

ALL}

Table 12 IOAVG command parameters and variables

Command	Parameters and variables
IOAVG	service
IOAVG	<Service> (CMIC, ETHR, AMDI, ALL)
Parameters and variables	Description
Service	Possible values are CMIC, ETHR, AMDI or ALL
CMIC	Displays only CMIC hourly average history data
ETHR	Displays only ETHR hourly average history data
AMDI	Displays only AMDI hourly average history data
All	Displays all hourly average history data for CMIC, ETHR, and AMDI.

2.9.6.6 Qualifications and warnings

Not applicable.

2.9.6.7 Responses**2.9.6.7.1 IOAVG response**

The following is the response if IOAVG CMIC is issued.

Table 13 MAP outputs with associated meanings and actions

Command
IOAVG CMIC: history data of CMIC hourly average utilization are displayed. Meaning: CMIC hourly average history data are displayed. System or user actions: Not applicable.
IOAVG ETHR: history data of ETHR hourly average utilization are displayed. Meaning: history data of ETHR hourly average utilization are displayed. System or user actions: Not applicable.
IOAVG AMDI: history data of AMDI hourly average utilization are displayed. Meaning: history data of AMDI hourly average utilization are displayed. System or user actions: Not applicable.

Table 13 MAP outputs with associated meanings and actions

Command
IOAVG ALL: history data of CMIC, ETHR, AMDI hourly average utilization are displayed.
Meaning: history data of CMIC, ETHR, AMDI hourly average utilization are displayed.
System or user actions: Not applicable.

2.9.6.8 Example

Table 14 Usage examples for IOAVG command

Description of task	Display the history data of IO hourly average utilization.																								
Command: MAP response:	Example: IOAVG CMIC Example: Average CMIC Utilization																								
	Date	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21
	2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/29	8	7	8	10	8	9	7																	
	1/30	3	8	7	6	9	8	4	12	16	21	27	29	39	49	47	45	55	53	57	56	51	49	29	14
	1/31	8	6	5	7	8	7	6	9	11	19	27	31	39	49	53	43	51	55	53	57	56	51	31	21

Table 14 Usage examples for IOAVG command

Command: MAP response:	Example: IOAVG ETHR																										
	Example: Average ETHR Utilization																										
	Date	0	1	2	3	4	5	6	7	8	9	10	11	Hour		12	13	14	15	16	17	18	19	20	21	22	23
2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21			
2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/29	8	7	8	10	8	9	7																				
1/30	3	8	7	6	9	8	4	12	16	21	27	29	39	49	47	45	55	53	57	56	51	49	29	14			
1/31	8	6	5	7	8	7	6	9	11	19	27	31	39	49	53	43	51	55	53	57	56	51	31	21			

Command: MAP response:	Example: IOAVG AMDI																										
	Example: Average AMDI Utilization																										
	Date	0	1	2	3	4	5	6	7	8	9	10	11	Hour		12	13	14	15	16	17	18	19	20	21	22	23
2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21			
2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21			
2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14			
2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18			
2/29	8	7	8	10	8	9	7																				

Table 14 Usage examples for IOAVG command

Command: MAP response:	Example: IOAVG ALL																								
	Example: Average CMIC Utilization																								
	Date	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21
	2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/29	8	7	8	10	8	9	7																	
	1/30	3	8	7	6	9	8	4	12	16	21	27	29	39	49	47	45	55	53	57	56	51	49	29	14
	1/31	8	6	5	7	8	7	6	9	11	19	27	31	39	49	53	43	51	55	53	57	56	51	31	21
	Average ETHR Utilization																								
	Date	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21
	2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
	2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
	2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
	2/29	8	7	8	10	8	9	7																	
	1/30	3	8	7	6	9	8	4	12	16	21	27	29	39	49	47	45	55	53	57	56	51	49	29	14
	1/31	8	6	5	7	8	7	6	9	11	19	27	31	39	49	53	43	51	55	53	57	56	51	31	21

Table 14 Usage examples for IOAVG command

	Average AMDI Utilization																							
	Date	Hour																						
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
2/1	9	7	8	6	5	7	8	11	17	22	28	30	40	55	50	47	61	57	59	62	59	39	31	21
2/2	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/3	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/4	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/5	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/6	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/7	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/8	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/9	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/10	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/11	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/12	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/13	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/14	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/15	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/16	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/17	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/18	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/19	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/20	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/21	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/22	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/23	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/24	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/25	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/26	5	7	9	8	7	8	9	8	15	23	21	29	39	53	49	42	59	51	55	57	53	47	31	21
2/27	3	8	7	6	9	8	4	7	11	19	27	31	38	51	47	45	55	53	57	56	51	49	29	14
2/28	9	9	8	7	7	7	8	7	18	28	18	29	37	48	55	48	58	48	59	59	57	48	27	18
2/29	8	7	8	10	8	9	7																	
1/30	3	8	7	6	9	8	4	12	16	21	27	29	39	49	47	45	55	53	57	56	51	49	29	14
1/31	8	6	5	7	8	7	6	9	11	19	27	31	39	49	53	43	51	55	53	57	56	51	31	21

2.9.7 Command: DISP

2.9.7.1 Command type: NON-MENU

2.9.7.2 Command target: XA-Core only

2.9.7.3 Command availability: RES

2.9.7.4 Command description

This DISP command displays the utilization and messaging throughput values of each IO service type of the last 60 minutes with option CURR (for example, when a command is issued at 2:35, displayed data is from 1:34 to 2:34) or previous full hour with option PREV (for example when a command is issued at 2:35, displayed data is from 1:00 to 2:00). This information survives all types of restarts (warm, cold and reload).

2.9.7.5 Command syntax

The command syntax for this command is as follows.

```
> q disp
Display table of IO utilization.
Params: <when> {CURR,
               PREV}
        <service> {CMIC,
                   ETHR,
                   ATM,
```

ALL}

Table 15 DISP command parameters and variables

Command	Parameters and variables
DISP	<when> <service>
DISP	<when> (CURR, PREV) <service> (CMIC, ETHR, AMDI, ALL)
Parameters and variables	Description
When	Possible values are CURR or PREV
CURR	Displays the last 60 minutes utilization and messaging throughput of the specified IO service type
PREV	Displays the previous full hour utilization and messaging throughput of the specified IO service type
Service	Possible values are CMIC, ETHR, AMDI or ALL
CMIC	Displays only CMIC utilization and messaging throughput
ETHR	Displays only ETHR utilization and messaging throughput
AMDI	Displays only AMDI utilization and messaging throughput
ALL	Displays utilization and messaging throughput for CMIC, ETHR, and AMDI.

2.9.7.6 Qualifications and warnings

Not applicable.

2.9.7.7 Responses**2.9.7.7.1 DISP response**

The following is the response if DISP CURR CMIC is issued.

Table 16 MAP outputs with associated meanings and actions

Command
DISP CURR CMIC: last 60 minutes of CMIC utilization and messaging throughput are displayed.
Meaning: last 60 minutes data for CMIC utilization and messaging throughput are displayed.
System or user actions: Not applicable.

Table 16 MAP outputs with associated meanings and actions

Command
DISP CURR ETHR: last 60 minutes of ETHR utilization and messaging throughput are displayed. Meaning: last 60 minutes of ETHR utilization and messaging throughput are displayed. System or user actions: Not applicable.
DISP CURR AMDI: last 60 minutes of AMDI utilization and messaging throughput are displayed. Meaning: last 60 minutes of AMDI utilization and messaging throughput are displayed. System or user actions: Not applicable.
DISP CURR ALL: last 60 minutes of CMIC, ETHR, AMDI utilization are displayed. Meaning: last 60 minutes of CMIC, ETHR, AMDI utilization are displayed. System or user actions: Not applicable.

2.9.7.8 Example

Table 17 Usage examples for DISP command

Description of task	Display the last 60 minutes of IO utilization and messaging throughput.
Command: MAP response:	Example: DISP CURR CMIC Example: <pre> Time IOUTIL% TxMsg/s TxSize RxMsg/s RxSize 16:17 45 23421 34 23421 34 16:18 39 22119 31 21228 32 16:19 38 21228 32 22119 31 16:20 39 23421 31 21221 31 17:14 41 20023 32 20019 33 17:15 39 21221 31 21228 32 17:16 38 20019 33 23421 34 </pre>
Command: MAP response:	Example: DISP CURR ETHR Example: <pre> Time IOUTIL% TxMsg/s TxSize RxMsg/s RxSize 16:17 45 23421 34 23421 34 16:18 39 22119 31 21228 32 16:19 38 21228 32 22119 31 16:20 39 23421 31 21221 31 17:14 41 20023 32 20019 33 17:15 39 21221 31 21228 32 17:16 38 20019 33 23421 34 </pre>
Command: MAP response:	Example: DISP CURR AMDI Example: <pre> Time IOUTIL% TxMsg/s TxSize RxMsg/s RxSize 16:17 45 23421 34 23421 34 16:18 39 22119 31 21228 32 16:19 38 21228 32 22119 31 16:20 39 23421 31 21221 31 17:14 41 20023 32 20019 33 17:15 39 21221 31 21228 32 17:16 38 20019 33 23421 34 </pre>

Table 17 Usage examples for DISP command

Command: MAP response:	Example: DISP CURR ALL			
	Example:			
	Time	CMICUTIL	ETHRUTIL	AMDIUTIL
	16:17	45	21	34
	16:18	39	19	31
	16:19	38	18	32
	16:20	39	21	31
				
	17:14	41	23	32
	17:15	39	21	31
	17:16	38	19	33

2.9.8 Command: STATUS

2.9.8.1 Command type: NON-MENU

2.9.8.2 Command target: XA-Core only

2.9.8.3 Command availability: RES

2.9.8.4 Command description

This command displays all status information including current version of IOCAPCI tool, timestamp in terms of hour and minute, the current IO utilization values of all IO services (CMIC, ETHR, AMDI), the current value of the IO_WARNING_THRESHOLD office parm.

2.9.8.5 Command syntax

The command syntax for this command is as follows.

```
> q STATUS
Display current IOCAP status.
```

Table 18 STATUS command parameters and variables

Command	Parameters and variables
STATUS	no parameter

2.9.8.6 Qualifications and warnings

Not applicable.

2.9.8.7 Responses

2.9.8.7.1 STATUS response

The following is the response if STATUS is issued.

Table 19 MAP outputs with associated meanings and actions

Command
STATUS: Status information such as IOCAPCI version, current utilizations and IO_WARNING_THRESHOLD office parm are displayed.
Meaning: Status information such as IOCAPCI version, current utilizations and IO_WARNING_THRESHOLD office parm are displayed.
System or user actions: Not applicable.

2.9.8.8 Example

Table 20 Usage examples for STATUS command

Description of task	Display status information such as IOCAPCI version, current utilizations and IO_WARNING_THRESHOLD office parm.
Command: MAP response:	Example: DISP CURR CMIC Example: <pre>> status IOCAP Version 1.0 Time CMICUTIL ETHRUTIL AMDIUTIL 17:16 32 29 15 IO_WARNING_THRESHOLD office parm is set to 100.</pre>

2.10 Security

Not applicable.

2.11 Configuration Walkthrough

Not applicable.

3: Performance for A00006693

3.1 Performance management strategy

3.2 Performance management tools and utilities

The new OM group can be displayed and collected via OMSHOW interface regularly by Telcos to monitor system IO throughput.

3.3 Performance Measurements (PM), Operational Measurements (OM), and stats

This feature will provide a new OM group IOCAP.

3.3.1 PM, OM, and stats format

3.3.2 OM Group template (applies only to DMS)

New OM group IOCAP provides information on IO capacity such as utilization and utilization high watermark and IO throughput information on a per IO service type (CMIC, ETHR and AMDI).

3.3.2.1 OM description

OM group IOCAP provides one tuple per IO service type available in the office. Possible IO service types are CMIC, ETHR and AMDI.

Key field: IO_SERVICE.

Info field: none.

3.3.2.2 Release history update

The OM group is being created in CSP21 and will be patched backed to CSP20.

3.3.2.3 Registers

OM group registers display on the MAP terminal as follows:

Figure 1 OM Group Display

IO_SERVICE	IOUTIL	IOHWM	TXMSGPS	TXSIZE	RXMSGPS
RXSIZE	IOTHRESH				

3.3.2.4 Group structure

OM group provides one tuple for each IO service type. There are 3 possible IO service types (CMIC, ETHR, AMDI).

Key field: IO_SERVICE indicates the IO service type the information is captured. Possible IO service types are CMIC, ETHR, and AMDI. The service type is displayed as a 4 character string (CMIC, ETHR, AMDI).

Info field: None.

3.3.2.5 Associated OM groups

Not applicable.

3.3.2.6 Associated functional groups

none

3.3.2.7 OM group registers logic flow chart

Not applicable.

3.3.3 Register (applies only to DMS)

IOHWM

3.3.3.1 Register description

IOHWM is a high watermark register holding the highest utilization value of the specified IO service type over the OM transfer period.

3.3.3.2 Register release history update

The register is being created in CSP21 and patched back to CSP20.

3.3.3.3 Associated registers

None.

3.3.3.4 Associated logs

None.

3.3.4 Register (applies only to DMS)

IOTHRESH

3.3.4.1 Register description

IOTHRESH is a peg register holding the number of one minute intervals in the transfer period the IO utilization has exceeded the value of the IO_WARNING_THRESHOLD office parm.

3.3.4.2 Register release history update

The register is being created in CSP21 and patched back to CSP20.

3.3.4.3 Associated registers

None.

3.3.4.4 Associated logs

None.

3.3.5 Register (applies only to DMS)

IOUTIL

3.3.5.1 Register description

IOUTIL is a usage register holding the average utilization value of the specified IO service type. This value is accumulated every minute and the average is calculated for every OM transfer period.

3.3.5.2 Register release history update

The register is being created in CSP21 and patched back to CSP20.

3.3.5.3 Associated registers

None.

3.3.5.4 Associated logs

None.

3.3.6 Register (applies only to DMS)

RXMSGPS

3.3.6.1 Register description

RXMSGPS is a usage register holding the average total system number of received messages of the specified IO service type. This value is accumulated every minute and the average is calculated for every OM transfer period. The unit is the number of messages per second.

3.3.6.2 Register release history update

The register is being created in CSP21 and patched back to CSP20.

3.3.6.3 Associated registers

None.

3.3.6.4 Associated logs

None.

3.3.7 Register (applies only to DMS)

RXSIZE

3.3.7.1 Register description

RXSIZE is a usage register holding the average incoming message size of the specified IO service type. This value is accumulated every minute and the average is calculated for every OM transfer period. The message size unit is in bytes.

3.3.7.2 Register release history update

The register is being created in CSP21 and patched back to CSP20.

3.3.7.3 Associated registers

None.

3.3.7.4 Associated logs

None.

3.3.8 Register (applies only to DMS)

TXMSGPS

3.3.8.1 Register description

TXMSGPS is a usage register holding the average total number of outgoing messages of the specified IO service type. This value is accumulated once every minute and the average is calculated for every OM transfer period. The unit is in number of messages per second.

3.3.8.2 Register release history update

The register is being created in CSP21 and patched back to CSP20.

3.3.8.3 Associated registers

None.

3.3.8.4 Associated logs

None.

3.3.9 Register (applies only to DMS)

TXSIZE

3.3.9.1 Register description

TXSIZE is a usage register holding the value of average size of outgoing messages of the specified IO service type. This value is accumulated once every minute and the average is calculated for every transfer period. The value unit is in bytes.

3.3.9.2 Register release history update

The register is being created in CSP21 and patched back to CSP20.

3.3.9.3 Associated registers

None.

3.3.9.4 Associated logs

None.

Product = CS 2000

A00006731--Handle Flash on Exit***Functional Description*****1.1 Applicable Solution(s)**

DMS

1.2 Description

On TMX100 switches, hook flash is only enabled on those RES lines that have flash features assigned. Most customers do not use flash features. RES customers without hook flash features who flash are treated as exiting the current call and receive standard dial tone allowing them to initiate a new call.

When TMX100 sites migrate to ISN04 or later, customers are converted from RES to IBN line functionality and by default have hook flash enabled and will get second dial tone if they Flash (go on/off hook) instead of Exit. This difference in behavior is causing confusion and customer complaints at the

Coteor site in Bolivia, the first local exchange migrating from TMX100 to ISN04. Similar complaints are expected when other sites convert (100-150 sites).

The purpose of the Exit on Flash (EOF) option is to resolve these customer complaints and to provide for a more seamless migration from TMX100 to ISN04.

Customer requirement of this activity is to develop a new line option that treats Flash as EXIT for IBN lines.

Without EOF:

A Calls B
B Answers
A Flashes
A gets Special Dial Tone
A Calls C
A Receives Feature Not Allowed (FNAL) treatment

With EOF:

A has EOF option
A Calls B
B Answers
A Flashes
A and B Disconnect
A gets Dial Tone
A calls C
A to C call is established

This feature uses line option datafill. The advantages of offering this as a line option are:

- consistency with the current FIG (Flash IGnore) option
- ability to define option compatibilities using OPTOPT table

1.3 Hardware Requirements or Dependencies

There is no hardware dependency. The option can be added to any line with an LCC of IBN.

1.4 Software Requirements or Dependencies

None.

1.5 Limitations and restrictions

EOF feature is only applicable to IBN lines in NA and WT.

EOF feature is not compatible with the following options:

CHD, CNF, CWI, CWX, CWT, CXR, FXR, DCBX, HLD, LDSA, LDSO, LDSR, LDST, LNPTST, MPB, PCWT, PRK, 3WC, 3WCPUB, VOWDN.

1.6 Interactions

CWO and CWD compatible with EOF feature. If another agent imposes CWT on an agent with EOF, this agent still has the ability to flash to the waiting call and maintain the original call.

A has EOF option

A Calls B

B Answers

C with CWO/CWD calls A and imposes CWT on A

A Flashes

A to C call established while B is on hold

A flashes again and A to B call established while C is on hold

1.7 Applicable customer facing sections

Fault Management

Logs

Alarms

Configuration

Data Schema

___X___

User Interface

Element Management

Security

Service Order

___X___

Office Parameters

Accounting (includes AMA billing)

Performance (includes operational measurements)

2: Configuration for A00006731

2.1 Hardware and Software Requirements

There is no hardware or software dependencies.

2.2 Upgrade Impact

No impact on upgrades.

2.3 Data schema (DS) (CM, MIBS, RDB)

2.3.1 New/modified tables, MIBs, or Database Schema

Table 1 New or modified tables

Table/MIB name	NEW/CHANGED/ or DELETED/	Table Control (NEW/OLD/UNCHANGED)
IBNLINES	changed	unchanged

2.3.2 Table/MIB/Remote Database Schema information

2.3.2.1 Name: IBNLINES

IBN Line Assignment Table

2.3.2.1.1 Functional description

Table IBNLINES contains the line assignments for each 500/2500 set assigned to an Integrated Business Network (IBN), Residential Enhanced Services (RES), and Multiple Appearance Directory Number (MADN) station number. This table also contains the line assignments for the IBN attendant consoles (AC).

2.3.2.1.2 Usage sequence and implications (CM Only)

Current datafill order unchanged.

2.3.2.1.3 Size

Unchanged.

2.3.2.1.4 Fields/OIDs

The following table lists fields/OIDs for IBNLINES.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
RESULT	Changed	OPTLIST	EOF	Option List. Added EOF to OPTLIST as another line option. Enter EOF for Exit On Flash option.

2.3.2.1.5 Datafill example

The following example shows sample datafill for table IBNLINES.

```
>table ibnlines
>list
LEN DNNO RESULT
-----
HOST 00 0 00 01 0 DT STN IBN 6210201 350 819_P621_2 L819_NILLA_2 819 (EOF) $
```

2.3.2.1.6 Table release history update

ISN08 - Feature (A00006731) Handle Flash on Exit adds new OPTLIST option EOF.

2.4 Service Orders (SO) (CM & SESM)

2.4.1 Service order change details

2.4.1.1 LCC and options

New line option, EOF, can only be assigned to LCC of IBN.

Option EOF is not compatible with the following options and features:

CHD, CNF, CWI, CWX, CWT, CXR, FXR, DCBX, HLD, LDSA, LDSO, LDSR, LDST, LNPTST, MPB, PCWT, PRK, 3WC, 3WCPUB, VOWDN.

2.4.2 New commands

2.4.2.1 How service order options are presented

2.4.2.1.1 Description

The EOF option enables the subscriber on the assigned line to exit on flash.

2.4.2.1.2 Example

Figure 1 Example of the EOF option in prompt mode

```

SERVORD
SO:
>ado
SONUMBER:      NOW    4    1 14 PM
>
DN_OR_LEN:
>6137220110
OPTION:
>eof
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 4 1 14 PM 6137220110 ( EOF ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>Y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>Y

```

Figure 2 Example of the EOF option in no-prompt mode

```

SERVORD
SO:
>ado $ 6137220110 eof $ Y Y

```

2.4.2.1.3 Option prompts

Table 3 System prompts for EOF option

Prompt	Valid input	Description	Areas affected by prompt
OPTION	EOF	Assigns Exit On Flash feature to line	None

2.4.2.1.4 Line class code compatibility

Table 4 EOF compatibility to LCC

Line class code	Compatible?
IBN	Yes

2.4.2.1.5 Option prerequisites

EOF has no prerequisites

2.4.2.1.6 Notes

None.

2.4.2.1.7 Feature identification

Feature number: A00006731

Product = CS 2000

A00006780--Trimodal Call Server OAM&P Enhancements***Functional Description*****1.1 Applicable Solution(s)**

UA-AAL1

1.2 Description

Trimodal Call Server is a Nortel Networks Call Server which supports all the following three Bearer Network Fabric types: ATM, IP and TDM. It is a solution being provided by Nortel Networks to its customers who want to:

- Make a smooth transition from VoATM Carriers to a VoIP network solution.
- Move into the IP Space, leveraging the already existing ATM equipment at their premises.

This activity is in continuation of the Enhancements done in SN07 under the following ACTIDs:

- A00003487: Tri Modal Provisioning
- A00003947: Tri Modal Logs and OMs

The SN08 Trimodal Enhancements include:

- OAMP Enhancements
 - TRK2NET2 and TRK2NET1 OM tuple allocation enhancement.
 - Enhancements to include Bearer Network information on (a) SPM PM, Carrier and Perfmon MAPs (b) ABI XPM MAPs (c) GWC MAP (d) TTP, LTP MAPs and (e) DPT MAPs.
 - Enhancements to the Servord Query Commands QDN, QLEN, QLENWRK, QDNWRK, QHASU, QGRP, QLT and QCUST command outputs to include Bearer Network Information.

- When a tuple is added in table NETBRDGE, a Bridge Pool without members is allocated.
- Introduce restriction in the table NETBRDGE to the DISPLAY field contains unique and non-null values, as these values are used in the MAP display and query command enhancements.
- New table OFCVAR parameter OSS_PROV_VERSION is added to enable/disable the Servord Query Command enhancements.
- Tool QOSSVER is introduced to print out the list of activity IDs of features delivered in various loads which have OSS impact.

1.2.1 OMs Enhancement

TRK2NET2 and TRK2NET1 OM tuples are allocated for all bearer networks provisioned in table BEARNETS, for each Trunk Group datafilled in table TRKGRP i.e. even if there are no Trunk Members against the Trunk Group in a bearer network.

Details are captured in the Performance Management Document for the feature.

1.2.2 MAP Enhancements

The following MAP enhancements are implemented as a part of this feature.

- Posting of nodes on a Bearer Network basis
- Refining the trunk post set based on the bearer network
- Display of Bearer Network Information on (a) SPM PM, Carrier and Perfmon MAP displays, (b) ABI XPM MAP displays as a part of QUERYPM MENU command, (c) GWC MAP display as a part of QUERYPM MENU command (d) TTP CktInfo MENU command, (e) LTP MAP displays and (f) DPT MAP displays.
 - The value displayed in new display field “Bear” is picked up from the DISPLAY field of the table BEARNETS tuple corresponding to the Bearer Network.
 - The value displayed in new display field “Netbrdge” is picked up from the DISPLAY field of the table NETBRDGE tuple corresponding to the Bridge Pool CLLI of the Bridge Pool to which an IW SPM belongs.

Notes:

- Refresh of the MAP displays of a currently posted PM or Line does not automatically update when table BEARNETS or NETBRDGE is changed. Reposting the PM or line reflects the change.

1.2.2.1 PM MAP level enhancements

The enhancements at the MAPCI;MTC;PM level enable the user to do the following:

- To display all PMs associated with a bearer network. This is applicable to all packet node types including SPMs, GWCs and ABI hosted XPMs which are currently maintained from PM MAP level.
- To post SPM type nodes based on the associated bearer network and the SPM node class. The valid SPM node classes for this command are SMG4 and DPT.

Note: All enhancements/additions are displayed in **BOLD** in figures.

Enhancements to post command:

The following figure shows the enhancements to the post command at the PM level.

- The new option <BN> allows the query by bearer network datafilled in DISPLAY field of the table BEARNETS tuple for a bearer network.

Note 1: The Parms <PM Type> and the Parm <PM BEARNETS> cannot be used together.

Note 2: For the user inputs and the MAP responses please refer the Configuration Document for the feature (CN Document). For more information see “User interface changes” on page 92.

Note 3: The Bearer Networks displayed in the Parameter list for new option <BN> does not include Bearer Network for fabric=ENET.

Figure 3 POST command with the new parameters

```
Post:Post specified PMs for maintenance
Parms: [<All PMs> {AllPMs}]
      [<PM Type>... {TM2 [<All> {All}]}
      ....
      [<PM State>... {SysB,
      ....
      InSv}]
      [<PM Alarm>... {Minor,
      Major,
      Crit}]
      [<BN> {A1_P [<PM Type> {SPM [<SPM Type> {SMG4,
      DPT}}]}}]
      A1_S [<PM Type> {SPM [<SPM Type> {SMG4,
      DPT}}]}}],
      IP_P [<PM Type> {SPM [<SPM Type> {SMG4,
      DPT}}]}}],
      IP_S [<PM Type> {SPM [<SPM Type> {SMG4,
      DPT}}]}}]}}
```

QUERYPM command for ABI XPMs:

The querypm command for on posting a ABI XPM from the MAPCI;MTC;PM level is enhanced to display the bearer network of the GWC from where it subtends.

This enhancement is for PMs datafilled in the following tables: LTCINV, LTCRINV, RCCINV, LCMINV, RDTINV, LGRPINV, SERVINV (except DPT GWCs) and RMMINV. Also the QueryPM command of ESA nodes has been enhanced to display Bearer Network information.

E.g., Datafill from Table LTCINV for an ABI hosted XPM:

```
SMA2 4 62 MVDD 1 57 21 R 21 MX85AB XM220CE (POTS POTSEX) (KEYSET KSETEX)
$ (4 16) (4 17) (4 18) (4 19) $ (UTR6 ) (MSGMX76 HOST ) (ISP 4) $
NORTHAA AX74AA AX74AA 0 NILLOAD ( EXTDS512 HOST ABI 5 ) $ 6X40FB N
```

Figure 4 QueryPM enhancements for LTC

```
>mapci nodisp prtmap;mtc;pm;post LTC 1
>querypm
PM Type: LTC PM No.: 1 PM Int. No.: 6 Node_No.: 149
PMs Equipped: 113 Loadname: QLI20CE EEPROM Load: SXFWAJ02
WARM SWACT is supported but not possible: node redundancy lost.
LTC 1 is included in the REX schedule.
REX on LTC 1 has not been performed.
Node Status: {OFFLINE, TRUE}
Unit 0 Status: {OFFLINE, TRUE}
Unit 1 Status: {OFFLINE, TRUE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
VOIP 01 AA05 LTEI 018 18 LTC : 001 6X02NA
MG9K Information:
HOST 01 MM04 MG9F 004 02 ABI : 0006 20/21 042 172.31.165.18
Bearer Network: IP_P
```

Figure 5 QueryPM enhancements for LCME

```
>post LCME HOST 2 0;querypm
PM:
POST:
PM Type: LCME Int. No.: 2 Status index: 1 Node_No: 107
LCME HOST 02 0 Memory Size - Unit 0: 256K , Unit 1: 256K
Loadnames: LCMINV - LCME18AW
LCM REX is ON; Not run since last Reload Restart.
Node Status: {OFFLINE, TRUE}
Unit 0 Status: {OFFLINE, TRUE} /RG: 0
Unit 1 Status: {OFFLINE, TRUE} /RG: 0
Ring Generator Status:
RG 0 Status: {OK} Preferred
RG 1 Status: {OK} Standby
RG in Overload : NO
Site Flr RPos Bay_id Shf Description Slot EqPEC
HOST 01 N25 LCEI 02 38 LCME 02 0 BX30AB
Services : ISDN Equipped
MG9K Information:
Bearer Network: A1_P
```


Figure 6 QueryPM enhancements for RCS

```
>querypm
PM Type: RCS Int. No.: 15 Node_No: 169
Site Flr RPos Bay_id Shf Description Slot EqPEC
SLC 01 K31 RTS 000 58 RCS 00 0
MG9K Information:
Bearer Network: IP_P
```

Figure 7 QueryPM enhancements for RCC

```
>querypm
PM Type: RCC Int. No.: 15 Node_No: 169
Site Flr RPos Bay_id Shf Description Slot EqPEC
SLC 01 K31 RTS 000 58 RCS 00 0
MG9K Information:
Bearer Network: A1_P
```

Figure 8 QueryPM enhancements for IDT

```
PM Type: IDT Int. No: 56 Status index: 0 Node No: 110
Prot-Switch: Unavailable
Cside Host Name: SMA2 4
RDT Name: RDT1 23 0
Network element: 12 ANODE_2_CUFED
Lines allocated to IDT 23: 671
Lines defined for SMA2 4: 671
Lines available to SMA2 4: 4705
MG9K Information:
Bearer Network: A1_P
```

Figure 9 QueryPM enhancements for LGRP

```
PM Type:LGRP Node No:150 Int.No:0 Off.LM:18 Type:S
Cside Host: GWC 0 Node_No: 89 IP: 47.142.92.68
Node_Status MTC_Node_Status Callp_Node_Status
{OFFL FALSE} {OFFL FALSE} {OFFL FALSE}
Site Flr RPos Bay_id Shf Description
HOST 1 A 1 MG9F 1 3 LGRP 1 3
Node Information:
Bearer Network: A1_P
```

Figure 10 QueryPM enhancements for ESA

```
PM Type: ESA PM No.: 0 PM Int. No.: 0 Node_No.: 110
PMs Equipped: 79 Loadname: ESA10AQ
NODE STATUS: {OFFLINE, TRUE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RLCM 01 N15 RLCM 00 00 ESA : 000
MG9K Information:
Bearer Network: A1_P
```

Figure 11 QueryPM enhancements for RMM

```

PM TYPE: RMM PM NO.: 0 NODE NO.: 105
PM_STATUS: Offl NODE_STATUS: OFFLINE,TRUE, CHKSUM: #BDB0
PP LOAD: VALID PP EXECS: VALID FNAME: RMM10A
PMS EQUIPPED: 79 PM INT. #: 3
  Site Flr RPos Bay_id Shf Description Slot EqpEC
USMA 01 D39 MIS 000 65 RMM : 000 6X13AA
TM Entries: 0 TO 10
MG9K Information:
  Bearer Network: AAL1

```

QUERYPM command for GWCs:

The querypm command is on posting a GWCs from the MAPCI;MTC;PM level is enhanced to display the bearer network it supports under Node Information. For DPT GWCs, the message “Signaling Only - No Associated Bearer Network” is displayed.

E.g., Datafill from Table SERVINV for GWCs.

```

GWC 0 IP 47 142 92 68 (POTS POTSEX) (KEYSET KSETEX) $ NORTHAA
(AAL1_PRIMARY Y) $ $
GWC 19 IP 47 142 92 148 (ABTRK GWCEX) $ NORTHAM $ $

```

Figure 12 QueryPM enhancements for GWCs

```

>mapci;mtc;pm;post gwc 0
>querypm
PM Type: GWC PM No.: 0 PM Int. No.: 0 Node_No.: 89
IP Address: 47.142.92.68
Unit 0:
  Load: GN080BK
Unit 1:
  Load: GN080BK
Node Information:
  Bearer Network: A1_P

```

Figure 13 QueryPM enhancement for DPT GWCs

```

>querypm
PM Type: GWC PM No.: 19 PM Int. No.: 19 Node_No.: 199
IP Address: 47.142.92.148
Unit 0:
  Load: GN080BK
Unit 1:
  Load: UNKNOWN
Node Information:
  Bearer Network: Signaling Only - No Associated Bearer Network

```

1.2.2.2 Enhancements to SPM MAP display (mapci;mtc;pm;post spm <spm no>)**Enhancements to Non-Menu POSTCLS command:**

To post SPM type nodes based on the SPM node class. In case of IW SPM (Bridge _only Type), nodes are posted based on their associated bridge pool.

The following figure shows the enhancements to the post command at the PM level.

- Enhancements to the existing command POSTCLS.
 - To Post the IW DPT SPMs
 - To POST IW SPMs associated with a specific Bridge Pool CLLI. Parameters which are passed to POSTCLS command are linked to the values datafilled in DISPLAY field of table NETBRDGE tuples.

Note: For the user inputs and the MAP responses please refer the Configuration Document for the feature (CN Document). For more information see “User interface changes” on page 92.

Figure 14 POSTCLS command Enhancements

```
POSTCLS: Post SPM by CLASS for maintenance.
Parms: <Class Type> {DMSCP,
                  IWBRG [<Netbridge_clli>...{E_A1,E_A2}]
                  SMG4,
                  IWDPT};
```

MAP Display for DMSCP/SMG4/IW DPT SPM node types:

Below are the MAP displays for a) DMSCP SPM b)SMG4 SPM c) IW DPT SPM. The DISPLAY field of the bearer network of the SPM node as datafilled in table BEARNETS is displayed in the new field “Bear”.

Figure 15 PM MAP display for DMSCP node

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
AMDI	Istb	NODLOG	.	3 SPM	.	SYSB	69C..	.	ATM_6
M				*C*		*C*	*C*		*C*
SPM				SysB	ManB	OffL	CBsy	ISTb	InSv
0 Quit		PM		4	1	52	2	6	48
2 Post_		SPM		0	0	6	0	3	4
3 ListSet									
4 ListRes	SPM	8	ISTb	Class: DMSCP				BEAR: ENET	
5 Trnsl									
6	Shlf0	SL A Stat	Shlf0	SL A Stat	Shlf1	SL A Stat	Shlf1	SL A Stat	
7 ATMConn	-----	1 - ----	CEM 1	8 A ISTb	DLC 0	1 A InSv	-----	8 - ----	
8 IPConn	-----	2 - ----	OC3 0	9 A InSv	DLC 1	2 I OffL	-----	9 - ----	
9 OfClk	-----	3 - ----	OC3 1	10 I InSv	-----	3 - ----	-----	10 - ----	
10	-----	4 - ----	-----	11 - ----	-----	4 - ----	DSP 1	11 A InSv	
11 Disp_	-----	5 - ----	VSP 0	12 I OffL	DSP 0	5 I InSv	-----	12 - ----	
12 Next	-----	6 - ----	VSP 1	13 A InSv	-----	6 - ----	-----	13 - ----	
13 Select_	CEM 0	7 I ISTb	-----	14 - ----	-----	7 - ----	-----	14 - ----	
14 QueryPM									
15 ListAlm	POST:								
16 Clock	SPM:								
17 SPERFORM									
18 Upgrade_									
ADMIN									

Figure 16 PM MAP display for SMG4 node

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
AMDI	Istb	NODLOG	.	3 SPM	.	SYSB	68C..	.	ATM_6
M				*C*		*C*	*C*		*C*
SPM				SysB	ManB	OffL	CBsy	ISTb	InSv
0 Quit		PM		4	1	52	2	6	48
2 Post_		SPM		0	0	6	0	3	4
3 ListSet									
4 ListRes	SPM	0	OffL	Class: SMG4			BEAR: A1_P		
5 TrnsL									
6		Shlf0	SL A Stat	Shlf0	SL A Stat	Shlf1	SL A Stat	Shlf1	SL A Stat
7 ATMConn	ATM 0	1 I OffL	CEM 1	8 I OffL	-----	1 -	-----	8 -	-----
8 IPConn	ATM 1	2 I OffL	OC3 0	9 I OffL	-----	2 -	-----	9 -	-----
9 OfClk	-----	3 -	-----	OC3 1	10 I OffL	-----	3 -	-----	10 -
10	-----	4 -	-----	VSP 1	11 I OffL	VSP 0	4 I OffL	-----	11 -
11 Disp_	-----	5 -	-----	VSP 2	12 I OffL	VSP 6	5 I OffL	VSP 5	12 I OffL
12 Next	-----	6 -	-----	VSP 3	13 I OffL	-----	6 -	-----	VSP 7
13 Select_	CEM 0	7 A OffL	VSP 4	14 I OffL	-----	7 -	-----	-----	14 -
14 QueryPM									
15 ListAlm	POST:								
16 Clock	SPM:								
17 SPERFORM									
18 Upgrade_									
ADMIN									

Figure 17 PM MAP display for IW DPT node

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
.	.	NO AMA	.	2 SPM	3 RS	.	34C..	.	SPM_26
		C		*C*	*C*		*C*		M
SPM				SysB	ManB	OffL	CBsy	ISTb	InSv
0 Quit		PM		5	0	6	0	10	19
2 Post_		SPM		0	0	4	0	7	6
3 ListSet									
4 ListRes	SPM	1	InSv	Class: IW			DPT_Only	BEAR: AAL1	
5 TrnsL									
6		Shlf0	SL A Stat	Shlf0	SL A Stat	Shlf1	SL A Stat	Shlf1	SL A Stat
7 ATMConn	-----	1 -	-----	CEM 1	8 I InSv	-----	1 -	-----	8 -
8 IPConn	-----	2 -	-----	ATM 0	9 A InSv	-----	2 -	-----	VSP 2
9 OfClk	-----	3 -	-----	ATM 1	10 I InSv	-----	3 -	-----	10 -
10	-----	4 -	-----	-----	11 -	-----	VSP 0	4 A InSv	DSP 1
11 Disp_	-----	5 -	-----	-----	12 -	-----	DSP 0	5 A InSv	-----
12 Next	-----	6 -	-----	-----	13 -	-----	VSP 1	6 A InSv	-----
13 Select_	CEM 0	7 A InSv	-----	14 -	-----	-----	7 -	-----	14 -
14 QueryPM	Next								
15 ListAlm									
16 Clock									
17 SPERFORM									
18 Upgrade_									
ADMIN									

MAP Display for IW bridge_only SPM node:

Below is the display of a IW bridge only SPM node. The value datafilled in DISPLAY field of the table NETBRDGE tuple corresponding to the NetBridge CLI of the SPM node is displayed in the new field “Netbridge”.

Figure 18 PM MAP display for IW bridge only node

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
AMDI	Istb	NODLOG	.	3 SPM	.	SYSB	69C..	.	ATM_6
M				*C*		*C*	*C*		*C*
SPM				SysB	ManB	OffL	CBsy	ISTb	InSv
0 Quit		PM		4	1	52	2	5	49
2 Post_		SPM		0	0	6	0	3	4
3 ListSet									
4 ListRes	SPM	3	InSv	Class: IW	BRG_Only	NETBRDGE: E_AP			
5 Trnsl									
6		Shlfl0	SL A Stat	Shlfl0	SL A Stat	Shlfl1	SL A Stat	Shlfl1	SL A Stat
7 ATMConn	-----	1 -	-----	CEM 1	8 A InSv	-----	1 -	-----	8 -
8 IPConn	-----	2 -	-----	ATM 0	9 A InSv	-----	2 -	-----	9 -
9 OfClk	-----	3 -	-----	ATM 1	10 I InSv	-----	3 -	VSP 6	10 A InSv
10	-----	4 -	-----	VSP 0	11 A InSv	VSP 4	4 A InSv	VSP 7	11 A InSv
11 Disp_	-----	5 -	-----	VSP 1	12 A InSv	DSP 2	5 A InSv	VSP 8	12 I InSv
12 Next	-----	6 -	-----	VSP 2	13 A InSv	DSP 3	6 A InSv	DSP 0	13 A InSv
13 Select_	CEM 0	7 I InSv	VSP 3	14 A InSv	-----	7 -	-----	DSP 1	14 I InSv
14 QueryPM	Next								
15 ListAlm									
16 Clock									
17 SPERFORM									
18 Upgrade_									
ADMIN									

1.2.2.3 Enhancements to CARRIER MAP display

The CARRIER level of MAPCI is enhanced for SPM PMs to display the SPM node type and the Bearer Network or Network Bridge Information as appropriate.

In the case of DMSCP, SMG4 and IW DPT node types, the additional information displayed is the SPM node class type and the value datafilled in DISPLAY field of the table BEARNETS tuple corresponding to the Bearer Network associated with the node.

In the case of Bridge Only IW nodes, the additional information displayed is the SPM node class type and the value datafilled in DISPLAY field of the table NETBRDGE corresponding to the bridge pool CLI with which the IW SPM is associated.

Figure 19 Carrier MAP display for DMSCP

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL		
AMDI	Istb	NODLOG	.	3 SPM	.	SYSB	69C..	.	ATM_6		
M				*C*		*C*	*C*		*C*		
POST	CLASS	ML	OS	ALRM	SYSB	MANB	UNEQ	OFFL	CBSY	PBSY	INSV
0 Quit	TRUNKS	75	0	0	0	0	0	527	0	0	89
2 Post_	REMOTE	0	0	0	0	0	0	42	0	0	0
3	PROTLN	0	0	0	0	0	0	3	0	0	0
4	HSCARR	85	0	0	0	0	0	545	0	0	95
5 Loop_	OC3S	Type: DMSCP Bear: ENET									
6 Tst_	N CLASS	SITE	SPM	RM	OC3S	CKT	STATE	TR	MA		
7 Bsy_	0 HSCARR	HOST	8	0	0	169	OFFL	--	--		
8 RTS_	1 HSCARR	HOST	8	1	0	170	OFFL	--	--		
9 Offl_											
10											
11 Disp_											
12 Next	SIZE OF POSTED SET	:	175						MORE...		
13											
14 Detail_	POST:										
15 ListAlm_											
16											
17 Perfmon_											
18											
ADMIN											

Figure 20 Carrier MAP display for SMG4

XAC	MS	IOD	Net		PM	CCS	Lns	Trks	Ext	APPL		
AMDI	Istb	NODLOG	.		3 SPM	.	SYSB	69C..	.	ATM_6		
M					*C*		*C*	*C*		*C*		
POST		CLASS	ML	OS	ALRM	SYSB	MANB	UNEQ	OFFL	CBSY	PBSY	INSV
0 Quit		TRUNKS	75	0	0	0	0	0	527	0	0	89
2 Post_		REMOTE	0	0	0	0	0	0	42	0	0	0
3		PROTLN	0	0	0	0	0	0	3	0	0	0
4		HSCARR	85	0	0	0	0	0	545	0	0	95
5 Loop_		OC3S	Type: SMG4 Bear: A1_P									
6 Tst_	N	CLASS	SITE	SPM	RM	OC3S	CKT	STATE	TR	MA		
7 Bsy_	0	HSCARR	HOST	0	0	0	1	OFFL	--	--		
8 RTS_	1	HSCARR	HOST	0	1	0	2	OFFL	--	--		
9 Offl_	2	HSCARR	HOST	0	0	0	176	OFFL	--	--		
10	3	HSCARR	HOST	0	1	0	177	OFFL	--	--		
11 Disp_												
12 Next		SIZE OF POSTED SET : 180							MORE...			
13												
14 Detail_		POST:										
15 ListAlm_												
16												
17 Perfmon_												
18												
ADMIN												

Figure 21 Carrier MAP display for IW DPT SPM

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
.	.	NO AMA	.	2 SPM	3 RS	.	34C..	.	SPM_26
		C		*C*	*C*		*C*		M
POST		CLASS	ML	OS ALRM	SYSB	MANB	UNEQ	OFFL	CBSY PBSY INSV
0 Quit		TRUNKS	0	0	0	0	0	477	0 0 618
2 Post_		HSCARR	0	0	1	0	0	503	0 0 692
3		OC3S	Type: DPT Bear: AAL1						
4		N CLASS	SITE	SPM RM	OC3S	CKT	STATE	TR	MA
5 Loop_		0 HSCARR	HOST	1	0	0	1	INSV	
6 Tst_		1 HSCARR	HOST	1	1	0	2	INSV	.S ..
7 Bsy_									
8 RTS_									
9 Offl_									
10		SIZE OF POSTED SET : 5						MORE...	
11 Disp_									
12 Next		POST:							
13									
14 Detail_									
15 ListAlm_									
16									
17 Perfmon_									
18									
		ADMIN							

Figure 22 Carrier MAP display for IW DPT SPM On Next Command

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
.	.	NO AMA	.	2 SPM	3 RS	.	34C..	.	.
		C		*C*	*C*		*C*		
POST		CLASS	ML	OS ALRM	SYSB	MANB	UNEQ	OFFL	CBSY PBSY INSV
0 Quit		TRUNKS	0	0	0	0	0	477	0 0 618
2 Post_		HSCARR	0	0	1	0	0	503	0 0 692
3		STS3L	Type: DPT Bear: AAL1						
4		N CLASS	SITE	SPM RM	OC3S	STS3L	CKT	STATE	TR MA
5 Loop_		0 HSCARR	HOST	1	0	0	0	3	INSV
6 Tst_		1 HSCARR	HOST	1	1	0	0	4	INSV .S ..
7 Bsy_									
8 RTS_									
9 Offl_									
10		SIZE OF POSTED SET : 3						MORE...	
11 Disp_		next							
12 Next									
13									
14 Detail_									
15 ListAlm_									
16									
17 Perfmon_									
18									
		ADMIN							

Carrier MAP Display for IW bridge only SPM node:

Below is the carrier level map display of a IW bridge only SPM node. The Class of the SPM Node and the value datafilled in DISPLAY field of table NETBRDGE tuple corresponding to the Bridge Pool CLLI with which the SPM node is associated, are displayed in the new fields 'Type' and 'Netbridge'.

Figure 23 Carrier MAP display for IW Bridge only SPM

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
Split	.	NODLOG	.	2 SPM	.	SYSB	55C..	.	SDM
				C		*C*	*C*		
		CLASS	ML	OS	ALRM	SYSB	MANB	UNEQ	OFFL
0 Quit		TRUNKS	4	0	4	0	0	0	81
2 Post_		REMOTE	2	0	2	0	0	0	35
3		PROTLN	0	0	0	0	0	0	3
4		HSCARR	0	0	3	0	0	0	32
5 Loop_		OC3S							
6 Tst_		N CLASS	SITE	SPM	RM	OC3S	CKT	STATE	TR MA
7 Bsy_		0 HSCARR	HOST	3	0	0	1	INSV	
8 RTS_		1 HSCARR	HOST	3	1	0	2	INSV	.S ..
9 Offl_									
10									
11 Disp_									
12 Next		SIZE OF POSTED SET	:	5					MORE...
13									
14 Detail_									
15 ListAlm_									
16									
17 Perfmon_									
18									
ADMIN									

Figure 24 Carrier MAP display for IW Bridge only SPM On Next Command

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL		
AMDI	Istb	NODLOG	.	3 SPM	.	SYSB	69C..	.	ATM_6		
M				*C*		*C*	*C*		*C*		
POST	CLASS	ML	OS	ALRM	SYSB	MANB	UNEQ	OFFL	CBSY	PBSY	INSV
0 Quit	TRUNKS	75	0	0	0	0	0	527	0	0	89
2 Post_	REMOTE	0	0	0	0	0	0	42	0	0	0
3	PROTLN	0	0	0	0	0	0	3	0	0	0
4	HSCARR	0	0	0	0	0	0	545	0	0	95
5 Loop_	STS3L	Type: IW Netbrdge: E_AP									
6 Tst_	N CLASS	SITE	SPM	RM	OC3S	STS3L	CKT	STATE	TR	MA	
7 Bsy_	0 HSCARR	HOST	3	0	0	0	3	OFFL	--	--	
8 RTS_	1 HSCARR	HOST	3	1	0	0	4	OFFL	--	--	
9 Offl_											
10											
11 Disp_											
12 Next	SIZE OF POSTED SET : 3							MORE...			
13	next										
14 Detail_											
15 ListAlm_											
16											
17 Perfmon_											
18											
ADMIN											

1.2.2.4 Enhancements to CARRIER PERFMON MAP display

The CARRIER/PERFMON level of the MAP is enhanced for SPM PMs to display the SPM node type and the Bearer Network or Network Bridge Information as appropriate.

In the case of DMSCP, SMG4 and IW DPT node types, the additional information displayed is the SPM node class type and the value datafilled in the DISPLAY field of the table BEARNETS tuple corresponding to the Bearer Network associated with the node.

In the case of IW Bridge nodes, the additional information displayed is the SPM node type and the value datafilled in the DISPLAY field in table NETBRDGE corresponding to the Bridge Pool CLLI with which the node is associated.

Figure 25 MAP display for DMSCP/SMG4/DPT node

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL				
AMDI	Istb	NODLOG	.	3 SPM	.	SYSB	70C..	.	ATM_6+				
M				*C*		*C*	*C*		*C*				
	PERFMON	CLASS	ML	OS	ALRM	SYSB	MANB	UNEQ	OFFL	CBSY	PBSY	INSV	
0	Quit	TRUNKS	75	0	0	0	0	0	527	0	0	89	
2		REMOTE	0	0	0	0	0	0	42	0	0	0	
3		PROTLN	0	0	0	0	0	0	3	0	0	0	
4		HSCARR	0	0	0	0	0	0	545	0	0	95	
5		OC3S	Type: DMSCP Bear: ENET										
6	SilMl	PERFMON	0	SPM	8	OC3RM	0	OC3S	0				
7		Interval:	4:30\$			Status:							
8		Parm	Count	M	D	Parm	Count	M	D	Parm	Count	M	D
9	MeterPP	LBC-N	255			OPT-N	255			OPR-N	UNSET		
10		CV-N	0			ES-N	0			SES-N	0		
11		SEFS-N	0										
12													
13		PERFMON:											
14	PPQuery												
15													
16													
17													
18													
	ADMIN												

1.2.2.5 DPTTRM MAP Level

The MAP screen displayed on accessing the MAPCI;MTC;TRKS;DPTTRM level is enhanced to display the DPT protocol used on posted DPT terminal node.

Figure 26 MAP display for DPTTRM MAP

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
AMDI	Istb	NODLOG	.	2 SPM	.	.	60C..	.	SDM
M				*C*		CR C	*C*		
0 Quit		PM: SPM	1		POSTED SET: SPM ALL	1 OF	5		
2 Post_									
3		SUB	STA	PROT INB	MANB	PMB	SYSB	CPB	CPD
4 Disp_		1	OFFL	BICC 2016	0	0	0	0	0
5 Bsy_									
6 RTS_									
7									
8 Frls_									
9									
10 Alrm									
11									
12 Next									
13									
14									
15									
16									
17									
18									
ADMIN									

1.2.2.6 Enhancements to DPTRKS MAP display

The MAP screen displayed on accessing the MAPCI;MTC;TRKS;DPTRKS level is enhanced to display the DPT protocol used on the posted DPT trunk group. This also displays the bearer network associated with the trunk group from table TRKOPTS.

Figure 27 MAP display for DPTTRKS

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
AMDI	Istb	NODLOG	.	2 SPM	.	.	60C..	.	SDM
M				*C*			*C*		
0	Quit								
2	Post_	CKT TYPE	COM LANG			STATE	RANGE		
3		2W ISP	DPTINATM			INS 41	59		
4						PROT: BICC	BEAR: A1_P		
5	BSY_	IDL:	19						
6	RTS_	CPB:	0						
7	OP_	MTC:	0						
8	FRLS_	PV: 0		FE_BLK: 0			FE_UNEQ: 0		
9	Reset_								
10		PENDING: 0							
11	PREV								
12	NEXT								
13									
14									
15	TrkQry_								
16	QrySig								
17	RouteSet								
18	QryMtc								
	ADMIN								

1.2.2.7 Enhancements to TTP MAP level

The Enhancements to the MAPCI;MTC;TRKS;TTP level to be able to post trunk members associated with a bearer network, within a existing POST set. After a post set has been created using any of the existing POST commands, the post-set can be refined to POST the trunk members of a particular bearer network. The parameter range BEARNETS_DISPLAY for parameter passed to POST command for new Option BN, is the values datafilled in DISPLAY field of table BEARNETS tuples. Refer to Figure 26 below.

The CktInfo command at MAPCI;MTC;TRKS;TTP level is enhanced to display Bearer network as shown in Figure 27 below.

Figure 28 POST command with new parameters

```

POST-- POST A NEW SET
Parms: [<SET TYPE> {T [<CLLI1> STRING
                      [<CNRI1> {0 TO 9999}}]
                      [<....> STRING],
      G <CLLI> STRING
        [<CLNR> {0 TO 9999}}]
        [<TO> {TO}}]

      ....
      WB <CLLI> STRING
        <CKTN> {0 TO 9999}},
      BN [<ENET> STRING]
        [<A1_P> STRING]
        [<A1_S> STRING]
        [<IP_P> STRING]
        [<IP_S> STRING]}}]

```

Figure 29 TTP level MAP display

```

>mapci;mtc;trks;ttp;<post any trunk ckt>
>cktinfo
SPM 0 95 : INSV
SPM 0 : InSv
Ckt state : IDL
Ckt Bearer net : A1_P

```

1.2.3 Enhancements to LTP MAP display

The MAP screen displayed on accessing the MAPCI;MTC;LNS;LTP level is enhanced to display the bearer network of the posted line.

Figure 30 LTP level MAP display

XAC	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
AMDI	Istb	NODLOG	.	3 SPM	.	SYSB	69C..	.	ATM_6
M				*C*		*C*	*C*		*C*
LTP									
0 Quit		POST	DELQ		BUSYQ		PREFIX		
2 Post_		LEN HOST 00 0 01 19					BEAR ENET		
3		LCC PTY RNG					STA F S LTA TE	RESULT	
4		1FR		DN 613 621 2590	IDL				
5 Bsy									
6 RTS									
7 Diag									
8									
9 AlmStat									
10 CktLoc		post d 6212590							
11 Hold									
12 Next									
13									
14									
15 FullDn									
16 Prefix									
17 LCO_									
18 Level_									
ADMIN									

1.2.4 Line Query Command Enhancements

1.2.4.1 Overview

Enhanced output of Line Query commands QDN, QLEN, QDNWRK, QLENWRK, QHASU, QGRP and QCUST to display Bearer Network Information associated with a subscriber line.

- Bearer Network Information for a subscriber line is added to the command outputs for CI commands QDN, QLEN, QDNWRK, QLENWRK, QHASU, QGRP, QLT and QCUST.
- In case of CI commands QLENWRK, QDNWRK and QHASU, the query run on a range of lines can be restricted to a Bearer Network.

No Servord Commands are being enhanced.

Details are captured in the Configuration Document for the feature.

1.2.5 New table OFCVAR Parm OSS_PROV_VERSION

A new table OFCVAR Parm OSS_PROV_VERSION has been introduced. The value of this Parm can be used as an ON/OFF feature switch control mechanism for features delivered on the Nortel Succession XA_CORE which impact the OSS interface. This is so that these kind of features are turned

ON/OFF on the switch using this OFCVAR Parm, only when OSS software for switch is upgraded to accommodate the feature code changes.

Details are provided in the User Interface Section of Configuration Document for the feature.

1.2.6 New CI Tool QOSSVER

A new CI tool, QOSSVER, is made available to user on the Nortel Succession XA-CORE. This tool lists the feature ACTIDs of features delivered in an XA-CORE software load which have an impact on the OSS interface and which make use of the table OFCVAR Parm OSS_PROV_VERSION control mechanism described above. Feature ACTIDs which do not use this mechanism will not be listed.

Details about the new tool are provided in the User Interface Section of Configuration Document for the feature.

1.2.7 Tables MNNODE, BEARNETS and NETBRIDGE Table Control Response Messages

There are some changes to the Response messages to Users for table control operations performed on tables MNNODE, BEARNETS, NETBRIDGE.

Changes are listed in User Interface Section of Configuration Document for feature.

1.3 Hardware Requirements or Dependencies

All variants of bearer networks and SPMs to be data filled in the lab.

1.4 Software Requirements or Dependencies

Succession release SN08 software load lineup.

1.5 Limitations and restrictions

In SN08, if number of OM Tuples belonging to OM Groups TRK2NET2 or TRK2NET1 exceeds 16,000 during the OM Tuple creation:

No more OM tuples will be created and the following Warnings are displayed to the user:

- **While adding tuple in table TRKGRP**

“Warning: Maximum number of allowed TRK2NET2 and TRK2NET1 OM tuples has been exceeded.

Require 4 tuples

Only 3 tuples are available

The OM tuples for TRK2NET1 and TRK2NET2 could not be allocated and this

OM data will not collected for any bearer network for the newly added trunk group when MULTINET_DISPLAY_ACTIVE is on”

- **While adding tuple in table BEARNETS**

“Warning: Maximum number of allowed TRK2NET2 and TRK2NET1 OM tuples has been exceeded.

Require 5000 tuples

Only 1000 tuples are available

The OM tuples for TRK2NET1 and TRK2NET2 could not be allocated and this

OM data will not collected for trunk groups using this new Bearer Network when MULTINET_DISPLAY_ACTIVE is on”

- **All SN07 limitations and restrictions as documented in A00003487 are inherited by this activity, unless specifically noted otherwise.**

1.6 Interactions

Not Applicable.

1.7 Glossary

Term	Description
ABI	Access Bridge Interface
APG	Anchor Packet Gateway
CDIS	Call Discrimination Service. This is a service provided by the Broadcom DSP that differentiates normal voice calls from VBD or Fax.
CICM	Centrex IP Client Manager
CLLI	Common Language Location Identifier
DMSCP	DMS Call Processing SPM
DN	Directory Number
DPT	Dynamic Packet Trunk
GWC	Gate Way Controller
IP	Internet Protocol
IW	Inter-Working SPM
LEN	Line Equipment Number
LTP	Line Test Position
MAP	Maintenance and Administration Position
NGSS	Next Generation Session Server
OM	Operational Measurements
PM	Peripheral Module
QCUST	Query Customer Information

Term	Description
QDN	Query Directory Number
QDNWRK	Query Working DN
QGRP	Query Group
QHASU	Query Hardware Assigned Software Unassigned LEN
QLEN	Query Line Equipment Number
QLENWRK	Query Working LEN
SERVORD	Service Order
SMG4	Media Gateway 4000 SPM
SPM	Spectrum Peripheral Module
TDM	Time Division Multiplexing
TTP	Trunk Test Position
SIP-T	Session Initiation Protocol - Telecommunications
VoATM	Voice Over ATM
VoIP	Voice Over IP
XPM	XMS-Based Peripheral Module

2: Configuration for A00006780

2.1 Hardware and Software Requirements

This functionality requires release SN08 or higher loads on the call server¹

2.2 Initial Configuration

2.3 Office/Subnet parameters (OP/SP) (CM & SESM)

2.3.1 OSS_PROV_VERSION (New Parameter in table OFCVAR)

A new parameter OSS_PROV_VERSION is being added in table OFCVAR in SN07. This Parameter's value can be used by Features delivered on Core, which have an OSS Impact, to keep the feature functionality Switched ON/OFF on Switch Core till the time OSS software is upgraded to be in sync with feature code changes.

1. Call Server in the Succession network.

Currently the Line Query Command enhancements (Described in Section 12.9.1 of this document) being done as part of this feature, is being controlled using this table OFCVAR Parm.

Example of an OSS_PROV_VERSION tuple in OFCVAR:

.....	
.....	
OSR_FOR_IMT	N
OSR_FOR_ISUP	N
OSS_PROV_VERSION	SN07
OVLP_ID_TIME	3
.....	
.....	

2.3.1.0.1 Default value

Default value for OSS_PROV_VERSION is SN07.

For this feature, by default the code for the Line Query command enhancements listed under Section 12.9 of this document stays inert on the Trimodal Call Server. (The code stays inert if OSS_PROV_VERSION has a value of SN07)

This ensures that user needs to explicitly change the value from SN07 to any other value in permitted range of values, to get access to functionality provided by feature code which enhances Line Query Commands.

In the process, the Warning messages the user gets will ensure that the new functionality is enabled, only after upgrading the OSS software for switch.

2.3.1.0.2 Permitted range of values for new OFCVAR parameter

```
>cha
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
PARMVAL: SN07
>SN02
PARM VALUE IS WRONG TYPE
TYPE IS OSS_VERSION MULTIPLE WITH
      VER      {SN07,SN08,SN09,SN10,SN11,SN12,SN13,SN14,SN15,SN16,SN17}
TUPLE TO BE CHANGED:
      OSS_PROV_VERSION      SN02
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

2.3.1.0.3 Meaning of OSS_PROV_VERSION in SN08

ACT.A00006780(SN08 Trimodal OAMP Enhancements) uses the Office Parm OSS_PROV_VERSION.

- **OSS_PROV_VERSION = 'SN07'**

Default value of SN07, means that the functionality provided by Line Query Command enhancements made under feature and described in Section 12.9 of this document is disabled

- **OSS_PROV_VERSION is anything greater than 'SN07' in permitted range**

If the Parameter has a any permitted value other than SN07 i.e. greater than SN07, then it means that the functionality provided by Line Query Command enhancements made under feature and described in Section 12.9 of this document is enabled.

User needs to ensure before setting value of parameter to anything permitted other than SN07, that the OSS software for switch is upgraded to be in sync with the Line Query Commands enhancements described in Section 12.9 of this document. User receives a Warning message to the same effect before he changes value from SN07 to any other permitted value.

2.3.1.0.4 Warning/Error Messages

- **If user enters a value outside of permitted range**

Change shall fail and user will get an error message as shown below. Also, user will be prompted to enter correct value with a Yes/No Prompt:

```
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
PARMVAL: SN08
>sn60
PARM VALUE IS WRONG TYPE
TYPE IS OSS_VERSION MULTIPLE WITH
VER
{SN07, SN08, SN09, SN10, SN11, SN12, SN13, SN14, SN15, SN16, SN17}
TUPLE TO BE CHANGED:
OSS_PROV_VERSION          SN60
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

- **If user tries to change parameter value from default value of SN07 to any other value within permitted range i.e. greater than SN07 but a permitted value:**

Change shall pass. User would get following Warning message, just before the Yes/No Prompt:

```
>pos OSS_PROV_VERSION
                                OSS_PROV_VERSION          SN07

>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
PARMVAL: SN07
>sn08
Changing from a lower to a higher version.
Check if the OSS Software has been upgraded to support
all OSS impacting feature enhancements contained
in the load corresponding to higher version.
Use QOSSVER tool to get list of OSS impacting features
in various loads.
TUPLE TO BE CHANGED:
                                OSS_PROV_VERSION          SN08
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

- **If user tries to change parameter value from default value of SN07 to any other value within permitted range i.e. greater than SN07 but a value which is also greater than the current running load (SN08):**

Change shall fail. User would get following Warning messages, just before

the

Yes/No Prompt:

```
>pos OSS_PROV_VERSION
                                OSS_PROV_VERSION          SN07

>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
PARMVAL: SN07
>sn09
ERROR: HIGHEST RELEASE ACTIVATED BY THIS PARM IS SN08
TUPLE TO BE CHANGED:
                                OSS_PROV_VERSION          SN09
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
ERROR: HIGHEST RELEASE ACTIVATED BY THIS PARM IS SN08
```

```
DATA CONSISTENCY ERROR
UNEXPECTED ERROR CONDITION
TUPLE TO BE CHANGED:
                                OSS_PROV_VERSION          SN09
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

- **If user tries to change the value from any valid value back to SN07, which is default value:**

Change shall pass. User will get a Warning message which is shown below, just before the Yes/No Prompt:

```
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
PARMVAL: SN08
>sn07
Changing from a higher to a lower version.
Some OSS impacting feature enhancements in
the load corresponding to higher version will stop
working after the change.
Check if the OSS Software needs to be downgraded
Use QOSSVER tool to get list of OSS impacting
features in various loads.
TUPLE TO BE CHANGED:
                                OSS_PROV_VERSION          SN08
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

2.4 Upgrade Considerations

2.4.0.1 OM Groups TRK2NET1 and TRK2NET2

In the event that the maximum numbers of OM tuples for OM groups TRK2NET1 and TRK2NET2 has been exceeded on the dump side, or will be exceeded on the restore side due to the tuple allocation enhancement provided by this feature, the tuples which are allocated are likely to be different between the two sides, due to the order in which they were allocated. On the ONP, the affected tables will restore in the order: BEARNETS, TRKGRP, OMKEYORD.

The OM tuples for TRK2NET1 and TRK2NET2 in table OMKEYORD are not transferred during the ONP since they are recreated by the transfer of tables BEARNETS and TRKGRP.

2.4.0.2 DISPLAY field of Tables BEARNETS and NETBRDGE

In SN08, the DISPLAY field of tables BEARNETS and NETBRDGE are required to be non-empty and unique for each Bearer Network (Table

BEARNETS) and each Network Bridge CLI(NETBRDGE). Due to enforcement of these criteria, if these fields were not provisioned accordingly in the DUMP side datafill, a warning will be provided indicating that these values should be changed in the SN08 datafill to conform. The warning message will be recorded in the standard TRACE file on XACORE during the execution of TABXFR. Refer to section 12.8.8 for further details.

2.5 Data schema (DS) (CM, MIBS, RDB)

Not Applicable.

2.6 Service Orders (SO)

Not Applicable.

2.7 Software optionality control (SOC)

Not Applicable.

2.8 Element Management

Not Applicable.

2.9 User interface changes

2.9.1 Enhanced Line Query Commands commands

The sample datafill for the Table BEARNETS which is used as reference for the examples presented further below in “Sample BEARNETS table datafill” on page 697:

Figure 1 Sample BEARNETS table datafill

TABLE: BEARNETS				
<line length>: 76 columns can be output per line.				
<pack mode>: Pack mode is ON.				
<indent column>: Indented lines will begin in column 1.				
<first column>: The first column of output is column 1.				
TOP				
NETIDX	BNETNAME	DISPLAY	FABRIC	OPTIONS

NET 0	TDM_ENET	ENET	ENET	\$
NET 1	AAL1_PRIMARY	A1_P	AAL1	(PKT_NETWORK_DEFAULT) \$
NET 2	AAL1_SECONDARY	A1_S	AAL1	\$
NET 3	IP_PRIMARY	IP_P	IP	\$
BOTTOM				

2.9.1.1 QDN Command

2.9.1.1.1 Description

Line Query command QDN is used to display information about a Directory Number (DN).

Command is enhanced to display Bearer Network Information as part of the Command Output.

A new field **BEARERNET** is added to the Command Output.

The information printed in the BEARERNET FIELD is in the following format:-

BEARERNET: <FABRIC> <DISPLAY>

where,

- **DISPLAY:** Value datafilled in DISPLAY field of the table BEARNETS tuple, corresponding to the Bearer Network to which the DN belongs.
- **FABRIC:** Value datafilled in FABRIC field of the table BEARNETS tuple, corresponding to the Fabric of the Bearer Network to which the DN belongs.

Examples (Refer to the“Sample BEARNETS table datafill” on page 697):

Figure 2 Enhanced QDN command output for a DN

```

CI>qdn 5207700
-----
DN:          5207700
TYPE: SINGLE PARTY LINE
SNPA: 214    SIG: DT    LNATTIDX: 1
LINE EQUIPMENT NUMBER:      SLOA  77 1 20 00
LINE CLASS CODE:           1FR
CARDCODE:  RDTLSG    GND: N  PADGRP: PKLNL  BNV: NL MNO: N
PM NODE NUMBER      :      129
PM TERMINAL NUMBER  :      913
BEARERNET: AAL1 A1_P
OPTIONS:
DGT
OFFICE OPTIONS:
U3WC AIN TIID SRA
-----

```

2.9.1.2 QLT Command

2.9.1.2.1 Description

Line Query command QLT is used to display information about a Logical Terminal ID(LTID).

Command is enhanced to display Bearer Network Information as part of the Command Output, if LTID is mapped to a LEN in table LTMAP.

A new field **BEARERNET** is added to the Command Output.

The information printed in the BEARER NET FIELD is in the following format:-

BEARER NET: <FABRIC> <DISPLAY>

where,

- **DISPLAY:** Value datafilled in DISPLAY field of the table BEARNETS tuple, corresponding to the Bearer Network to which the DN belongs.
- **FABRIC:** Value datafilled in FABRIC field of the table BEARNETS tuple, corresponding to the Fabric of the Bearer Network to which the DN belongs.

Examples (Refer to the “Sample BEARNETS table datafill” on page 697):

Figure 3 Enhanced QLT command output for a LTID

```
>qlt isdn 194
-----
LTID: ISDN      194
SNPA: 416
DIRECTORY NUMBER: 4738073
LT GROUP NO: 0
LTCLASS: BRAFS  DEFAULT LOGICAL TERMINAL: N
EKTS: N  CACH: N
SLBRI: N
BEARER SERVICE ALLOWED: VOICE  VBD  CMD
CS: Y PS: N
ELN: N
VERSION: FUNCTIONAL ISSUE: 2
TSPID: 4164738073
LEN: HOST 01 1 11 22  TEI: DYNAMIC
BEARER NET: ENET ENET
CUSTGRP: MDC416 SUBGRP: 0 NCOS: 0 RING: Y
LINE CLASS CODE: ISDNKSET
MAXKEYS: 64
OPTIONS:
SFC
CUSTOMER GROUP OPTIONS:
AIN CDP CODE
OFFICE OPTIONS:
AIN TIID

KEY      DN
---      --
1        DN      4164738073

KEY      FEATURE
---      -
      NONE
-----
```

2.9.1.3 QLEN Command

2.9.1.3.1 Description

Line Query command QLEN is used to display information about a Line Equipment Number (LEN).

Command is enhanced to display Bearer Network Information as part of the Command Output.

A new field **BEARERNET** is added to the Command Output.

The information printed in the BEARERNET FIELD is in the following format:-

BEARERNET: <FABRIC> <DISPLAY>

where,

- **DISPLAY:** Value datafilled in DISPLAY field of the table BEARNETS tuple, corresponding to the Bearer Network to which the LEN belongs.
- **FABRIC:** Value datafilled in FABRIC field of the table BEARNETS tuple, corresponding to the Fabric of the Bearer Network to which the LEN belongs.

Examples:

Figure 4 Enhanced QLEN command output for LEN

```

CI>qlen sloa 23 3 4 2
-----
LEN:      SLOA  23 3 04 02
TYPE: SINGLE PARTY LINE
SNPA: 613
DIRECTORY NUMBER:      7202342
LINE CLASS CODE:       1FR
IBN TYPE: STATION
CUSTGRP:      RES1      SUBGRP: 0  NCOS: 0
SIGNALLING TYPE: DIGITONE
LINE TREATMENT GROUP:   0
LINE ATTRIBUTE INDEX:   30
CARDCODE:  RDTLSG      GND: N  PADGRP: PKLNL  BNV: NL MNO: N
PM NODE NUMBER      :    118
PM TERMINAL NUMBER  :    147
BEARERNET: IP IP_P
OPTIONS:
DGT
RES OPTIONS: NONE
OFFICE OPTIONS:
SRA

```

2.9.1.4 QDNWRK Command

Line Query Command QDNWRK displays information about a range of working lines using Directory Numbers, which meet the conditions specified by the query parameters passed to the command the user.

The command format is enhanced to include a mandatory query parameter called **BEARNETWORK**.

The range of DNs passed to command is refined such that the output includes DNs which belong to the Bearer Network passed as BEARNETWORK and which meet the specifications set by the values passed for the other command parameters

As mentioned earlier, BEARNETWORK Parm selects only DNs which are physically associated to a LEN, directly or indirectly(e.g. LTIDs which are MAPPED to a LEN in table LTMAP). This is because only if DN is associated/attached to a LEN, can it be said that DN is part of a particular Bearer Network.

Table 1 New Mandatory Command Parameter “BEARNETWORK”

Parameter Name	Valid input	Description	Areas affected by prompt
BEARNETWORK	Range includes “ALL” and Character Strings datafilled in DISPLAY field of all table BEARNETS tuples: BNETDISP_RANGE{ENET, A1_P, A1_S, IP, ALL} Default value if no PARM is added is “ALL”, which means DNs corresponding to all Provisioned Bearer Networks is included in Query	A bearer network is entered for BEARNETWORK parameter of the command. A range of DNs and some other command parameters are also passed to the command. Command output includes DNs from the range which belong to the bearer network. The DNs also satisfy the command parameters other than BEARNETWORK	N/A

Figure 5 QDNWRK command format with new BEARNETWORK parameter

```

CI>help qdnwrk
COMMAND QDNWRK : QUERY WORKING DIRECTORY NUMBERS
COMMAND FORMAT :
QDNWRK <DIRECTORY NUMBER RANGE><BEARNETWORK><LCC><OPTION><SUMMARY OR DETAIL>

```

2.9.1.4.1 Examples:

- **QDNWRK SUMMARY output when default parameter “ALL” is passed for BEARNETWORK**

Prints SUMMARY output for DNs belonging to any Bearer Network datafilled in table BEARNETS, which satisfy the values passed in for the command parameters other than BEARNETWORK.

Figure 6 QDNWRK command SUMMARY output in Prompt Mode

```
CI>qdnwrk
DIRECTORY_NUMBER_RANGE: ALL
>
BEARNETWORK: ALL
>
AGENT OR LINE CLASS CODE: NLCC
>
OPTION:
>$
SUMMARY OR DETAIL: S
>s
COMMAND AS ENTERED
QDNWRK ALL  ALL NLCC $ ALL S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
REPORT ON WORKING DIRECTORY NUMBERS
      LCC ALL                      OPTION ALL
      TOTAL COUNT OF WORKING DN:      135
```

Figure 7 QDNWRK SUMMARY command in No Prompt Mode (Same Output)

```
>QDNWRK ALL  ALL NLCC $  S
COMMAND AS ENTERED
QDNWRK ALL  ALL NLCC $ ALL S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
```

- **QDNWRK DETAIL output when default parameter “ALL” is passed for BEARNETWORK**

Prints DETAIL output for DNs belonging to any Bearer Network datafilled in table BEARNETS, which satisfy the values passed in for the command parameters other than BEARNETWORK.

Figure 8 QDNWRK command DETAIL output in Prompt Mode

```

CI>qdnwrk
DIRECTORY_NUMBER_RANGE: ALL
>
BEARNETWORK: ALL
>
AGENT OR LINE CLASS CODE: NLCC
>
OPTION:
>$
SUMMARY OR DETAIL: S
>d
COMMAND AS ENTERED
QDNWRK ALL  ALL NLCC $ ALL D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
REPORT ON WORKING DIRECTORY NUMBERS
  LCC ALL              OPTION ALL
-----
DN:      5207700
TYPE: SINGLE PARTY LINE
SNPA: 214  SIG: DT  LNATTIDX: 1
LINE EQUIPMENT NUMBER:  SLOA  77 1 20 00
LINE CLASS CODE:      1FR
CARDCODE:  RDTLSG  GND: N  PADGRP: PKLNL  BNV: NL MNO: N
PM NODE NUMBER      : 129
PM TERMINAL NUMBER : 913
BEARERNET: AAL1 A1_P
OPTIONS:
DGT
OFFICE OPTIONS:
U3WC AIN TIID SRA
-----
. . .
DN:      6211002
TYPE: SINGLE PARTY LINE
SNPA: 613  SIG: DT  LNATTIDX: 407
LINE EQUIPMENT NUMBER:  HOST  01 1 00 01
LINE CLASS CODE:      1FR
CARDCODE:  6X17AC  GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      : 90
PM TERMINAL NUMBER : 2
BEARERNET: ENET ENET
OPTIONS:
DGT
OFFICE OPTIONS:
U3WC AIN TIID
TOTAL COUNT OF WORKING DN:      135

```

Figure 9 QDNWRK DETAIL command in No Prompt Mode (Same Output)

```

>QDNWRK ALL  ALL NLCC $  D
COMMAND AS ENTERED
QDNWRK ALL  ALL NLCC $ ALL D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y

```

- **QDNWRK SUMMARY output when a particular Bearer Network is passed for BEARNETWORK**

Prints SUMMARY output for DNs belonging to a particular Bearer Network datafilled in table BEARNETS entered for parameter BEARNETWORK, which satisfy the values passed in for the command parameters other than BEARNETWORK.

Figure 10 QDNWRK SUMMARY command output in Prompt Mode

```

CI>qdnwrk
DIRECTORY_NUMBER_RANGE: ALL
>
BEARNETWORK: ALL
> ENET
AGENT OR LINE CLASS CODE: NLCC
>
OPTION:
>$
SUMMARY OR DETAIL: S
>s
COMMAND AS ENTERED
QDNWRK ALL ENET NLCC $ ALL S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
REPORT ON WORKING DIRECTORY NUMBERS
      LCC ALL                      OPTION ALL
      613621 : DN NOT IN HUNTMEM
.....
.....
TOTAL COUNT OF WORKING DN: 20

```

Figure 11 QDNWRK SUMMARY command in No Prompt Mode (Same Output)

```

>QDNWRK ALL ENET NLCC $ S
COMMAND AS ENTERED
QDNWRK ALL ENET NLCC $ ALL S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y

```

- **QDNWRK DETAIL output when a particular Bearer Network is passed for BEARNETWORK**

Prints DETAIL output for DNs belonging to a particular Bearer Network datafilled in table BEARNETS entered for parameter BEARNETWORK, which satisfy the values passed in for the command parameters other than BEARNETWORK.

Figure 12 QDNWRK DETAIL command output in Prompt Mode

```

CI>qdnwrk
DIRECTORY_NUMBER_RANGE: ALL
>
BEARNETWORK: ALL
>ENET
AGENT OR LINE CLASS CODE: NLCC
>
OPTION:
>$
SUMMARY OR DETAIL: S
>d
COMMAND AS ENTERED
QDNWRK ALL ENET NLCC $ ALL D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
REPORT ON WORKING DIRECTORY NUMBERS
    LCC ALL                OPTION ALL
-----
DN:      6211001
TYPE: SINGLE PARTY LINE
SNPA: 613 SIG: DT    LNATTIDX: 406
LINE EQUIPMENT NUMBER: HOST  01 1 00 01
LINE CLASS CODE:      1FR
CARDCODE: 6X17AC GND: N  PADGRP: STDLN BNV: NL MNO: N
PM NODE NUMBER      :    90
PM TERMINAL NUMBER  :    1
BEARERNET: ENET ENET
OPTIONS:
DGT
OFFICE OPTIONS:
U3WC AIN TIID
-----
. . . .
DN:      6211005
TYPE: SINGLE PARTY LINE
SNPA: 613 SIG: DT    LNATTIDX: 407
LINE EQUIPMENT NUMBER: HOST  01 1 00 05
LINE CLASS CODE:      1FR
CARDCODE: 6X17AC GND: N  PADGRP: STDLN BNV: NL MNO: N
PM NODE NUMBER      :    90
PM TERMINAL NUMBER  :    5
BEARERNET: ENET ENET
OPTIONS:
DGT
OFFICE OPTIONS:
U3WC AIN TIID
TOTAL COUNT OF WORKING DN: 20

```

Figure 13 QDNWRK DETAIL command in No Prompt Mode (Same Output)

```

>QDNWRK ALL ENET NLCC $ D
COMMAND AS ENTERED
QDNWRK ALL ENET NLCC $ ALL D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y

```

2.9.1.4.2 Responses

Figure 14 BEARNETWORK entered is out of valid range

```

CI>qdnwrk
DIRECTORY_NUMBER_RANGE: ALL
>
BEARNETWORK: ALL
>jdhjd
  ***  ERROR  ***
JDHJD
|
TYPE OF BEARNETWORK IS BNETDISP_RANGE
BEARNETWORK: ALL
>BNETDISP_RANGE
  ***  ERROR  ***
BNETDISP_RANGE
|
TYPE OF BEARNETWORK IS BNETDISP_RANGE
TYPE IS BNETDISP_RANGE {ENET, A1_P, A1_S, IP, ALL}
BEARNETWORK: ALL
>A1_P ----->Valid value such that an entry is there in table BEARNETS
AGENT OR LINE CLASS CODE: NLCC
>

```

2.9.1.5 QLENWRK Command

Line Query command QLENWRK displays information about a range of working lines using Line Equipment Numbers (LENs), which meet the conditions specified by the query parameters passed to the command the user.

The command format is enhanced to include a mandatory query parameter called **BEARNETWORK**.

The range of LENs passed to command is refined such that: The output includes LENs which belong to the Bearer Network passed as BEARNETWORK and which meet the specifications set by the values passed for the other command parameters

Table 2 New Mandatory Command Parameter “BEARNETWORK”

Parameter Name	Valid input	Description	Areas affected by prompt
BEARNETWORK	Range includes “ALL” and Four Character Strings datafilled in DISPLAY field of all table BEARNETS tuples: BNETDISP_RANGE{ENET, A1_P, A1_S, IP, ALL} Default value if no PARM is added is “ALL”, which means LENSs corresponding to all Provisioned Bearer Networks is included in Query	A bearer network is entered for BEARNETWORK parameter of the command. A range of LENSs and some other command parameters are also passed to the command. Command output includes LENSs from the range which belong to the bearer network. The LENSs also satisfy the command parameters other than BEARNETWORK.	N/A

Figure 15 QLENWRK command format with new BEARNETWORK parameter

```

CI>q qlenwrk
COMMAND QLENWRK : QUERY WORKING LINE EQUIPMENT NUMBERS
COMMAND FORMAT :
QLENWRK <LINE MODULE RANGE><LINE DRAWER RANGE><BEARNETWORK><LCC OR
ACC><OPTION><SUMMARY OR DETAIL>

```

2.9.1.5.1 Examples:

- **QLENWRK SUMMARY output when default parameter “ALL” is passed for BEARNETWORK**

Prints SUMMARY output for LENSs which satisfy the values passed in for the command parameters other than BEARNETWORK, irrespective of which Bearer Network provisioned in table BEARNETS they belong to.

Figure 16 QLENWRK SUMMARY output in Prompt Mode

```

CI>qlenwrk
LINE_MODULE_RANGE: ALL
>
LINE_DRAWER_RANGE: ALL
>
BEARNETWORK: ALL
>
AGENT OR LINE CLASS CODE: NLCC
>
OPTION:
>$
SUMMARY OR DETAIL: S
>s
COMMAND AS ENTERED
QLENWRK ALL  ALL ALL NLCC $ S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
WARNING : Queries of all LENS or a large range of LENS
          may run for 30 minutes or more before producing any output
Please confirm ("YES", "Y", "NO", or "N"):
>y
SUMMARY OF WORKING LINE EQUIPMENT NUMBERS
DRAWERS ALL
LCC ALL          OPTION ALL
COUNT BY LINE DRAWERS
 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
 32 33 34 35
LM : HOST 01 1  COUNT : 137
 16 18 16 17    0 0 0 0 17 20 17 16 0 0 0 0
          TOTAL:      137
. . . . .
DRAWER TOTALS:
 16 18 16 17    0 0 0 0 17 20 17 16 0 0 0 0

```

Figure 17 QLENWRK SUMMARY output in No Prompt Mode (Same Output)

```

>QLENWRK ALL  ALL ALL NLCC $ S
COMMAND AS ENTERED
QLENWRK ALL  ALL ALL NLCC $ S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y

```

- **QLENWRK DETAIL output when default parameter “ALL” is passed for BEARNETWORK:**

Prints DETAIL output for LENS which satisfy the values passed in for the command parameters other than BEARNETWORK, irrespective of which Bearer Network provisioned in table BEARNETS they belong to.

Figure 18 QLENWRK DETAIL output in Prompt Mode

```

CI>qlenwrk
LINE_MODULE_RANGE: ALL
>
LINE_DRAWER_RANGE: ALL
>
BEARNETWORK: ALL
>
AGENT OR LINE CLASS CODE: NLCC
>
OPTION:
>$
SUMMARY OR DETAIL: S
>d
COMMAND AS ENTERED
QLENWRK ALL  ALL ALL NLCC $ ALL D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
WARNING : Queries of all LENS or a large range of LENS
          may run for 30 minutes or more before producing any output
Please confirm ("YES", "Y", "NO", or "N"):
>y
REPORT ON WORKING LINE EQUIPMENT NUMBERS
      DRAWERS ALL
      LCC ALL              OPTION ALL
-----
LEN:      HOST  01 1 00 00
TYPE: SINGLE PARTY LINE
DN 6136211001  LCC      1FR      SIG DT  LNATTIDX 407
CARDCODE: 6X17AA      GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      90
PM TERMINAL NUMBER  :      1
BEARER NET: ENET ENET
OPTIONS:
DGT
OFFICE OPTIONS:
U3WC AIN TIID
-----
.....
LEN:      SLOA  23 3 04 02
TYPE: SINGLE PARTY LINE
SNPA: 613
DIRECTORY NUMBER:      7202342
LINE CLASS CODE:      1FR
IBN TYPE: STATION
CUSTGRP:      RES1      SUBGRP: 0  NCOS: 0
SIGNALLING TYPE: DIGITONE
LINE TREATMENT GROUP:      0
LINE ATTRIBUTE INDEX:      30
CARDCODE: RDTLSG      GND: N  PADGRP: PKLNL  BNV: NL MNO: N
PM NODE NUMBER      :      118
PM TERMINAL NUMBER  :      147
BEARER NET: IP IP_P
OPTIONS:
DGT
RES OPTIONS: NONE
OFFICE OPTIONS:
SRA
-----
TOTAL:      137

```

Figure 19 QLENWRK DETAIL command in No Prompt Mode (Same Output)

```

>QLENWRK ALL  ALL ALL NLCC $ ALL D
COMMAND AS ENTERED
QLENWRK ALL  ALL ALL NLCC $ ALL D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y

```

- **QLENWRK SUMMARY** output when a particular Bearer Network is passed for BEARNETWORK:

Figure 20 QLENWRK SUMMARY command output in Prompt Mode

```

CI>qlenwrk
LINE_MODULE_RANGE: ALL
>
LINE_DRAWER_RANGE: ALL
>
BEARNETWORK: ALL
> ENET
AGENT OR LINE CLASS CODE: NLCC
>
OPTION:
>$
SUMMARY OR DETAIL: S
>s
COMMAND AS ENTERED
QLENWRK ALL  ALL NETO NLCC $ S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
WARNING : Queries of all LENS or a large range of LENS
          may run for 30 minutes or more before producing any output
Please confirm ("YES", "Y", "NO", or "N"):
>y
SUMMARY OF WORKING LINE EQUIPMENT NUMBERS
DRAWERS ALL
LCC ALL          OPTION ALL
COUNT BY LINE DRAWERS
 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
 32 33 34 35
LM : HOST 01 1  COUNT : 20
8 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0
TOTAL: 137
. . . . .
DRAWER TOTALS:
8 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0

```

Figure 21 QLENWRK SUMMARY command in No Prompt Mode (Same Output)

```

>QLENWRK ALL  ALL ENET NLCC $ S
COMMAND AS ENTERED
QLENWRK ALL  ALL ENET NLCC $ S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y

```

- **QLENWRK DETAIL** output when a particular Bearer Network is passed for BEARNETWORK:
Prints DETAIL output for DN's in range, which belong to the Bearer Network passed in as BEARNETWORK parameter and comply with the values entered for the other command parameters.

Figure 22 QLENWRK DETAIL command in Prompt Mode

```

CI>qlenwrk
LINE_MODULE_RANGE: ALL
>
LINE_DRAWER_RANGE: ALL
>
BEARNETWORK: ALL
>ENET
AGENT OR LINE CLASS CODE: NLCC
>
OPTION:
>$
SUMMARY OR DETAIL: S
>d
COMMAND AS ENTERED
QLENWRK ALL ALL NET0 NLCC $ ALL D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
WARNING : Queries of all LENS or a large range of LENS
          may run for 30 minutes or more before producing any output
Please confirm ("YES", "Y", "NO", or "N"):
>y
REPORT ON WORKING LINE EQUIPMENT NUMBERS
      DRAWERS ALL
      LCC ALL          OPTION ALL
-----
LEN:      HOST 01 1 00 00
TYPE: SINGLE PARTY LINE
DN 6136211001 LCC      1FR      SIG DT LNATTIDX 406
CARDCODE: 6X17AA      GND: N    PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      90
PM TERMINAL NUMBER  :      1
BEARERNET: ENET ENET
OPTIONS:
DGT
OFFICE OPTIONS:
U3WC AIN TIID
-----
.....
LEN:      HOST 01 1 00 05
TYPE: SINGLE PARTY LINE
DN 6136211005 LCC      1FR      SIG DT LNATTIDX 407
CARDCODE: 6X17AA      GND: N    PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      90
PM TERMINAL NUMBER  :      5
BEARERNET: ENET ENET
OPTIONS:
DGT
OFFICE OPTIONS:
U3WC AIN TIID
-----
TOTAL: 20

```

Figure 23 QLENWRK command in No Prompt Mode (Same Output)

```

>QLENWRK ALL ALL ENET NLCC $ ALL D
COMMAND AS ENTERED
QLENWRK ALL ALL ENET NLCC $ ALL D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y

```

2.9.1.5.2 Responses

Figure 24 BEARNETWORK out of valid range value

```

CI>qlenwrk
LINE_MODULE_RANGE: ALL
>
LINE_DRAWER_RANGE: ALL
>
BEARNETWORK: ALL
>jdhjd
*** ERROR ***
JDHJD
|
TYPE OF BEARNETWORK IS BNETDISP_RANGE
BEARNETWORK: ALL
>BNETDISP_RANGE
*** ERROR ***
BNETDISP_RANGE
|
TYPE OF BEARNETWORK IS BNETDISP_RANGE
TYPE IS BNETDISP_RANGE {ENET, A1_P, A1_S, IP, ALL}
BEARNETWORK: ALL
>A1_P
AGENT OR LINE CLASS CODE: NLCC
>

```

2.9.1.6 QHASU Command

Line Query command QHASU displays hardware assigned and software unassigned Line Equipment Numbers in a specified range. Enhance the command QHASU to allow querying by the Bearer Network.

The command format is enhanced to include a mandatory query parameter called **BEARNETWORK**.

The range of LENSs passed to command is refined such that: The output includes LENSs which belong to the Bearer Network passed as BEARNETWORK and which meet the specifications set by the values passed for the other command parameters

Table 3 New Mandatory Command Parameter “BEARNETWORK”

Parameter Name	Valid input	Description	Areas affected by prompt
BEARNETWORK	Range includes “ALL” and Four Character Strings datafilled in DISPLAY field of all table BEARNETS tuples: BNETDISP_RANGE{ENET, A1_P, A1_S, IP, ALL} Default value if no PARM is added is “ALL”, which means LENSs corresponding to all Provisioned Bearer Networks is included in Query	A bearer network is entered for BEARNETWORK parameter of the command. A range of LENSs and some other command parameters are also passed to the command. Command output includes LENSs from the range which belong to the bearer network. The LENSs also satisfy the command parameters other than BEARNETWORK	N/A

Figure 25 Enhanced QHASU command format

```
QHASU <LINE MODULE RANGE><LINE DRAWER RANGE><CARDTYPE><GND><BEARNETWORK><SUMMARY
OR DETAIL>
```

2.9.1.6.1 Examples:

- **QHASU SUMMARY output when default parameter “ALL” is passed for BEARNETWORK**

Prints SUMMARY output for LENS which satisfy the values passed in for the command parameters other than BEARNETWORK, irrespective of which Bearer Network provisioned in table BEARNETS they belong to.

Figure 26 QHASU command SUMMARY output in Prompt Mode

```
CI>qhasu
LINE_MODULE_RANGE: ALL
>
LINE_DRAWER_RANGE: ALL
>
BEARNETWORK: ALL
>
CARD CODE: NIL_CC
>
GND: N
>
SUMMARY OR DETAIL: S
>s
COMMAND AS ENTERED
QHASU ALL ALL ALL NIL_CC N S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
SUMMARY OF HARDWARE ASSIGNED SOFTWARE UNASSIGNED LEN -- HASU
DRAWERS ALL
CARDTYPE ALL OPT ALL
COUNT BY LINE DRAWERS
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
32 33 34 35
LM : HOST 01 1 COUNT : 5
2 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0
TOTAL: 5
. . . . .
DRAWER TOTALS:
2 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Figure 27 QHASU SUMMARY command in No Prompt Mode (Same Pout

```
>QHASU ALL ALL NIL_CC N ENET S
COMMAND AS ENTERED
QHASU ALL ALL NIL_CC N ENET S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
```

- **QHASU DETAIL output when default parameter “ALL” is passed for BEARNETWORK:**

Prints DETAIL output for LENS which satisfy the values passed in for the command parameters other than BEARNETWORK, irrespective of which Bearer Network provisioned in table BEARNETS they belong to.

Figure 28 QHASU command DETAIL output in Prompt Mode

```

CI>qhasu
LINE_MODULE_RANGE: ALL
>
LINE_DRAWER_RANGE: ALL
>
BEARNETWORK: ALL
>
CARD CODE: NIL_CC
>
GND: N
>
SUMMARY OR DETAIL: S
>d
COMMAND AS ENTERED
QHASU ALL ALL ALL NIL_CC N D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
HARDWARE ASSIGNED SOFTWARE UNASSIGNED LEN -- HASU
DRAWERS ALL
CARDTYPE ALL OPT ALL
LM COUNT LD COUNT LINE CARD SLOTS
HOST 01 1 5 0 2 3 18
1 2 18 19
2 1 13
TOTAL: 5

```

Figure 29 QHASU DETAIL command in No Prompt Mode (Same Output)

```

>QHASU ALL ALL NIL_CC N ALL D
COMMAND AS ENTERED
QHASU ALL ALL NIL_CC N ALL D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y

```

- **QHASU SUMMARY output when a particular Bearer Network is passed for BEARNETWORK:**

Prints SUMMARY output for LENS in the range, which belong to the Bearer Network passed in as BEARNETWORK parameter and comply with the values entered for the other command parameters.

Figure 30 QHASU command SUMMARY output in Prompt Mode

```

CI>qhasu
LINE_MODULE_RANGE: ALL
>
LINE_DRAWER_RANGE: ALL
>
BEARER_NETWORK: ALL
> ENET
CARD CODE: NIL_CC
>
GND: N
>
SUMMARY OR DETAIL: S
>s
COMMAND AS ENTERED
QHASU ALL ALL ENET NIL_CC N S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
SUMMARY OF HARDWARE ASSIGNED SOFTWARE UNASSIGNED LEN -- HASU
DRAWERS ALL
CARDTYPE ALL OPT ALL
COUNT BY LINE DRAWERS
  00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
  16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
  32 33 34 35
LM : HOST 01 1 COUNT : 2
  2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      TOTAL: 2
. . . . .
DRAWER TOTALS:
  2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

```

Figure 31 QHASU SUMMARY command in No Prompt Mode (Same Output)

```

>QHASU ALL ALL NIL_CC N ENET S
COMMAND AS ENTERED
QHASU ALL ALL NIL_CC N ENET S
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y

```

- **QHASU DETAIL output when a particular Bearer Network is passed for BEARNETWORK:**
Prints DETAIL output for LENS in range, which belong to the Bearer Network passed in as BEARNETWORK parameter and comply with the values entered for the other command parameters.

Figure 32 QHASU DETAIL output in Prompt Mode

```

CI>qhasu
LINE_MODULE_RANGE: ALL
>
LINE_DRAWER_RANGE: ALL
>
BEARER NETWORK: ENET
>ENET
CARD CODE: NIL_CC
>
GND: N
>
SUMMARY OR DETAIL: S
>d
COMMAND AS ENTERED
QHASU ALL  ALL  ENET NIL_CC N D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
HARDWARE ASSIGNED SOFTWARE UNASSIGNED LEN -- HASU
      DRAWERS ALL
CARDTYPE ALL          OPT ALL
      LM  COUNT LD COUNT          LINE CARD SLOTS
HOST  01 1 2 0    2    3 18
      TOTAL:          0

```

Figure 33 QHASU DETAIL command in No Prompt Mode (Same Output)

```

>QHASU ALL  ALL  NIL_CC N ENET D
COMMAND AS ENTERED
QHASU ALL  ALL  NIL_CC N ENET D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y

```

2.9.1.6.2 Responses:

Figure 34 BEARNETWORK entered is out of valid range

```

CI>qhasu
LINE_MODULE_RANGE: ALL
>
LINE_DRAWER_RANGE: ALL
>
BEARNETWORK: ALL
>jdhjd
***  ERROR  ***
JDHJD
|
TYPE OF BEARNETWORK IS BNETDISP_RANGE
BEARER NETWORK: ALL
>BNETDISP_RANGE
***  ERROR  ***
BNETDISP_RANGE
|
TYPE OF BEARNETWORK IS BNETDISP_RANGE
TYPE IS BNETDISP_RANGE {ENET, A1_P, A1_S,  IP, ALL}
BEARNETWORK: ALL
>A1_P ----->Valid value such that an entry is there in table BEARNETS
AGENT OR LINE CLASS CODE: NLCC
>

```

2.9.1.7 QGRP Command

Line Query command QGRP queries information about Members belonging to Line Groups like CPU, SCU, QBS etc. and displays the information to the user.

The command output is enhanced to display against each Group member, the information about the Bearer Network to which the member belongs.

The enhanced output format for a Group member has bearer network information added as **<FABRIC> <DISPLAY>**:

where,

- **FABRIC:** Value datafilled in FABRIC field of the table BEARNETS tuple, corresponding to the Fabric of the Bearer Network to which the LEN belongs.
- **DISPLAY:** Value datafilled in DISPLAY field of the table BEARNETS tuple, corresponding to the Bearer Network to which the LEN belongs.

This enhancement holds true for the following command options of QGRP command only, as listed below:

QGRP CPU <LINE EQUIPMENT NUMBER>

QGRP QBS <LINE EQUIPMENT NUMBER> <KEY>

QGRP MDN <LINE EQUIPMENT NUMBER OR LOGICAL TERMINAL ID> <KEY>

QGRP MDN <DIRECTORY NUMBER>

QGRP MDN <DIRECTORY NUMBER> <BRIEF FULL OR CA <CALL APPEARANCE NUMBER>>

QGRP HNT <DIRECTORY NUMBER OR LINE EQUIPMENT NUMBER> <KEY>

QGRP HNT <DIRECTORY NUMBER OR LINE EQUIPMENT NUMBER>

QGRP BLF <DIRECTORY NUMBER>

For ISDN agents which are not attached to a LEN, the message 'UNATTACHED TO A LEN' is displayed.

2.9.1.7.1 Examples:

Figure 35 Enhanced QGRP command output for CPU Command Option

```
>qgrp cpu SLOA 23 3 08 07

CPU GROUP
-----

LINKLEN:      SLOA  23 3 08 07 KEY 1    BEARERNET: AAL1 A1_S      9097500036
               SLOA  23 3 08 07 KEY 8    BEARERNET: AAL1 A1_S
               SLOA  23 3 08 07 KEY 2    BEARERNET: AAL1 A1_S      9097500074

The number of members in the CPU GROUP is 3.
```

Figure 36 Enhanced QGRP command output for QBS Command Option

```
>qgrp qbs HOST 00 0 08 05 2
LEN AND KEY NOT A MEMBER OF INTERCOM GROUP

QBS GROUP
-----

MONITORED LEN:  HOST 00 0 08 04      BEARER NET: ENET ENET
                  HOST 00 0 08 05 KEY 2  BEARER NET: ENET ENET

The number of members in the QBS GROUP is 1.
```

Figure 37 Enhanced QGRP command output for HNT Command Option

```
>qgrp hnt 9519111

DLH HUNT GROUP #9
-----

PILOT:      HOST 00 0 00 29 KEY 2      BEARER NET: ENET ENET DN      9099519111
            SLOA 23 3 08 09 KEY 4      BEARER NET: AAL1 A1_S
            CGA      105      KEY 11    BEARER NET: ENET ENET

HUNT options <TFO> apply to this HUNT GROUP.
The number of members in the HUNT GROUP is 3.
```

Figure 38 Enhanced QGRP command output for BLF Command Option

```
>qgrp blf 4731064
-----
THE LENS MONITORING THE INPUT DN VIA BLF ARE:

LEN                                KEY  TYPE              BEARER NET
.....
HOST 01 1 09 19                    2    GROUP_MONITOR  BEARER NET: ENET ENET
-----
```

Figure 39 Enhanced QGRP command output with Non-Attached ISDN Agents

```
>qgrp cpu HOST 00 0 08 01

CPU GROUP
-----

LINKLEN:      HOST 00 0 08 01 KEY 1      BEARER NET: ENET ENET      6137222008
              FUNC      3      KEY 1      BEARER NET: AAL1 A1_P      6137223002
              FUNC      27      KEY 1      UNATTACHED TO A LEN      6137223027

The number of members in the CPU GROUP is 3.
```

Figure 40 Enhanced QGRP command output for MDN Command Option

```
>qgrp mdn 4731064 brief

MDN GROUP
-----

HOST 01 1 09 19 KEY 1    BEARER NET: ENET ENET

There is no Primary member associated with this group.
Member HOST 01 1 09 19 has the following options :
CPU 0 HOST 01 1 09 19 1
CUSTOMER GROUP OPTIONS:
AIN CDPCODE
OFFICE OPTIONS:
AIN TIID

The number of members in the SCA MDN GROUP is 1.

>qgrp mdn 4731064 full

MDN GROUP
-----

HOST 01 1 09 19 KEY 1    BEARER NET: ENET ENET

There is no Primary member associated with this group.
Member HOST 01 1 09 19 has the following options :
CPU 0 HOST 01 1 09 19 1
CUSTOMER GROUP OPTIONS:
AIN CDPCODE
OFFICE OPTIONS:
AIN TIID

The number of members in the SCA MDN GROUP is 1.

>qgrp mdn 4731064 ca 4164731064

MDN GROUP
-----

HOST 01 1 09 19 KEY 1    BEARER NET: ENET ENET

There is no Primary member associated with this group.
Member HOST 01 1 09 19 has the following options :
CPU 0 HOST 01 1 09 19 1
CUSTOMER GROUP OPTIONS:
AIN CDPCODE
OFFICE OPTIONS:
AIN TIID

The number of members in the SCA MDN GROUP is 1.

>
```

```
>qgrp mdn 4731064

MDN GROUP
-----

HOST 01 1 09 19 KEY 1    BEARER NET: ENET ENET

There is no Primary member associated with this group.
Member HOST 01 1 09 19 has the following options :
CPU 0 HOST 01 1 09 19 1
CUSTOMER GROUP OPTIONS:
AIN CDPCODE
OFFICE OPTIONS:
AIN TIID

The number of members in the SCA MDN GROUP is 1.

>qgrp mdn HOST 01 1 09 19
KEY:
>1
LEN AND KEY NOT A MEMBER OF INTERCOM GROUP

MDN GROUP
-----

HOST 01 1 09 19 KEY 1    BEARER NET: ENET ENET

4164731064 : IS MDN DN
There is no Primary member associated with this group.
Member HOST 01 1 09 19 has the following options :
CPU 0 HOST 01 1 09 19 1
CUSTOMER GROUP OPTIONS:
AIN CDPCODE
OFFICE OPTIONS:
AIN TIID

The number of members in the SCA MDN GROUP is 1.

>qgrp mdn 4164731064

MDN GROUP
-----

HOST 01 1 09 19 KEY 1    BEARER NET: ENET ENET

There is no Primary member associated with this group.
Member HOST 01 1 09 19 has the following options :
CPU 0 HOST 01 1 09 19 1
CUSTOMER GROUP OPTIONS:
AIN CDPCODE
OFFICE OPTIONS:
AIN TIID

The number of members in the SCA MDN GROUP is 1.

>
```

2.9.1.8 QCUST

QCUST command displays all Line Equipment Numbers (LENs) corresponding to a Customer Group. The command output is enhanced to display the corresponding Bearer Network against each of the LENs.

The command output is enhanced such that the Bearer Network information for each LEN in a Customer Group is displayed against the LEN in the QCUST output.

A new Line of output (RECORD 22 i.e. We have “22” at start of LINE) showing **BEARERNET** field is introduced in the QCUST command output against each LEN.

The format of the new field BEARERNET is as follows:

22 BEARERNET: <FABRIC> <DISPLAY>

where,

- **DISPLAY**: Value datafilled in DISPLAY field of the table BEARNETS tuple, corresponding to the Bearer Network to which the LEN belongs.
- **FABRIC**: Value datafilled in FABRIC field of the table BEARNETS tuple, corresponding to the Fabric of the Bearer Network to which the LEN belongs.

These enhancements hold for the whole of the command menu applicable to QCUST command. The Command menu being:

```
COMMAND QCUST : QUERY CUSTOMER DATA
COMMAND FORMAT : QCUST <CUSTGRP> $
                  OR
                  QCUST LEN <LINE EQUIPMENT NUMBER/
                  LOGICAL TERMINAL IDENTIFIER>
                  OR
                  QCUST ALL
                  OR
                  QCUST OWNEDBY <CUSTNAME> INITIAL
                  OR
                  QCUST ALL <CUSTNAME> INCR
                  OR
                  QCUST ALL <CUSTNAME> DONE
```

2.9.1.8.1 Examples:

Figure 41 Enhanced QCUST command output

```

CI>qcust all
0 55 Y 4 Y N
99
18 ISDN
18 FUNC
.....
.....
18 BRI_TRAF
99
19 PUBLIC 0
19 PRIVATE 1
99
1 RDT1 45 0 00 13 M5316 NPDGP RDTEBS N
4 $
5 1 5200013 NT520 0 0 214 Y
22 BEARER NET: IP IP_P
99
.....
.....
99
17 FUNC 5 B BRAFS VOICE VBD CMD PVC FUNCTIONAL 2 DTEI TSPID 6137223003 $ Y RDT
1 24 0 00 94 $ N
1 FUNC 5 ISDNKSET NPDGP RDTISD N
4 60 $
5 1 7223003 THE_FAR_SIDE 0 0 613 Y
9 LNR SFC $
10 1 NAME PUBLIC YOMAMA
22 BEARER NET: AAL1 A1_P
The number of members in the HUNT GROUP is 4.

```

2.9.1.9 Restrictions & Special Cases

The Line Query Command Enhancements described in this Section **do not** apply to following:

- MTX DNs/LENs
- Cellular DNs/LENs
- Synonym DNs/LENs
- Virtual DNs
- Unassigned and free DNs
- DNs not associated to a LEN
- GSF DNs/LENs

These Enhancements are aimed at the North American (NA) Markets. It is not supported for MSL loads and other non-NA loads

These enhancements become active only when value datafilled for table OFCVAR Parm OSS_PROV_VERSION is greater than SN07

The Enhancements to QLEN command do not hold true for LEN corresponding to Free slot i.e. without a Line Card physically present in slot, of the 2 Slots in a two slot Line Card

For QGRP Command Options enhanced, if a given DN is not attached to a LEN, in place of the “BEARER NET: “field display, following will be displayed: “UNATTACHED TO A LEN”

For Offices with a JNET:-

- The BEARER NET field in enhanced command points for QDN, QLEN, QCUST, QGRP (Options enhanced), QLT commands will be as follows:- “BEARER NET: JNET “
- The Displayed options list for BEAR NETWORK Command Parm for QDNWRK, QLENWRK and QHASU commands will contain only “ALL”

2.9.2 Sample Datafills for PM MAP level and other MAP level enhancements described below

Figure 42 Sample BEARNETS table datafill

```
TABLE: BEARNETS
<line length>: 76 columns can be output per line.
<pack mode>: Pack mode is ON.
<indent column>: Indented lines will begin in column 1.
<first column>: The first column of output is column 1.
TOP
NETIDX  BNETNAME                DISPLAY  FABRIC  OPTIONS
-----
--
NET 0    TDM_ENET                ENET     ENET     $
NET 1    AAL1_PRIMARY             A1_P     AAL1     (PKT_NETWORK_DEFAULT ) $
NET 2    AAL1_SECONDARY           A1_S     AAL1     $
NET 3    IP_PRIMARY               IP_P     IP        $
NET 4    IP_SECONDARY             IP_S     IP        $
```

Figure 43 Sample NETBRDGE table datafill

```
TABLE: NETBRDGE
<line length>: 76 columns can be output per line.
<pack mode>: Pack mode is ON.
<indent column>: Indented lines will begin in column 1.
<first column>: The first column of output is column 1.
TOP
BRDGCCLI  BRDGTYP  DISPLAY BEARNETS
-----
ENET_TO_AAL1_PRI  CORE_BRDGE  E_AP  TDM_ENET  AAL1_PRIMARY
ENET_TO_AAL1_SEC  CORE_BRDGE  E_AS  TDM_ENET  AAL1_SECONDARY
```


2.9.3 Directory: PMLEVEL

This feature enhances a command in the PMLEVEL directory, but does not modify the directory itself.

2.9.3.1 Directory description

The commands in this directory help operating company personnel to operate and maintain the Peripheral Module (PM) at the node level.

2.9.3.2 Accessing directory: PMLEVEL Directory

2.9.3.2.1 Access to directory or MAP level and return to CI

To access the PMLEVEL level from the CI environment, type:

```
>MAPCI ;MTC ; PM;
```

To return to the CI environment, type:

```
>QUIT ALL
```

2.9.4 Command: POST

2.9.4.1 Command type: Listed MENU

2.9.4.2 Command target: All

2.9.4.3 Command availability: RES

2.9.4.4 Command description

The POST command Displays the Peripheral Modules. This command is used to post the various Peripheral modules for Maintenance.

This feature introduces a new parameter PM BEARNETS. This parameter in POST command allows the craft to post all the PMs hosted on a given bearer network. The valid entries for this new parameter are the entries for the bearer network in the table BEARNETS.

The PMs can be posted by:

- Bearer network and PM type. The PM type allowed is limited to SPM type for this release.
- The PMs can be posted by Bearer network and PM type and the SPM node class type. The SPM node class types allowed is limited to SMG4 and IWDPT type of SPMs for this release.

Following is not supported(Description given further below, can be referred to for more details):

- The PMs being posted by Bearer network *and* PM type *and* the PM state.
- The PMs being posted by Bearer network *and* PM type *and* the PM alarm.

2.9.4.5 Command syntax

The command syntax is as shown in Figure 44.

Figure 44 PM POST command syntax

```
Post:Post specified PMs for maintenance
Parms: [<All PMs> {AllPMs}]
      [<PM Type>... {TM2 [<All> {All}}]
      .....
      [<PM State>... {SysB,
      .....
      InSv}]
      [<PM Alarm>... {Minor,
      Major,
      Crit}]
      [<BN> {A1_P [<PM Type> {SPM [<SPM Type> {SMG4,
      DPT}}}}]}
      A1_S [<PM Type> {SPM [<SPM Type> {SMG4,
      DPT}}}],
      IP_P [<PM Type> {SPM [<SPM Type> {SMG4,
      DPT}}}],
      IP_S [<PM Type> {SPM [<SPM Type> {SMG4,
      DPT}}}}]}
```

Note: The Parms <PM Type> and the Parm <BN> cannot be used together.
E.g. POST SPM BN 0 is invalid command.

Figure 45 PM POST command parameters and variables

Command	Parameters and variables
POST	<pre>Parms: [<All PMs> {AllPMs}] [<PM Type>... {TM2 [<All> {All}}] [<PM State>... {SysB, ... InSv}] [<PM Alarm>... {Minor, Major, Crit}] [<BN> {A1_P [<PM Type> {SPM [<SPM Type> {SMG4, DPT}}}}]} A1_S [<PM Type> {SPM [<SPM Type> {SMG4, DPT}}}], IP_P [<PM Type> {SPM [<SPM Type> {SMG4, DPT}}}], IP_S [<PM Type> {SPM [<SPM Type> {SMG4, DPT}}}}]}</pre>
Parameters and variables	Description
PM BEARNETS	Value datafilled in DISPLAY field of a table BEARNETS tuple corresponding to a Bearer network. This command posts all the PMs hosted on the corresponding bearer network. E.g. POST A1_P posts all the PMs which are on the Bearer network corresponding to the table BEARNETS tuple, which has the value A1_P datafilled in the DISPLAY field.

Figure 45 PM POST command parameters and variables

Command	Parameters and variables
PM Type	(optional) SPM [Currently only SPM is supported]. This command posts all the SPMs on the specified network.
Class	(optional) SPM node class. This command posts all the SPMs of the specified class and Bearer network data filled in the DMS Switch.
SMG4	Post all the SMG4 class SPM nodes hosted on the Switch
DPT	Post all the DPT class SPM nodes hosted on the Switch

2.9.4.6 Qualifications and warnings

No warnings are displayed.

2.9.4.7 Responses

Neither the POST command nor any of its options have required parameters; therefore, the user is never prompted for additional information when issuing any variant of the POST command.

2.9.4.7.1 POST <BN> response

The command and response for 'POST <BN>' is as shown in Table 4, "MAP outputs for POST <PM BEARNETS> with associated meanings and actions," on page 727.

Table 4 MAP outputs for POST <PM BEARNETS> with associated meanings and actions

Command MAPCI;MTC;PM; POST <BN>
RESPONSE: All the PMs hosted on the bearer network corresponding to the table BEARNETS tuple whose DISPLAY field contains value specified as parameter, are posted. Meaning: The Parameter PM BEARNETS is the value datafilled in DISPLAY field of a table BEARNETS tuple corresponding to a Bearer Network. All the PMs hosted on the bearer network are posted as post-set at the MAP level. The MAP level is changed to the PM level of the first member in the post-set. The maintenance commands available off the specific PM MAP can be executed on this posted PM. System or user actions: N/A User actions: Menu/Non menu commands available off the specific PM MAP for maintenance can be executed.

2.9.4.7.2 POST <BN> response when an invalid entry for bearer network is given

The command and response for 'POST <BN>' is as shown in Table 5, "MAP outputs for POST <BN> with associated meanings and actions," on page 728.

Table 5 MAP outputs for POST <BN> with associated meanings and actions

Command MAPCI;MTC;PM; POST BN NET
RESPONSE: "EITHER incorrect optional parameter(s) OR too many parameters. Failed to create Post set" MAP screen will remain at PM MAP. Meaning: The parameter given as bearer network [NET] is not a valid entry in the DISPLAY field of any table BEARNETS tuples. The valid entry for this is the contents of the DISPLAY field of a table BEARNETS tuple. So no PMs are posted for this command. User actions: The Craft has to give contents of DISPLAY field in any of the table BEARNETS tuples. Each tuple in table BEARNETS corresponds to a Bearer network.

2.9.4.7.3 POST <BN> <PM Type>

The command and response for 'POST <BN> <PM Type>' is as shown in Table 6, "MAP outputs for POST <BN> <PM Type> with associated meanings and actions," on page 729. SPM is the only PM Type supported for this release.

Table 6 MAP outputs for POST <BN> <PM Type> with associated meanings and actions

Command MAPCI;MTC;PM; POST <BN> <PM Type> POST <BN> SPM
RESPONSE: All the SPMs hosted on the specified bearer network are posted. Meaning: The Parameter PM BEARNETS is the value datafilled in DISPLAY field of a table BEARNETS tuple corresponding to a Bearer Network. All the SPMs hosted on the specified bearer network are posted as post-set at the MAP level. The MAP level is changed to the SPM MAP level. The maintenance commands available off the SPM MAP can be executed on this posted SPM. System or user actions: N/A User actions: Menu/Non menu commands available off the specific SPM MAP for maintenance can be executed.

2.9.4.7.4 POST <BN> <PM Type>

The command and response for 'POST <BN> <PM Type>' when the PM Type is given as anything other than SPM is as shown in Table 7, "MAP outputs for POST <BN> <PM Type> with associated meanings and actions," on page 730. SPM is the only PM Type supported for this release.

Table 7 MAP outputs for POST <BN> <PM Type> with associated meanings and actions

Command MAPCI;MTC;PM; POST <BN> SMA2
RESPONSE: “EITHER incorrect optional parameter(s) OR too many parameters. Failed to create Post set” Map screen will remain at PM MAP. Meaning: The parameter given as PM Type is not a valid entry. The only valid entry for this release is SPM. So no PMs are posted for this command. User actions: The PM Type has to given as SPM.

2.9.4.7.5 POST <BN> SPM SMG4

The command and response for ‘POST <BN> SPM SMG4’ is as shown in Table 8, “MAP outputs for POST <BN> SPM SMG4 with associated meanings and actions,” on page 731. SMG4 and DPT are the only SPM class Types supported for this release.

Table 8 MAP outputs for POST <BN> SPM SMG4 with associated meanings and actions

Command MAPCI;MTC;PM; POST <BN> SPM SMG4
RESPONSE: All the SPMs of node class type as SMG4 hosted on the specified bearer network are posted. Meaning: The Parameter PM BEARNETS is the value datafilled in DISPLAY field of a table BEARNETS tuple corresponding to a Bearer Network. All the SMG4 SPMs hosted on the specified bearer network are posted as post-set at the MAP level. The MAP level is changed to the SPM MAP level. The maintenance commands available off the SPM MAP can be executed on this posted SPM. System or user actions: N/A User actions: Menu/Non menu commands available off the specific SPM MAP for maintenance can be executed.

2.9.4.7.6 POST <BN> SPM DPT

The command and response for 'POST <BN> SPM DPT' is as shown in Table 9, "MAP outputs for POST <BN>SPM DPT with associated meanings and actions," on page 732. SMG4 and DPT are the only SPM class Types supported for this release.

Table 9 MAP outputs for POST <BN>SPM DPT with associated meanings and actions

Command MAPCI;MTC;PM; POST <BN> SPM DPT
RESPONSE: All the SPMs of node class type as DPT hosted on the specified bearer network are posted. Meaning: The Parameter PM BEARNETS is the value datafilled in DISPLAY field of a table BEARNETS tuple corresponding to a Bearer Network. All the DPT SPMs hosted on the specified bearer network are posted as post-set at the MAP level. The MAP level is changed to the SPM MAP level. The maintenance commands available off the SPM MAP can be executed on this posted SPM. System or user actions: N/A User actions: Menu/Non menu commands available off the specific SPM MAP for maintenance can be executed.

2.9.4.7.7 POST <BN> SPM <class>

The command and response for 'POST <BN> SPM <class>' where the entry for parameter class is other than SMG4 or DPT is as shown in Table 10, "MAP outputs for POST <BN> SPM <class> with associated meanings and actions," on page 733. SMG4 and DPT are the only SPM class Types supported for this release.

Table 10 MAP outputs for POST <BN> SPM <class> with associated meanings and actions

Command MAPCI;MTC;PM; POST <BN> SPM IW
RESPONSE: “EITHER incorrect optional parameter(s) OR too many parameters. Failed to create Post set” MAP screen will remain at PM MAP. Meaning: The parameter given as SPM Node class Type is not a valid entry. The only valid entries for this parameter are SMG4 and DPT. So no PMs are posted for this command. User actions: The SPM Node class Type has to given as SMG4 or DPT.

2.9.4.8 Examples

Table 11 Examples for the POST command at PM MAP

Description of task	Post all the PMs hosted on an specified bearer network
Command: MAP response:	POST A1_P A post-set with of all the PMs which are hosted on the bearer network which has “A1_P” datafilled in table BEARNETS tuple is created.
Description of task	Post all the SPMs hosted on an specified bearer network
Command: MAP response:	POST A1_P SPM A post-set with of all the SPMs which are hosted on the bearer network which has “A1_P” datafilled in table BEARNETS tuple is created.
Description of task	Post all the SPM nodes by class SMG4 on specified bearer network
Command: MAP response:	POST A1_S SPM SMG4 A post-set with of all the SMG4 SPMs which are hosted on the bearer network which has “A1_S” datafilled in table BEARNETS tuple is created.
Description of task	Post all the SPM nodes by class DPT on specified bearer network

Command: MAP response:	POST A1_P SPM DPT A post-set with of all the DPT SPMs which are hosted on the bearer network which has "A1_P" datafilled in table BEARNETS tuple is created.

2.9.5 Command: POSTCLS

2.9.5.1 Command type: Hidden

2.9.5.2 Command target: All

2.9.5.3 Command availability: RES

2.9.5.4 Command description

This feature enhances an existing functionality POSTCLS at SPM level to post the PMTYPE by SPM node class type. This enables the craft to post the SPMs by the node class type (such as DMSCP, SMG4, IWDPT, IWRBG). The POST command, when posted by SPM node class type (E.g SMG4) creates a post set which contains all the SMG4 SPMs data filled in the DMS Switch.

2.9.5.5 Command syntax

The command syntax is as shown in Figure 46.

Figure 46 POSTCLS command Enhancements

```
POSTCLS: Post SPM by CLASS for maintenance.
Parms: <Class Type> {DMSCP,
                    IWRBG [<Netbridge_clli>...{E_AP,E_AS}]
                    SMG4,
                    IWDPT}
```

Figure 47 POSTCLS command parameters and Variables

Command	Parameters and variables
POSTCLS	Parms: <Class Type> {DMSCP, IWRBG [<Netbridge_clli>...{E_AP,E_AS}] SMG4, IWDPT}
Parameters and variables	Description
Class	(optional) SPM node class. This command posts all the SPMs of the specified class data filled in the DMS Switch.
DMSCP	Post all the DMSCP class SPM nodes hosted on the Switch
IWRBG	Post all the IWRBG class SPM nodes hosted on the Switch
IWRBG <NETBRIDGE_DISPLAY>	(optional) Post all the IWRBG class SPM nodes hosted on the Switch which use the Netbridge CLLI, corresponding to the table NETBRIDGE tuple whose DISPLAY field has the specified value.
SMG4	Post all the SMG4 class SPM nodes hosted on the Switch

Command	Parameters and variables
IWDPT	Post all the IWDPT class SPM nodes hosted on the Switch

2.9.5.6 Qualifications and warnings

No warnings are displayed.

2.9.5.7 Responses

2.9.5.7.1 POSTCLS <class> response when class is specified is DMSCP

The command and response for 'POSTCLS DMSCP' is as shown in Table 12, "MAP outputs for POSTCLS <class> with associated meanings and actions," on page 735.

Table 12 MAP outputs for POSTCLS <class> with associated meanings and actions

Command MAPCI;MTC;PM;POST SPM; POSTCLS DMSCP
RESPONSE: Map screen will be at SPMDIR. The DMSCP SPMs data filled in the DMS switch are posted on the SPM MAP. Meaning: All the SPMs of SPM node class type as DMSCP are posted as post-set at the SPM MAP level. All the maintenance commands available off a SPM MAP can be executed on this post-set. System or user actions: N/A User actions: Menu/Non menu commands available off the SPM MAP for maintenance can be executed.

2.9.5.7.2 POSTCLS <class> response when class is specified is SMG4

The command and response for 'POSTCLS SMG4' is as shown in Table 13, "MAP outputs for POSTCLS <class> with associated meanings and actions," on page 736.

Table 13 MAP outputs for POSTCLS <class> with associated meanings and actions

Command MAPCI;MTC;PM;POST SPM; POSTCLS SMG4
RESPONSE: Map screen will be at SPMDIR. The SMG4 SPMs data filled in the DMS switch are posted on the SPM MAP. Meaning: All the SPMs of SPM node class type as SMG4 are posted as post-set at the SPM MAP level. All the maintenance commands available off a SPM MAP can be executed on this post-set. System or user actions: N/A User actions: Menu/Non menu commands available off the SPM MAP for maintenance can be executed.

2.9.5.7.3 POSTCLS <class> response when class is specified is IWDPT

The command and response for 'POSTCLS IWDPT' is as shown in Table 14, "MAP outputs for POSTCLS <class> with associated meanings and actions," on page 737.

Table 14 MAP outputs for POSTCLS <class> with associated meanings and actions

Command MAPCI;MTC;PM;POST SPM; POSTCLS IWDPT
RESPONSE: MAP screen will be at SPMDIR. The IWDPT SPMs data filled in the DMS switch are posted on the SPM MAP. Meaning: All the SPMs of SPM node class type as IWDPT are posted as post-set at the SPM MAP level. All the maintenance commands available off a SPM MAP can be executed on this post-set. System or user actions: N/A User actions: Menu/Non menu commands available off the SPM MAP for maintenance can be executed.

2.9.5.7.4 POSTCLS <class> response when class is specified is IWBRG

The command and response for 'POSTCLS IW ALL' is as shown in Table 15, "MAP outputs for POSTCLS <class> with associated meanings and actions," on page 738.

Table 15 MAP outputs for POSTCLS <class> with associated meanings and actions

Command MAPCI;MTC;PM;POST SPM; POSTCLS IWBRG
RESPONSE: Map screen will be at SPMDIR. All the IWBRG SPMs data filled in the DMS switch are posted on the SPM MAP. Meaning: All the SPMs of SPM node class type as IWBRG are posted as post-set at the SPM MAP level. All the maintenance commands available off a SPM MAP can be executed on this post-set. System or user actions: N/A User actions: Menu/Non menu commands available off the SPM MAP for maintenance can be executed.

2.9.5.7.5 POSTCLS <class> response when class is specified is IWBRG

The command and response for 'POSTCLS IWBRG <NETBRIDGE_DISPLAY>' is as shown in Table 16, "MAP outputs for POSTCLS <class> with associated meanings and actions," on page 739.

Table 16 MAP outputs for POSTCLS <class> with associated meanings and actions

Command MAPCI;MTC;PM;POST SPM; POSTCLS IWRBG <NETBRDGE_DISPLAY>
RESPONSE: Map screen will be at SPMDIR. All the IWRBG SPMs data filled in table MNNODE, which use the Netbridge CLI in the DMS switch corresponding to the table NETBRDGE tuple having value specified for <NETBRDGE_DISPLAY> datafilled in the DISPLAY field, are posted on the SPM MAP. Meaning: The Parameter NETBRDGE_DISPLAY is the value data filled in the DISPLAY field of a table NETBRDGE tuple. All the SPMs of SPM node class type as IWRBG, which use the Netbridge CLI corresponding to the table NETBRDGE tuple, are posted as post-set at the SPM MAP level. The maintenance commands available off a SPM MAP can be executed on this post-set. System or user actions: N/A User actions: Menu/Non menu commands available off the SPM MAP for maintenance can be executed.

2.9.5.7.6 POSTCLS <class> response when specified class is not in the valid variables

The command and response for 'POSTCLS <class>' is as shown in Table 17, "MAP outputs for POSTCLS <class> with associated meanings and actions," on page 740.

Table 17 MAP outputs for POSTCLS <class> with associated meanings and actions

Command MAPCI;MTC;PM;POSTCLS; POSTCLS SMG
RESPONSE: postcls smg Invalid symbol: <Class Type> {DMSCP, IWBRG [<Netbridge_clli>...{E_AP,E_AS}], SMG4, IWDPT} Enter: <Class Type> Map screen will remain at PM MAP. Meaning: The parameter given as the node class type is invalid. So no PMs are posted for this command. User actions: The SPM node class type has to one of the types: DMSCP, SMG4, IWDPT, IWBRG.

2.9.5.7.7 POSTCLS IWBRG <NETBRDGE_DISPLAY> response when specified Netbridge DISPLAY field value is not a valid entry in any table NETBRDGE Tuple

The command and response for 'POSTCLS IWBRG <NETBRDGE_DISPLAY>' is as shown in Table 18, "MAP outputs for POSTCLS IWBRG <NETBRDGE_DISPLAY> with associated meanings and actions," on page 741.

Table 18 MAP outputs for POSTCLS IWBRG <NETBRDGE_DISPLAY> with associated meanings and actions

Command MAPCI;MTC;PM; POSTCLS IWBRG <NETBRDGE_DISPLAY>
RESPONSE: “EITHER incorrect optional parameter(s) OR too many parameters. Failed to create Post set” MAP screen will remain at PM MAP. Meaning: The parameter given as NETBRDGE_DISPLAY is invalid or not datafilled in DISPLAY field of any table NETBRDGE tuple. So no PMs are posted for this command. User actions: The NETBRDGE_DISPLAY has to be value data filled in DISPLAY field of a table NETBRDGE tuple.

2.9.5.8 Examples

Table 19 Examples for the POSTCLS command at SPM MAP level

Description of task	Post all the DMSCP SPM nodes
Command: MAP response:	POSTCLS DMSCP A post-set with of all the DMSCP SPMs is created.
Description of task	Post all the SMG4 SPM nodes
Command: MAP response:	POSTCLS SMG4 A post-set with of all the SMG4 SPMs is created.
Description of task	Post all the DPT SPM nodes
Command: MAP response:	POSTCLS IWDPT A post-set with of all the DPT SPMs is created.
Description of task	Post all the IW SPM nodes
Command: MAP response:	POSTCLS IWBRG A post-set with of all the IW SPMs is created.

Description of task	Post all the IW SPM nodes belonging to a Netbridge CLLI whose corresponding table NETBRDGE tuple's DISPLAY field contents are passed as parameter to the command.
Command: MAP response:	POSTCLS IWBRG E_AP A post-set with of all the IW SPMs using the NetBridge CLLI corresponding to the table NETBRDGE tuple whose DISPLAY field contains a value of "E_AP" is created.

2.9.6 Directory: TTP MAP

This feature enhances a command in the TTP MAP directory, but does not modify the directory itself.

2.9.6.1 Directory description

The commands in this directory helps operating company personnel to operate and maintain the trunks at the TTP MAP level.

2.9.6.2 Accessing directory: TTP

2.9.6.2.1 Access to directory or MAP level and return to CI

To access the TTP MAP level from the CI environment, type:

```
>MAPCI;MTC;TRKS;TTP;
```

To return to the CI environment, type:

```
>QUIT ALL
```

2.9.7 Command: POST

2.9.7.1 Command type: Listed MENU

2.9.7.2 Command target: All

2.9.7.3 Command availability: RES

2.9.7.4 Command description

The POST command Displays the trunk members. This command is used to post the various trunks for Maintenance.

This feature introduces a new parameter "BN" in the POST command to refine posted set of the trunks by a specified bearer network. This command can be used only on a already created post-set using any of the existing post commands. This enables the craft to use maintenance commands available at the TTP level on the trunk members of a specific bearer network.

2.9.7.5 Command syntax

The command syntax is as shown in "POST command at TTP MAP level with new parameters" on page 743.

Figure 48 POST command at TTP MAP level with new parameters

```

POST-- POST A NEW SET
Parms: [<SET TYPE> {T [<CLLI1> STRING
                        [<CNRI1> {0 TO 9999}}
                        [<....> STRING]},
        G <CLLI> STRING
          [<CLNR> {0 TO 9999}]
          [<TO> {TO}]
          <CLNR> {0 TO 9999},
        ....
        WB <CLLI> STRING
          <CKTN> {0 TO 9999}},
BN [<ENET> STRING]
          [<A1_P> STRING]
          [<A1_S> STRING]
          [<IP P> STRING]

```

Figure 49 TTP POST command parameters and variables

Command	Parameters and variables
POST	Parms: BN [<ENET> STRING] [<A1_P> STRING] [<A1_S> STRING] [<IP_P> STRING] [<IP_S> STRING]]
Parameters and variables	Description
BN	(optional) option to specify that the trunks are to be posted by bearer network.
BEARNETS_DISPLAY [STRING]	value datafilled in DISPLAY field of a table BEARNETS tuple

2.9.7.5.1 POST BN <BEARNETS DISPLAY>

The command and response for ‘Post BN <BEARNETS_DISPLAY>’ is as shown in Table 20, “MAP outputs for POST BN <BEARNETS_DISPLAY> with associated meanings and actions,” on page 744.

Table 20 MAP outputs for POST BN <BEARNETS_DISPLAY> with associated meanings and actions

Command MAPCI;MTC;TRKS;TTP;POST A IDL; POST BN <BEARNETS_DISPLAY>
RESPONSE: The trunk members in the given post-set hosted on the specified bearer network are posted on the TTP MAP. Meaning: All the trunks of a specified bearer network in the given post-set are posted at the TTP MAP level. All the maintenance commands available off a TTP MAP can be executed on this post-set. System or user actions: N/A User actions: Menu/Non menu commands available off the TTP MAP for maintenance can be executed.

2.9.7.5.2 POST BN <BEARNETS_DISPLAY> when bearer network entered is invalid

The command and response for 'Post BN <BEARNETS_DISPLAY>' when a invalid bearer network is as shown in Table 21, "MAP outputs for POST BN NET with associated meanings and actions," on page 745.

Table 21 MAP outputs for POST BN NET with associated meanings and actions

Command MAPCI;MTC;TRKS;TTP;POST A IDL; POST BN <INVALID BEARNETS_DISPLAY VALUE>
RESPONSE: “EITHER incorrect optional parameter(s) OR too many parameters.” PARM <no> INVALID POST -- Wrong number of parameters.” Meaning: The entry for the BEARNETS_DISPLAY is either not data filled in the DISPLAY field of any table BEARNETS tuples or is invalid. System or user actions: N/A User actions: Craft has to enter a valid value from the DISPLAY fields of any datafilled BEARNETS tuples.

2.9.7.5.3 Repetitive use of POST BN <BEARNETS_DISPLAY> is invalid

The command and response for ‘Post BN <BEARNETS_DISPLAY>’ when a invalid bearer network is as shown in Table 22, “MAP outputs for repetitive POST BN NET with associated meanings and actions,” on page 746.

Table 22 MAP outputs for repetitive POST BN NET with associated meanings and actions

Command MAPCI;MTC;TRKS;TTP;POST G <TRUNK NAME>;POST BN BNET POST BN BNET
RESPONSE: “REPOST FOR NEW CONDITIONAL SELECTION” Meaning: Repetitive use of POST BN command is invalid. System or user actions: N/A User actions: Craft has to repost the Trunk to post the members of the new Bearer Network

2.9.7.5.4 POST BN <BEARNETS_DISPLAY> when no bearer network is entered

The command and response for ‘Post BN <BEARNETS_DISPLAY>’ when no bearer network is entered as shown in Table 23, “MAP outputs for POST BN with associated meanings and actions,” on page 747.

Table 23 MAP outputs for POST BN with associated meanings and actions

Command MAPCI;MTC;TRKS;TTP;POST A IDL; POST BN
RESPONSE: “INVALID BEARER NETWORK ENTRY” Meaning: The selection of trunk members by bearer network is turned off. System or user actions: N/A User actions: Craft has to enter contents of the DISPLAY field in any of the table BEARNETS tuples, in the post BN command to activate it again.

Table 24 Examples for POST command at TTP MAP

Description of task	Select all the trunk members hosted on a bearer network in the given post-set. The value datafilled in DISPLAY field of corresponding table BEARNETS tuple being passed to the Command as parameter.
Command: MAP response:	POST BN A1_P Selects all trunk members of Bearer Network, the table BEARNETS tuple corresponding to which has a value of A1_P datafilled in the DISPLAY field.

2.9.8 New CI Tool called QOSSVER available to User on Core

A new CI tool QOSSVER is made available to user on the Nortel Switch Core. This tool helps list the CAF ACTIDs of Nortel features delivered in a load which has OSS impact.

2.9.8.1 Help Command for Tool

>q qossver

Displays list of Feature ACTIDs introduced in a load, which impact OSS. If no parameters are passed, the list displayed is for value of Parm OSS_PROV_VERSION in table OFCVAR.

Parms: [<LOAD RELEASE> {ALL,
SN07,
SN08,
SN09,
SN10,
SN11,
SN12,


```
SN13,
SN14,
SN15,
SN16,
SN17}]
```

2.9.8.2 Response message on passing an invalid Parm

```
>qossvr sn60
EITHER incorrect optional parameter(s) OR too many parameters.
QOSSVER -- Wrong number of parameters.
```

2.9.8.3 Output when “ALL” Parameter is passed to Tool

Tool lists CAF ACTIDs of all OSS impacting features delivered in all loads.

As stated earlier the ACTID of the features has to be entered against appropriate load, by the Nortel design team delivering the feature in the software database used by tool on Core, via feature code.

In case the software database used by tool, does not have any Feature ACTIDs entered for a load: There are no messages to the user to the effect that there are no OSS impacting features in a load.

A sample output in SN08 load (This feature's actid A00006780 has been entered in software database against SN08):

```
>qossvr all
OSS Impacting Features in SN08 are:
A00006780
```

2.9.8.4 Output when a valid load within permitted range is passed as Parm to QOSSVER:

- If there are one or more ACTIDs entered in database against load

```
>qossvr sn08
OSS Impacting Features in SN08 are:
A00006780
```

- If there are on ACTIDs entered in database against load

```
>qossvr sn09
No OSS Impacting Features in SN09
```

2.9.8.5 Output when no Parameter is passed to tool

Tool prints out ACTIDs entered in database against a load, which is same as load datafilled as value of table OFCVAR parm OSS_PROV_VERSION

Outputs when no Parameter is passed to QOSSVER

- If value of the OFCVAR Parm is SN07(No feature ACTIDs in database against SN07)

```
>qossvr
No OSS Impacting Features in SN07
```

- If value of the OFCVAR Parm is SN08(ACTID of this feature i.e. A00006780 is entered in database against SN08)

```
>qossvr
OSS Impacting Features in SN08 are:
```

A00006780

2.9.9 User Responses for Table Control Operations

2.9.9.1 Table BEARNETS

2.9.9.1.1 Tuple Addition Failure with Non-unique DISPLAY field

Attempting to add a tuple to table BEARNETS which includes a DISPLAY field value which is already used by an existing tuple in the table will be rejected as shown below.

Existing BEARNETS tuple

NETIDX	BNETNAME	DISPLAY	FABRIC	OPTIONS
NET 1	NET_AAL1	A1_P	AAL1	\$

```

>add net 4 NET_AAL2      A1_P      AAL1 $
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
DISPLAY field for a Bearer Network must be unique
TUPLE TO BE ADDED:
  NET 4                      NET_AAL3  A1_P  AAL1  $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

```

Note: Following are the Warning Messages provided to the user for a tuple in Table BEARNETS having a Non-Unique 'Display' field:

During TABXFR, the tuple will be transferred and the warning generated:

```

"DISPLAY fields in Table BEARNETS are not unique
Change the DISPLAY field values to be unique after RESTORE."

```

During TABAUDIT,

```

"DISPLAY fields in Table BEARNETS are not unique
Change the DISPLAY field values to be unique."

```

2.9.9.1.2 Tuple Change Failure with Non-unique DISPLAY field

Attempting to change a tuple to table BEARNETS which includes a DISPLAY field value which is already used by an existing tuple in the table will be rejected as shown below. Assume existing BEARNETS tuple as shown in 2.9.9.1.1.

```

>pos net 0
  NET 0                      TDM_ENET  ENET  ENET  $
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
BNETNAME: TDM_ENET
>
DISPLAY: ENET
>A1_P
FABRIC: ENET
>

```

```

OPTIONS:
>$
DISPLAY field for a Bearer Network must be unique
TUPLE TO BE CHANGED:
  NET 0          TDM_ENET    A1_P    ENET      $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

```

Note: Following are the Warning Messages provided to the user for a tuple in Table BEARNETS having a Non-Unique 'Display' field:

During TABXFR, the tuple will be transferred and the warning generated:

```

"DISPLAY fields in Table BEARNETS are not unique
Change the DISPLAY field values to be unique after RESTORE."

```

During TABAUDIT,

```

"DISPLAY fields in Table BEARNETS are not unique
Change the DISPLAY field values to be unique."

```

2.9.9.1.3 Tuple Addition Failure with Empty DISPLAY field

Attempting to add a tuple to table BEARNETS which includes an empty DISPLAY field value will be rejected as shown below.

```

>add net 7
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
BNETNAME:
>net_ip
DISPLAY:
>$
FABRIC:
>ip
OPTIONS:
>$
DISPLAY field value is not valid.
TUPLE TO BE ADDED:
  NET 7          NET_IP      $      IP      $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

```

Note: Following are the Warning Messages provided to the user for a tuple in Table BEARNETS having a Empty 'Display' field:

During TABXFR, the tuple will be transferred and the warning generated:

```

"DISPLAY fields of table BEARNETS tuples are empty
Change the DISPLAY field value to be non-empty after RESTORE."

```

During TABAUDIT,

```

"DISPLAY fields of table BEARNETS tuples are empty
Change the DISPLAY field value to be non-empty."

```

2.9.9.2 Table NETBRDGE

2.9.9.2.1 Tuple Addition Failure with Non-unique DISPLAY field

Attempting to add a tuple to table NETBRDGE which includes a DISPLAY field value which is already used by an existing tuple in the table will be rejected as shown below.

Existing NETBRDGE tuple:

```
BRDGCLLI      BRDGTYPE      DISPLAY      BEARNETS
-----
--
ENET_TO_AAL1  CORE_BRDGE      E_A1          TDM_ENET NET_AAL1

>add ENET_TO_AAL3 CORE_BRDGE E_A1 TDM_ENET NET_AAL1
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
DISPLAY field for a Bridge Pool CLLI should be unique
TUPLE TO BE ADDED:
      ENET_TO_AAL3 CORE_BRDGE      E_A1 TDM_ENET NET_AAL1
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

Note: Following are the Warning Messages provided to the user for a tuple in Table NETBRDGE having a Non-Unique 'Display' field:

During TABXFR, the tuple will be transferred and the warning generated:

“DISPLAY field of table NETBRDGE for a Bridge Pool CLLI is not unique
Change the DISPLAY field value to be unique after RESTORE.”

During TABAUDIT,

“DISPLAY field of table NETBRDGE for a Bridge Pool CLLI is not unique
Change the DISPLAY field value to be unique.”

2.9.9.2.2 Tuple Change Failure with Non-unique DISPLAY field

Attempting to change a tuple to table NETBRDGE which includes a DISPLAY field value which is already used by an existing tuple in the table will be rejected as shown below. Assume existing NETBRDGE tuple as shown in 12.8.9.2.1.

```
>pos ENET_TO_AAL2
      ENET_TO_AAL2 CORE_BRDGE      A2 TDM_ENET NET_AAL1
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
BRDGTYPE: CORE_BRDGE
>
DISPLAY: A2
>e_a1
BEARNETS: TDM_ENET NET_AAL1
>
DISPLAY field for a Bridge Pool CLLI should be unique
TUPLE TO BE CHANGED:
      ENET_TO_AAL2 CORE_BRDGE      E_A1 TDM_ENET NET_AAL1
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

Note: Following are the Warning Messages provided to the user for a tuple in Table NETBRDGE having a Non-Unique 'Display' field:

During TABXFR, the tuple will be transferred and the warning generated:

“DISPLAY field of table NETBRDGE for a Bridge Pool CLLI is not unique
Change the DISPLAY field value to be unique after RESTORE.”

During TABAUDIT,

“DISPLAY fields in Table NETBRDGE are not unique
Change the DISPLAY field values to be unique.”

2.9.9.2.3 Tuple Addition Failure with Empty DISPLAY field

Attempting to add a tuple to table NETBRDGE which includes an empty DISPLAY field value will be rejected as shown below.

```
>add enet_to_aal4
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
BRDGTTYPE:
>CORE_BRDGE
DISPLAY:
>$
BEARNETS:
>TDM_ENET NET_AAL1
DISPLAY field of NETBRDGE tuple cannot be empty
TUPLE TO BE ADDED:
      ENET_TO_AAL4 CORE_BRDGE          $ TDM_ENET NET_AAL1
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
```

Note: Following are the Warning Messages provided to the user for a tuple in Table NETBRDGE having a Empty 'Display' field:

During TABXFR, the tuple will be transferred and the warning generated:

“DISPLAY fields of table NETBRDGE tuples are empty
Change the DISPLAY field value to be non-empty after RESTORE.”

During TABAUDIT,

“DISPLAY fields of table NETBRDGE tuples are empty
Change the DISPLAY field value to be non-empty.”

2.9.9.2.4 Bridge Pool Creation Failure

If, when attempting to add a tuple to table NETBRDGE, the attempt to create a Bridge Pool fails, the tuple will be rejected. The following warning will be displayed to the user.

“Bridge Pool Creation Failed for CLI”

2.9.9.2.5 NETBRDGE Tuple Deletion Success

When a tuple from table NETBRDGE is deleted successfully, the following message will be displayed to the user.

“DELETING BRIDGE POOL OBJECT”

2.9.9.3 Table MNNODE

Bridge Pool Creation / Deletion no longer happens during addition / deletion of IW SPM(BRGD_ONLY)SPM Tuples in MNNODE table

The following message is no longer seen during deletion of MNNODE tuples for IW BRDG_ONLY SPMs:

“DELETING BRIDGE POOL OBJECT”

2.10 OSSGate Interface Changes

Functionality changes described in Section 9.9 of this Section, i.e. Enhancements to Line Query Commands. Functionality changes Turning ON/OFF is controlled using a newly introduced table OFCVAR Parm OSS_PROV_VERSION. The enhancements are effective only when this Office Parameter has a value greater than SN07.

2.11 Security

Not Applicable.

3: Performance for A00006780

3.1 Performance management strategy

TRK2NET2 and TRK2NET1 OM tuples are allocated for all bearer networks provisioned in table BEARNETS, for each Trunk Group datafilled in table TRKGRP, i.e., even if there are no Trunk Members datafilled in table TRKMEM against the Trunk Group in a bearer network.

By allocating OM tuples for each bearer network of each trunk group, attempts to use a trunk group member of a particular bearer network fabric not provisioned for that trunk group will be pegged. This is done to assist in evaluating provisioning and engineering in a Trimodal Call Server environment.

3.2 Performance management tools and utilities

The TRK2NET2 and TRK2NET1 OM tuples can be seen by executing the following commands, when the value of table OFCVAR field MULTINET_DISPLAY_ACTIVE is set to Y:

- CI>omshow TRK2NET1 ACTIVE
- CI>omshow TRK2NET2 ACTIVE

3.3 Performance Measurements (PM), Operational Measurements (OM), and stats

The following is a list of the enhanced OM groups for the SN08 Trimodal Call Server feature A00006780:

- TRK2NET1
- TRK2NET2

3.3.1 PM, OM, and stats format

3.3.1.1 TRK2NET1

Component: Trunks

Performance Measurement Name: TRK2NET1

Description: TRK2NET1 OM Group provides information for per-trunk group traffic analysis per bearer network. The OM group is modeled after group TRK. The TRK2NET1 OM group provides information on trunk traffic for each trunk group. The registers in TRK2NET1 count the following:

- routing attempts
- seizure attempts
- seize failures
- total trunk use
- busy state use

History:

This OM was created in SN08 under Feature ACT.A00003487.

The OM tuples creation/deletion mechanism for this OM Group is enhanced in SN08, under feature ACT.A00006780.

3.3.1.2 TRK2NET2

Component: Trunks

Performance Measurement Name: TRK2NET2

Description: TRK2NET2 OM Group provides information for per-trunk group traffic analysis per bearer network. It contains extension registers for registers found in OM Group TRK2NET1.

History:

This OM was created in SN08 under Feature ACT.A00003487.

The OM tuples creation/deletion mechanism for this OM Group is enhanced in SN08, under feature ACT.A00006780.

3.3.2 TRK2NET1 OM Group

3.3.2.1 OM description

TRK2NET1 OM Group provides information for per trunk group traffic analysis per bearer network. The OM group is modeled after group TRK. The TRK2NET1 OM group provides information on trunk traffic for each trunk group. The registers in TRK2NET1 count the following:

- routing attempts
- seizure attempts
- seize failures
- total trunk use
- busy state use

The OM groups OFZ and OTS provide office-wide traffic summaries for trunks. The OM groups OFZ2NET1 and OFZ2NET2 provide office-wide per bearer network traffic summaries for trunks.

3.3.2.2 Release history update

3.3.2.2.1 Enhancement in Release SN07

TRK2NET1 OM group is new in SN07.

The addition of this new TRK2NET1 OM group is controlled by the value of a new SN07 office parameter, MULTINET_DISPLAY_ACTIVE. If this parameter is set to 'Y', then the tuples of the new TRK2NET1 OM group are displayed. If the parameter is set to 'N', then the tuples of the TRK2NET1 OM group are not displayed. The tuples of this OM group are created when the office parameter MULTINET_DISPLAY_ACTIVE is set to Y for the first time.

3.3.2.2.2 Enhancement in Release SN08

In SN07, the tuples for TRK2NET1 OM Groups are allocated only for the bearer networks of the trunk group members data filled in table TRKMEM.

In SN08, TRK2NET1 OM tuples are allocated for all bearer networks provisioned in table BEARNETS for each Trunk Group datafilled in table TRKGRP, i.e., even if there are no Trunk Members against the Trunk Group in a bearer network.

- When a Bearer Network is datafilled in table BEARNETS, a TRK2NET1 OM tuple is added for every Trunk Group datafilled in table TRKGRP.
- When a Bearer Network is deleted from table BEARNETS, all corresponding TRK2NET1 OM tuples are deleted. This functionality is delivered in SN08.
- When a Trunk Group is added in table TRKGRP, a TRK2NET1 OM tuple is added for every Bearer Network datafilled in table BEARNETS.
- When a Trunk Group is deleted from table TRKGRP, all corresponding TRK2NET1 OM tuples are deleted.
- TRK2NET1 OM tuple creation and deletion does not happen during tuple addition/deletion in tables TRKOPTS and TRKMEM.
- The TRK2NET1 OM group is ignored by table OMKEYORD.

3.3.3 TRK2NET2 OM Group

3.3.3.1 OM description

TRK2NET2 OM Group provides information for per trunk group traffic analysis per bearer network. It contains extension registers for registers found in OM Group TRK2NET1.

3.3.3.2 Release history update

3.3.3.2.1 Enhancements in Release SN07

TRK2NET2 OM group is new in SN07.

The addition of this new TRK2NET2 OM group is controlled by the value of a new SN07 office parameter, MULTINET_DISPLAY_ACTIVE. If this parameter is set to 'Y', then the new TRK2NET2 OM group is displayed. If the parameter is set to 'N', then the TRK2NET2 OM group is not displayed.

3.3.3.2.2 Enhancements in Release SN08

In SN07, the tuples for TRK2NET2 OM Groups are allocated only for the bearer networks of the trunk group members data filled in table TRKMEM.

In SN08, TRK2NET2 OM tuples are allocated for all bearer networks provisioned in table BEARNETS, for each Trunk Group datafilled in table TRKGRP, i.e., even if there are no Trunk Members against the Trunk Group in a bearer network

- When a Bearer Network is datafilled in table BEARNETS, a TRK2NET2 OM tuple is added for every Trunk Group datafilled in table TRKGRP.
- When a Bearer Network is deleted from table BEARNETS, all corresponding TRK2NET2 OM tuples are deleted. This functionality is delivered in SN08.
- When a Trunk Group is added in table TRKGRP, a TRK2NET2 OM tuple is added for every Bearer Network datafilled in table BEARNETS.
- When a Trunk Group is deleted from table TRKGRP, all corresponding TRK2NET2 OM tuples are deleted.
- TRK2NET2 OM tuple creation and deletion does not happen during tuple addition/deletion in tables TRKOPTS and TRKMEM.
- The TRK2NET1 OM group is ignored by table OMKEYORD.

3.3.4 Special Scenarios(SN08 Enhancement)

- Before associating TRK2NET2&TRK2NET1 OM Tuples against a Bearer Network (When a table BEARNETS tuple is added) or associating TRK2NET2&TRK2NET1 OM Tuples against a Trunk Group (When adding a table TRKGRP Tuple):

- A check is made in software to check if there is space left to be able to associate the required number of OM Tuples (Refer to Limitation Section in FN)
- If the above check fails i.e. there is not enough space left, then not even a single TRK2NET2 or TRK2NET1 OM Tuple is associated with the Bearer Network or Trunk Group (as the case may be)
- An appropriate Warning is given to the User (Refer to Limitation Section of FN document). This tells user how much is the space needed and how much of space is actually available
- This gives the User an option of freeing up required space, given that user knows the requirement. User can free up space as per his/her discretion, by deleting table BEARNETS or TRKGRP tuples.
- The SN08 Enhancement gives the User an option of doing a NIL Change on the BEARNETS or TRKGRP tuple (During addition of which User faced the OM Tuple space availability issue). This particular enhancement causes the Feature code to re-attempt trying to associate required number of TRK2NET2/TRK2NET1 OM Tuple against Bearer Network or Trunk Group (as case may be). This re-attempt would succeed, if User has freed up space by deleting TRKGRP or BEARNETS tuples before attempting NIL Change
 - NIL Change operation on a Tuple means trying a REPLACE command on Tuple with none of the fields of TUPLE having a changed value.
 - *Note: Above enhancement in software of re-attempting association of the OM Tuples, is run even if it is a normal Tuple CHANGE operation and not a NIL Change operation only.*
- When an ONP is done from a SN07 or SN08 load (Without feature code) to a SN08 load (With feature code): Then the TRK2NET2 and TRK2NET1 OM Tuples found associated with Bearer networks and Trunk Groups *will be different* from those associated on DUMP side. *In some cases, TRK2NET2/TRK2NET1 OM Tuples existing on DUMP side for a Bearer network and Trunk Group, will be found missing after TABXFR on the RESTORE side.*
 - An example is :-
 - When we have 5 Bearer Networks provisioned on DUMP side and 4000 Trunk Groups datafilled in TRKGRP.
 - Without the feature code, we have TRK2NET2/TRK2NET1 OM Tuples associated with each of the Bearer Networks *only* for those Trunk Groups (say there are 4000 Trunk Groups) which have Members physically belonging to a Bearer Network. Due to this, the Max OM Tuple limit per OM Group is not hit.

- Now when TABXFR of table BEARNETS happens to a load with feature code: When the first 4 BEARNETS tuples are TABXFRed, $4 * 4000 = 16000$ (Max OM Tuple limit per OM Group) is reached for TRK2NET2 & TRK2NET1 OM Groups.
- When the 5th table BEARNETS tuple is TABXFRed, the feature code detects that there is no space to associate even a single TRK2NET2/TRK2NET1 OM Tuple against Bearer Network. Hence on RESTORE side, not even a single TRK2NET2/TRK2NET1 OM tuple exists for Bearer Network corresponding to 5th table BEARNETS tuple.
- Table OMKEYORD will ignore the TRK2NET1 and TRK2NET2 OM groups during an ONP. This means that table OMKEYORD cannot be used to reorder the TRK2NET1 and TRK2NET2 tuples for EADAS.
- During ONP, the HOLE tuples from the OM groups TRK2NET1 and TRK2NET2 are not transferred to the Table OMKEYORD. TRK2NET1 and TRK2NET2 related OMKEYORD tuples are ignored.

Product = CS 2000

A00006979--Synchronized Backup Restore Manager

Functional Description

1.4 Applicable Solution(s)

UA-AAL1

1.5 Naming Conventions

Throughout this document, the backup restore functionality delivered under this feature will be referred to in 3 distinct ways:

Synchronous Backup Restore Manager (SBRM) refers specifically to the IEMS launched synchronized backup/restore software. The SBRM will control/synchronize the backup related activities across other components/devices which contain related backup software.

Device Backup Restore Manager (DBRM) refers specifically to the component/device level backup software which is controlled by the SBRM.

Backup Restore Manager is a generic term encompassing both SBRM and DBRM functionalities and in general simply refers to the software which is common to both.

1.6 Description

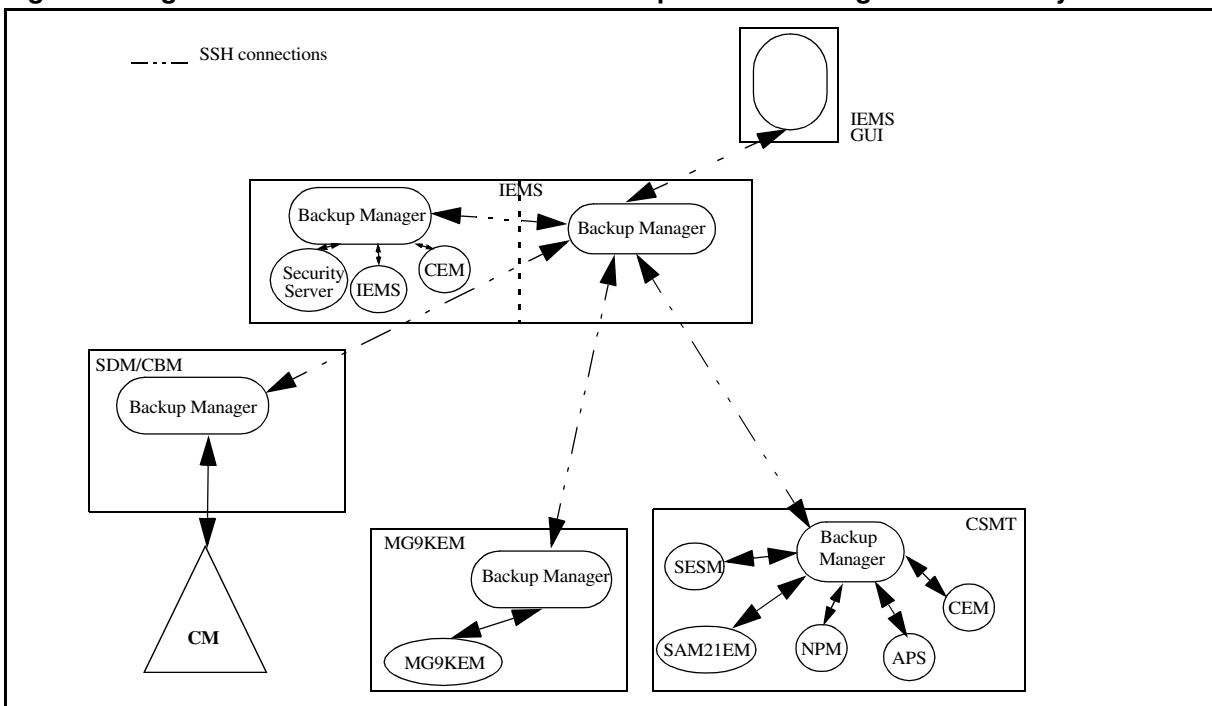
The feature provides a centralized mechanism allowing the user to initiate a synchronous backup for the core components of the Succession Call Server. Providing this capability reduces the possibility of error caused by manual backup procedures on the various component platforms spread across the Succession Call Server solution.

In SN08, the Synchronous Backup Restore Manager will provide synchronous centralized control of the backup functionality resident within the following Succession Call Server components:

- CallServer 2000 Management Tools (CSMT) server
- MG9000 Element Manager (MG9KEM) server
- Supernode Data Manager (SDM) / Core Billing Manager (CBM) server.
The software on the SDM/CBM acts only to allow control of the XACore/3PC backup. No SDM/CBM data is backed up via the Backup Restore Manager software.
- Integrated Element Management System (IEMS) server

Note: The IEMS may reside with the CSMT (and other applications) on the CSMT server.

Figure 1 High Level Functional Overview of Backup Restore Manager Functionality



Functional Description:

From the IEMS GUI, the user launches the Synchronous Backup Restore Manager command line interface and initiates a backup for the core components of the Succession Call Server. The Synchronous Backup Restore Manager receives the user request, and subsequently initiates a backup command sequence (using CLI commands over SSH) to execute a synchronous backup of the components. Once the backup is complete, the backup files are stored locally on each component.

1.7 Hardware Requirements or Dependencies

None.

1.8 Software Requirements or Dependencies

All platforms requiring Synchronous Backup Restore Manager driven imaging are required to package, install and configure the Backup Restore Manager software. This software should be incorporated within the specific build process of each individual platform.

All platforms requiring Backup Restore Manager software functionality should be Java compatible and should provide a resident Java runtime system (installation).

1.9 Limitations and restrictions

- **Restore of generated synchronized backup images is NOT supported in the SN08 Synchronous Backup Restore Manager software. Existing manual restore procedures must be followed in order to utilize the backup images produced by the Backup Restore Manager.**
- **The Backup Restore Manager system does not perform automatic spooling of backup data/image files to secure/redundant servers. Customers are required to manage their own secure server archiving capabilities. The Backup Restore Manager system will publish data/image files in pre-determined/configurable directories on various servers:**
 - **SSPSF Platform data/image file location: /data/bkresmgr/backup**
 - **XACore/3PC data/image file location: *Configurable* - see the CN section of this feature document.**
- Backup of program store and associated patches is not covered as part of the functionality associated with Synchronous Backup Restore Manager. If a customer needs to completely 'restore' a server/component, they will need to reinstall their applications and reapply the associated patches.
- The backup "abort" command may require manual cleanup/removal of some backup files. The user will be notified at "abort" command completion time if this is the case.

- The backup process itself can not be executed while certain constructive/destructive system audits are in progress (e.g. SESM's CS2K Data Integrity Audit). In general, if a backup is attempted while these audits are in progress, the backup attempt will be rejected. However, some constructive/destructive audits will be postponed when a backup request is received (e.g. MG9KEM Network Element Audit). The architecture of the system in question determines the appropriate behavior. In general, any system rejections of the backup request will result in an appropriate message being displayed to the Synchronous Backup Restore Manager client user. See section "1.10 Interactions" on page 761 for a full description of system interaction limitations.
- No system wide coordination between Synchronous Backup Restore Manager and other applications (e.g. UpgradeManager, CS2K Audits, CM dump scheduling, etc.) is delivered in SN08. All application activity interdependencies must be manually managed by the user. For example, scheduled activities such as audits should be stopped during system backup. Also, any automated CM image dumps should be cancelled since the Synchronous Backup Restore Manager will be used to drive the dump within a synchronized system wide backup window.
- APS and NPM queries will be disallowed during backup. This is due to the applications being shut down during backup. Active clients will be informed of the application shutdown.
- Backup of the MG9KEM in isolation is not recommended due the CSMT platform data dependency. The MG9KEM database is hosted on the CSMT server.
- Synchronous Backup Restore Manager user authorization only controls the launch of the CLI. CLI Command specific authorization is not provided, therefore only users authorized to actually launch the Synchronous Backup Restore Manager CLI will be allowed to perform query commands at the Synchronous Backup Restore Manager CLI.
- The software on the SDM/CBM acts only to allow control of the XACore/3PC backup. No SDM/CBM data is backed up via the Backup Restore Manager software.

1.10 Interactions

During the period when the backup is executing, user's of the various GUI and command line provisioning interfaces will be restricted from attempting actions which result in configuration and provisioning data changes. These restrictions include, but are not limited to the following:

- Adding/deleting/updating GWCs at the Call Server Management Tools (CSMT) GUI or OSSGate interface.
- Adding/deleting/updating gateways at the CSMT GUI or OSSGate interface.

- Adding/deleting/updating line service at the at the CSMT OSSGate interface.
- Manually invoking (or running via the scheduler) the various audits at the CSMT GUI.
- Adding/deleting/updating objects in the Integrated Element Management Server (IEMS) topology via the IEMS client.
- Adding/modifying collection jobs via the IEMS client.
- Using the Runtime Administration interface at the IEMS client to perform OSS configuration.
- Using the Security Administration interface at the IEMS client to add/delete Users/Groups/Operations.
- Using the Security Administration interface at the IEMS client to change a user password.
- Adding/deleting/updating Trunks/Carriers via the CSMT
- Node provisioning/deprovisioning via the SAM21EM
- ATM connection set provisioning/deprovisioning via the SAM21EM

1.11 Glossary

Term	Definition
CSMT	Call Server Management Tools
MG9KEM	Media Gateway 9000 Element Manager
SDM	Supernode Data Manager
CBM	Core Billing Manager
IEMS	Integrated Element Management System
SESM	Succession Element and Subelement Manager
OSS	Operations Support System

Fault Management for A00006979

2.1 Fault management strategy

Synchronized Backup Manager will generate two customer logs:

- BKM600 if a system backup completes successfully.
- BKM601 if a system backup fails.
- Synchronized Backup Manager will generate one security log if a user without the correct permissions attempts to invoke the Backup Manager.

2.2 Fault management tools and utilities

2.2.1 Faults, Alarms and Logs

Existing SSPFS customerlog and securitylog facilities.

2.3 Logs

Log Title/Log ID: BKM600

2.3.1 Formats

2.3.1.1 NTSTD

2.3.1.2 SCC2

2.3.1.3 Syslog

Aug 23 21:00:01 znc0s0j6.us.nortel.com BackupManager:
V2~I=~H=znc0s0j6~A=BackupManager~S=0206~~ BKM600 NONE
INFO System Backup Complete^M System backup 040830_134700
completed successfully.

2.3.1.4 SNMP

2.3.1.5 Integrated Element Manager GUI Fields

2.3.2 Explanation

Description: Generated when a system backup is completed successfully.

2.3.3 Field descriptions

None.

2.3.4 Action

None.

2.3.5 Associated Operational Measurements or Performance Measurements

None.

2.3.6 Additional information

Not applicable.

Log Title/Log ID: BKM601

2.3.7 Formats

2.3.7.1 NTSTD

2.3.7.2 SCC2

2.3.7.3 Syslog

Aug 23 21:00:01 znc0s0j6.us.nortel.com BackupManager:
V2~I=~H=znc0s0j6~A=BackupManager~S=0206~~ BKM300 NONE
INFO System Backup Failure^M System backup failed. ^M Reason:
SESM not running.

2.3.7.4 SNMP

2.3.7.5 Integrated Element Manager GUI Fields

2.3.8 Explanation

Description: Generated when a system backup fails.

2.3.9 Field descriptions

Table 1: Field descriptions

Field	Value	Description
Reason	variable	Reason system backup failed.

2.3.10 Action

Correct problem in system based on failure reason. Once failure is corrected, re-attempt backup.

2.3.11 Associated Operational Measurements or Performance Measurements

None.

2.3.12 Additional information

Not applicable.

Log Title/Log ID: Backup Manager: class_security.ver01

2.3.13 Formats

2.3.13.1 Securitylog

Aug 30 11:24:15 znc0s0jh Backup Manager: class_security.ver01
STAT=FAILED SRC.USR=fred EVNT.TYPE =Authentication

2.3.14 Explanation

Description: Generated when a user attempts to invoke the Backup Manager and does not have the correct permissions.

2.3.15 Field descriptions

None.

2.3.16 Action

None.

2.3.17 Associated Operational Measurements or Performance Measurements

None.

2.3.18 Additional information

Not applicable.

2.4 Alarms

None

2.5 Related documentation

Configuration for A00006979

3.1 Naming Conventions

Throughout this document, the backup restore functionality delivered under this feature will be referred to in 3 distinct ways:

Synchronous Backup Restore Manager (SBRM) refers specifically to the IEMS launched synchronized backup/restore software. The SRBM will control/synchronize the backup related activities across other components/devices which contain related backup software.

Device Backup Restore Manager (DBRM) refers specifically to the component/device level backup software which is controlled by the SBRM.

Backup Restore Manager is a generic term encompassing both SBRM and DBRM functionalities and in general simply refers to the software which is common to both.

3.2 Hardware and Software Requirements

Backup Restore Manager functionality requires that the appropriate software is resident and configured in all platforms which require synchronized imaging. The Backup Restore Manager software itself will be included in various platform software packages such as the SSPFS and SDM. SSPFS Backup Restore Manager functionality will be used for integration of Call Server Management Tools (CSMT), the Media Gateway 9000 Element Manager (MG9KEM), the Integrated Element Manager Server (IEMS), and the Core Billing Manager (CBM). The software on the SDM/CBM acts only to allow control of the XACore/3PC backup. No SDM/CBM data is backed up via the Backup Restore Manager software.

On the SDM, ensure the Java Runtime Environment (JRE) 1.3 package is installed. This package is not installed by default on the SDM. At the sdmmtc swim, level look for the following packages and install them in given order

First apply,

Java Runtime Environment Executables 1.3.0.0

Java Runtime Environment Libraries 1.3.0.0

Now, apply the following packages,

Java Runtime Environment Executables 1.3.0.15

Java Runtime Environment Libraries 1.3.0.15

3.3 Initial Configuration

1. Install Backup Restore Manager as part of the various platform software package installations (e.g. CSMT, IEMS, etc.).
2. Configure the Secure Shell (SSH) users and keys on the various platforms. See “3.8.2 Configuring SSH Between the Various Backup Restore Manager servers” on page 773. Also, ensure the bkmgrusr is created on SDM platforms See “12.8.1.1”
3. Configure the automated Synchronous Backup Restore Manager scheduler if automated system backups are required. See “Automated Synchronous Backup Restore Manager service” on page 782.
4. Configure the specific Backup Restore Manager installations, setting the appropriate properties for the Synchronous Backup Restore Manager which resides in IEMS and the individual component level Backup Restore Managers which reside in the other platforms (e.g. CSMT, SDM, etc.).

5. Configure the CM telnet users and Logical volume information on SDM/CBM machines. See “Configuring CM access information for Backup” on page 790.

3.4 Upgrade Considerations

The centralized, Synchronous Backup Restore Manager functionality at IEMS will be blocked until the time that all affected components (CSMT, SDM, CBM, MG9KEM) are upgraded to SN08 load levels.

3.4.1 Dump and Restore (CM)

Not affected. Existing Dump and Restore will continue to function.

3.4.2 Element Management Upgrade

3.4.2.1 IEMS Database Table Spaces

In order to allow backup of only configuration data (as opposed to transient event and fault data) stored by IEMS, the Oracle database definitions are split into separate table spaces when IEMS is upgraded. A configuration table space and a runtime table space are created and existing tables are assigned to either space depending on the nature of the table data. Only the configuration table space is registered for backup.

3.4.3 Downgrade impact

None.

3.5 Element Management

3.5.1 New/modified GUIs

Table 1 New or modified GUIs

GUI name	NEW, CHANGED, or DELETED
Request disallowed due to backup process.	NEW

3.5.2 GUI information

3.5.2.1 GUI name: IEMS System Backup Command Rejection Error Dialog

3.5.2.1.1 Functional description

IEMS will present the user with a general error dialog when the user attempts to perform actions which are incompatible with Synchronous Backup Restore Manager activity.

3.5.2.1.2 GUI usage and implications

No usage or implications for this GUI. It is simply an error response dialog.

3.5.2.1.3 GUI size

Table 2 New or modified GUIs

Abbreviated GUI name	Minimum instances	Maximum instances	Information on memory
Backup Error	0	NA	NA

3.5.2.1.4 GUI fields

The following table lists fields for GUI or pull down menu Backup Error.

Table 3 GUI field descriptions

Field	New or Changed	Subfield	Entry	Explanation and action	Associated MIB entry
Text Reason	NEW	NA	NA	User must accept error response.	NA

3.5.2.1.5 Usage example

The following example shows sample datafill or menu selection for GUI Backup Error:

3.5.2.1.6 GUI release history update

Not applicable.

3.5.2.1.7 Context sensitive launching information

Not applicable.

3.5.2.1.8 Supplementary information

GUI Screen shot example (many other actions can be rejected with a similar error dialog):



3.5.3 CLUI Interface

The Synchronous Backup Restore Manager is invoked via a CLUI. The CLUI is started by IEMS. Once the user has entered the CLUI, only Synchronous Backup Restore Manager Commands are available to the user. The command prompt within the CLUI is “bkmgr>”. The following table shows the available commands and provides a brief description of each.

Table 4 Synchronous Backup Restore Manager Supported Commands

Command	Description
commands	Displays a list of commands available to the user.
help [command]	Displays help text. If the optional command name is omitted, help text for all commands will be displayed.
exit	Exits the Synchronous Backup Restore Manager CLUI.
quit	Exits the Synchronous Backup Restore Manager CLUI.
backup full	Performs all steps of a backup sequence. If a failure is encountered or an abort is issued, the backup stops at the completion of the current step in the backup sequence. Example: User issues the 'backup full' command. So the first thing the Synchronous Backup Restore Manager does is issue the command 'precheck' to all the Device Synchronous Backup Restore Managers on the supported nodes currently provisioned in IEMS. As the Device Backup Restore Managers are executing the precheck, the user issues the 'bkmgr abort'. AFTER the Device Backup Restore Managers are done with the prechecks it will stop the backup sequence and return all components to their initial states (e.g. startprov).
backup auto	Performs all steps of a backup sequence. Note: This is a “hidden” command only to be invoked by the Synchronous Backup Restore Manager scheduler. If a failure is encountered or an abort is issued, the backup stops at the completion of the current step in the backup sequence and the system will be restored to it's pre-backup state. This does not imply a 'rollback'. It simply means if the Device Backup Restore Managers have executed the 'stopprov' command the 'startprov' command will be issued to ensure provisioning can proceed.
backup abort	Aborts a backup after completion of the current step. Returns all applications to a startprov state if required.
query status	Display the status of the backup on a high level. Example: Backup in progress. Backup failed, etc.
query history	Display information about previous backups. Example: Last backup executed <date> <time> successful.
query inventory	Displays the components available for backup.

Command	Description
precheck	Perform basic sanity checks to ensure the system is in a state to perform a backup. Example: Check disk space and possibly subtending component (application) health
stopprov	Stops provisioning.
dumpdata	Backup the critical data.
startprov	Start provisioning (if stopped).
verify	Checks the validity of the backed up data. Example: Validate DB data.
activatenew	Marks the new backup data as the current backup. Example: Move current backup to permanent location.

All commands executed within the CLUI are synchronous commands. The command prompt will not be returned to the user until the requested command completes. Therefore, if the user wishes to perform an operation such as “query status” or “backup abort” while a command is executing, another CLUI instance must be started from IEMS, and the new command executed from the second CLUI instance.

Additionally, the Synchronous Backup Restore Manager allows only one backup related command to be running at a time. If a backup, or one of the commands that executes a backup step (precheck, stopprov, dumpdata, verify, startprov, activatenew), is invoked while a backup (or backup step) is in progress, the request will be rejected.

3.5.3.1 Execution of Backup Steps at Component Level

As the backup process, or steps of the backup process, are invoked from the CLUI, the Synchronous Backup Restore Manager distributes the commands to the various components/servers to be backed up. In rare instances, it may necessary to run various portions of the backup process on the individual components/servers themselves. This capability is provided, and is implemented as a CLUI interface as well.

This CLUI interface can be invoked by logging into the appropriate component via a Telnet session, and performing the following commands.

```
>cd /opt/nortel/bkresmgr/cbm  
>bkmgr
```

At this point, most of the commands listed in “Table 4 Synchronous Backup Restore Manager Supported Commands” on page 769 can be used. The commands NOT available when running at this component level are as follows.

- backup full

- backup auto
- backup abort

This capability should be used only in rare circumstances, and care should be taken to keep the Synchronous Backup Restore Manager and this Device Backup Restore Manager in sync.

3.6 OSSGate Interface Changes

3.6.1 OSSGate Changes

No existing Service Order formats or logic is affected by Backup Restore Manager. However, when Backup Restore Manager is executing a synchronized backup of CSMT, non-query OSSGate commands will be rejected with an error indicating that commands are disallowed during system backup. All modes (CI, XML, TL1) of OSSGate will support the error response. The error response will be formatted as follows:

“SERVICE ORDERS NOT ALLOWED. SYSTEM BACKUP IS IN PROGRESS. COMMANDS MAY BE REATTEMPTED FOLLOWING COMPLETION OF THE SYSTEM BACKUP.”

3.7 Security

3.7.1 Key management

SSH common key authorization based on user ID is used to screen activity between the various Backup Restore Managers. A common encrypted key is defined for the bkmgrusr user ID and distributed to all Backup Restore Manager platforms for the bkmgrusr user ID (see “Configuring the bkmgrusr user ID and Password for SSH Common Key Authorization” on page 772 and “3.8.2 Configuring SSH Between the Various Backup Restore Manager servers” on page 773)

3.7.2 Authentication

SSH common key authorization based on user ID is used to screen activity between the various Backup Restore Managers. A common encrypted key is defined for the bkmgrusr user ID and distributed to all Backup Restore Manager platforms for the bkmgrusr user ID (see “Configuring the bkmgrusr user ID and Password for SSH Common Key Authorization” on page 772 and “3.8.2 Configuring SSH Between the Various Backup Restore Manager servers” on page 773). The SSH connections between the IEMS based Synchronous Backup Restore Manager and the various Device Backup Restore Managers in the subtending application servers (CSMT, MG9KEM, etc.) are authenticated using this common key for the bkmgrusr user ID.

The launch of the Synchronous Backup Restore Manager from the IEMS GUI is authenticated using existing user based screening. Only users permitted to

perform system level configuration changes will be allowed to launch the Synchronous Backup Restore Manager CLI from IEMS. Once launched, all commands (both query and non-query) are available. No further command level authentication is provided.

3.8 Configuration Walkthrough

3.8.1 Configuring the bkmgrusr user ID and Password for SSH Common Key Authorization

Before configuring SSH between the Backup Restore Manager servers the bkmgrusr user ID and password must be configured on all Backup Restore Manager Servers.

3.8.1.1 Configuring the bkmgrusr user ID and Password for SSH Common Key Authorization on SSPFS Based Platforms

On SSPFS based platforms, the bkmgrusr user ID is configured by default without a password. The bkmgrusr user ID password must be configured on all SSPFS based Backup Restore Manager servers using the Integrated EMS Central Security Server. Refer to section “Changing user password” in NN10336-611 Integrated EMS Security Administration.

Refer to section “Configuring the Integrated EMS central security server in the network” in NN10336-611 Integrated EMS Security Administration for configuring the Integrated EMS Central Security Server, and section “Configuring a central security client” in NN10336-611 Integrated EMS Security Administration for configuring an Integrated EMS Central Security client.

3.8.1.2 Configuring the bkmgrusr user ID and Password for SSH Common Key Authorization on SDM Based Platforms

On the SDM AIX platform, the bkmgrusr user ID and password needs to be configured in order for the SBRM to communicate with the DBRM.

1. Login to the DBRM (AIX/SDM box) by typing

>telnet <server> and pressing the Enter key. Where the server is the IP address or hostname of the SDM-AIX server where the Synchronous Backup Restore Manager is installed.

2. When prompted, login as root by entering root and password for root.
3. After login, create the user by typing

```
mkuser bkmgrusr
```

4. Now create the groups emsmtc, emsadm, emsrw by typing

```
mkgroup emsmtc
```

```
mkgroup emsadm
```

```
mkgroup emsrw
```

5. Now, make this user **bkmgrusr** belong to primary group **maint** and secondary group **emsmtc, emsadm, emsrw**

```
chuser pgrp=maint groups=emsmtc,emsadm,emsrw home=/home/bkmgrusr  
admin=true shell=/bin/ksh bkmgrusr
```

6. You can now confirm that the user **bkmgrusr** belongs to the groups **maint, emsmtc, emsadm, emsrw** by typing

```
groups bkmgrusr
```

and it will display the groups associated with this user.

7. Set the password for this user **bkmgrusr** by typing

```
passwd bkmgrusr
```

This new user is 'locked out' i.e. disabled until the password is set.

8. Logout as root and re login back to the AIX/SDM server as **bkmgrusr**. It would prompt the user to change password. After changing password the user would be logged in to the server. Go to the home directory if not already there

```
cd /home/bkmgrusr
```

```
mkdir .ssh
```

```
chmod 700 .ssh
```

3.8.2 Configuring SSH Between the Various Backup Restore Manager servers

1. Telnet to the IEMS server where the Synchronous Backup Restore Manager is installed by typing
> **telnet <server>** and pressing the Enter key. Where the server is the IP address or hostname of the IEMS server where the Synchronous Backup Restore Manager is installed.
2. When prompted, enter your user ID and password.
3. Change to the root user by typing
\$ **su - root** and pressing the Enter key.
4. When prompted, enter the root password.

5. If you are setting up SSH for the first time, or are changing the SSH keys follow the procedures outlined in “Generate SSH key and transfer to Device Backup Restore Manager server” on page 774. If you need to transfer an existing SSH key to a new or existing DBRM follow the procedures outline in “Transfer Existing SSH key to Device Backup Restore Manager server” on page 778.

3.8.2.1 Generate SSH key and transfer to Device Backup Restore Manager server

1. Run the Backup Restore Manager configuration to setup SSH between the Synchronous Backup Restore Manager and various Device Backup Restore Managers:

- a. Change directory to the Backup Restore Manager configuration location and run the Backup Restore manager configuration:

```
$ cd /opt/bkresmgr/admin/bin
```

```
$ ./configure
```

Example response:

Backup Restore Manager Configuration

- ```
1 - Backup Restore Manager SSH Setup
2 - Automated Synchronous Backup Restore
 Manager Service
X - exit
```

```
select - [X, 1-2]
```

- b. When prompted select 1 for Backup Restore Manager SSH Setup.

Example Response:

SSH Setup for Synchronous Backup Restore Manager

- ```
1 - Generate SSH key and transfer to Device
  Backup Restore Manager servers
2 - Transfer existing SSH key to Device Backup
  Restore Manager servers
```

```
X - exit
```

```
select - [X, 1-2]
```

- c. When prompted select 1 for Generate SSH key and transfer to Device Backup Restore Manager servers.

Example Response:

Generate SSH key for Synchronous Backup Restore Manager and transfer to Device Backup Restore Manager servers.

WARNING: Running this script will generate a new SSH key for the bkmgrusr.

This new SSH key must be transferred to all existing and new Device Backup Restore Manager servers.

Do you want to continue? [y/n]:

- d. When prompted, enter Y to continue.

Example response:

Generating SSH key for bkmgrusr.

Sun Microsystems Inc. SunOS 5.9 Generic
May 2002

Generating public/private rsa key pair.

Enter file in which to save the key
(/export/home/bkmgrusr/.ssh/id_rsa):

- e. When prompted, press the Enter key to accept default location of key file.

Example response:

Your identification has been saved in
/export/home/bkmgrusr/.ssh/id_rsa.

Your public key has been saved in
/export/home/bkmgrusr/.ssh/id_rsa.pub.

The key fingerprint is:

33:99:17:f0:ac:2a:3a:86:a9:d9:76:65:e6:70:4b:6
8 bkmgrusr@comp5iems

Synchronizing files IF clustered node

Transfer existing SSH key to Device Backup
Restore Manager servers

WARNING: You must have the password for the
bkmgrusr on the Device Backup Restore Manager
server to transfer the SSH key.

Do you want to transfer the SSH key? [y/n]:

- f. When prompted, enter Y to transfer the SSH key.

Example response:

```
Setting up to transfer SSH key to DBRM server.
```

```
Enter hostname or IP address of DBRM server to  
transfer the SSH key to:
```

- g. When prompted, enter the DBRM server hostname or IP address.

Example response:

```
Platform type of DBRM server to transfer SSH  
key to:
```

```
1 - SSPFS
```

```
2 - SDM
```

```
Enter platform type of DBRM server to transfer  
SSH key to - [1-2]:
```

- h. When prompted, enter 1 if DBRM server is a SSPFS based server or 2 if DBRM server is a SDM based server.

Example response:

```
Sun Microsystems Inc.   SunOS 5.9           Generic  
May 2002
```

```
The authenticity of host 'comp5iems  
(47.142.128.85)' can't be established.
```

```
RSA key fingerprint is  
ff:eb:a8:87:14:d0:82:28:5c:43:70:5a:ab:af:e6:f  
d.
```

```
Are you sure you want to continue connecting  
(yes/no)?:
```

- i. When prompted, enter yes to continue connecting.

Example response:

```
Warning: Permanently added  
'comp5iems,47.142.128.85' (RSA) to the list of  
known hosts.
```

```
Password:
```

- j. When prompted, enter the password for the bkmgrusr on the DBRM server.

Example response:

```
Transfer of SSH key to comp5iems complete.
```

- k. At this point, SSH will be set up for two alternate names of the server. Responses will vary depending on whether a server name or IP address was entered in the above steps, or if the server had been set up previously. Input may be required for either, both, or neither alternate name. The following examples provide one response requiring input, and one response that does not require input.

Example response:

```
Verifying SSH setup for  
'comp5iems.us.nortel.com'
```

```
The authenticity of host  
'comp5iems.us.nortel.com (47.142.128.85)' can't  
be established.
```

```
RSA key fingerprint is  
ff:eb:a8:87:14:d0:82:28:5c:43:70:5a:ab:af:e6:f  
d.
```

```
Are you sure you want to continue connecting  
(yes/no)?:
```

When prompted, enter yes.

```
Warning: Permanently added  
'comp5iems.us.nortel.com' (RSA) to the list of  
known hosts.
```

```
Successful
```

```
Verifying SSH setup for '47.142.128.85'
```

```
Successful
```

```
Is DBRM comp5iems a High Availability (HA)  
server? [y/n]:
```

2. If DBRM server is a HA server, enter Y. Otherwise enter N and proceed to Step 3.:

Note: You need to know the password for the root user on the NBRM server to complete the following steps.

- a. Synchronize the SSH data on the NBRM server:

Example response:

```
WARNING: On HA DBRM servers, SSH setup is not
complete unless one of the following steps is
performed.
```

- a) The HA DBRM server comp5iems is cloned.
- b) The SSH data on HA DBRM comp5iems is manually synched.

```
WARNING: Choosing this option requires
the root password for comp5iems.
```

```
Do you want to manually synchronize the SSH
data on DBRM comp5iems now [y/n]
```

- b. When prompted, enter Y to manually synchronize the SSH data:

Example response:

```
Password:
```

- c. When prompted, enter the password for the root user on the NBRM server.

Example response:

```
Synchronization of SSH data on DBRM comp5iems
complete.
```

3. Repeat Step 1 f through 2 for each DBRM server.

Note: The SSH key must be transferred within the server it is created on. This is due to the configuration where both a SBRM and DBRM reside on the same server and use SSH to communicate within the server.

To transfer the SSH key within the server it is created on, simply enter the name (or IP address) of the server in step 1 g.

3.8.2.2 Transfer Existing SSH key to Device Backup Restore Manager server

1. Run the Backup Restore Manager configuration to setup SSH between the Synchronous Backup Restore Manager and various Device Backup Restore Managers:
 - a. Change directory to the Backup Restore Manager configuration location and run the Backup Restore manager configuration:
\$ cd /opt/bkresmgr/admin/bin

```
$ ./configure
```

Example response:

Backup Restore Manager Configuration

- 1 - Backup Restore Manager SSH Setup
- 2 - Automated Synchronous Backup Restore Manager Service

X - exit

select - [X, 1-2]

- b. When prompted select 1 for Backup Restore Manager SSH Setup.

Example Response:

SSH Setup for Synchronous Backup Restore Manager

- 1 - Generate SSH key and transfer to Device Backup Restore Manager servers
- 2 - Transfer existing SSH key to Device Backup Restore Manager servers

X - exit

select - [X, 1-2]

- c. When prompted select 2 for Transfer existing SSH key to Device Backup Restore Manager servers.

Example Response:

Transfer existing SSH key to Device Backup Restore Manager servers

WARNING: You must have the password for the bkmgrusr on the Device Backup Restore Manager server to transfer the SSH key.

Do you want to transfer the SSH key? [y/n]:

- d. When prompted, enter Y to transfer the SSH key.

Example response:

Setting up to transfer SSH key to DBRM server.

Enter hostname or IP address of DBRM server to transfer the SSH key to:

- e. When prompted, enter the DBRM server hostname or IP address.

Example response:

```
Platform type of DBRM server to transfer SSH
key to:
```

```
1 - SSPFS
```

```
2 - SDM
```

```
Enter platform type of DBRM server to transfer
SSH key to - [1-2]:
```

- f. When prompted, enter 1 if DBRM server is a SSPFS based server or 2 if DBRM server is a SDM based server.

Example response:

```
Sun Microsystems Inc.   SunOS 5.9           Generic
May 2002
```

```
The authenticity of host 'comp5iems
(47.142.128.85)' can't be established.
```

```
RSA key fingerprint is
ff:eb:a8:87:14:d0:82:28:5c:43:70:5a:ab:af:e6:f
d.
```

```
Are you sure you want to continue connecting
(yes/no)?:
```

- g. When prompted, enter yes to continue connecting.

Example response:

```
Warning: Permanently added
'comp5iems,47.142.128.85' (RSA) to the list of
known hosts.
```

```
Password:
```

- h. When prompted, enter the password for the bkmgrusr on the DBRM server.

Example response:

```
Transfer of SSH key to comp5iems complete.
```

- i. At this point, SSH will be set up for two alternate names of the server. Responses will vary depending on whether a server name or IP address

was entered in the above steps, or if the server had been set up previously. Input may be required for either, both, or neither alternate name. The following examples provide one response requiring input, and one response that does not require input.

Example response:

```
Verifying SSH setup for  
'comp5iems.us.nortel.com'
```

```
The authenticity of host  
'comp5iems.us.nortel.com (47.142.128.85)' can't  
be established.
```

```
RSA key fingerprint is  
ff:eb:a8:87:14:d0:82:28:5c:43:70:5a:ab:af:e6:f  
d.
```

```
Are you sure you want to continue connecting  
(yes/no)?:
```

When prompted, enter yes.

```
Warning: Permanently added  
'comp5iems.us.nortel.com' (RSA) to the list of  
known hosts.
```

```
Successful
```

```
Verifying SSH setup for '47.142.128.85'
```

```
Successful
```

```
Is DBRM comp5iems a High Availability (HA)  
server? [y/n]:
```

2. If DBRM server is a HA server, enter Y. Otherwise enter N and proceed to Step 3.:

Note: You need to know the password for the root user on the NBRM server to complete the following steps.

- a. Synchronize the SSH data on the NBRM server:

Example response:

```
WARNING: On HA DBRM servers, SSH setup is not  
complete unless one of the following steps is  
performed.
```

- a) The HA DBRM server comp5iems is cloned.
- b) The SSH data on HA DBRM comp5iems is manually synched.

WARNING: Choosing this option requires the root password for comp5iems.

Do you want to manually synchronize the SSH data on DBRM comp5iems now [y/n]

- b. When prompted, enter Y to manually synchronize the SSH data:

Example response:

Password:

- c. When prompted, enter the password for the root user on the NBRM server.

Example response:

Synchronization of SSH data on DBRM comp5iems complete.

- 3. You will be prompted to transfer the SSH key to another DBRM server. Enter Y to transfer SSH key to another DBRM server. Enter N if you do not want to transfer SSH key to another DBRM server. If you enter N you have completed the procedure.

Example response:

WARNING: You must have the password for the bkmgrusr on the Device Backup Restore Manager server to transfer the SSH key.

Do you want to transfer the SSH key to another DBRM server? [y/n]:

- 4. Repeat Step 1 d through 3 for each DBRM server you want to transfer the SSH key to.

3.8.3 Automated Synchronous Backup Restore Manager service

3.8.3.1 Configuring the Automated Synchronous Backup Restore Manager service

- 1. Telnet to the IEMS server where the Synchronous Backup Restore Manager is installed by typing
> **telnet <server>** and pressing the Enter key. Where the server is the IP address or hostname of the IEMS server where the Synchronous Backup Restore Manager is installed.

2. When prompted, enter your user ID and password.
3. Change to the root user by typing
\$ **su - root** and pressing the Enter key.
4. When prompted, enter the root password.
5. Run the Backup Restore Manager configuration. Change directory to the Backup Restore Manager configuration location and run the Backup Restore manager configuration:
\$ **cd /opt/bkresmgr/admin/bin**
\$ **./configure**

Example response:

```
Backup Restore Manager Configuration
```

- ```
1 - Backup Restore Manager SSH Setup
2 - Automated Synchronous Backup Restore
 Manager Service
X - exit
```

```
select - [X, 1-2]
```

6. When prompted select 2 for Automated Synchronous Backup Restore Manager Service.

Example Response:

```
Automated Synchronous Backup Restore Manager
Service
```

- ```
1 - Configure Automated Synchronous Backup Restore
    Manager Service
2 - Start the Automated Synchronous Backup Restore
    Manager Service
3 - Stop the Automated Synchronous Backup Restore
    Manager Service
4 - View the Automated Synchronous Backup Restore
    Manager Service Configuration
X - exit
```

```
select - [X, 1-4]
```

7. When prompted select 1 for Configure Automated Synchronous Backup Restore Manager Service.

Example Response:

```
Automated Synchronous Backup Restore Manager
Service Configuration
```

Configuring the Automated Synchronous Backup Restore Manager Service does not START the service. Return to the previous menu and select 'Start the Automated Synchronous Backup Restore Manager Service' to start the service.

Day of week to run the Synchronous Backup Restore Manager:

This is day of the week the Synchronous Backup Restore Manager will execute a full backup.

- 1 - MONDAY
- 2 - TUESDAY
- 3 - WEDNESDAY
- 4 - THURSDAY
- 5 - FRIDAY
- 6 - SATURDAY
- 7 - SUNDAY

Enter day of week to run the Synchronous Backup Restore Manager (default: SUNDAY):

8. When prompted enter the number corresponding to the day of the week.

Example Response:

Hour to run the Synchronous Backup Restore Manager based on 24 hour clock:

Example 1 is 1 AM, 12 is noon, and 24 is midnight.

This is the hour on the SATURDAY the Synchronous Backup Restore print Manager will execute a full backup.

Enter hour to run the Synchronous Backup Restore Manager (default: 24)

9. When prompted enter a number corresponding to the time on the day of the week (based on a 24 hour clock).

Example Response:

Automated Synchronous Backup Restore Manager Service Configuration complete.

10. You have completed this procedure. To start the Automated Synchronous Backup Restore Manager Service refer to.

3.8.3.2 Starting the Automated Synchronous Backup Restore Manager service

1. Telnet to the IEMS server where the Synchronous Backup Restore Manager is installed by typing
> **telnet <server>** and pressing the Enter key. Where the server is the IP address or hostname of the IEMS server where the Synchronous Backup Restore Manager is installed.
2. When prompted, enter your user ID and password.
3. Change to the root user by typing
\$ **su - root** and pressing the Enter key.
4. When prompted, enter the root password.
5. Run the Backup Restore Manager configuration. Change directory to the Backup Restore Manager configuration location and run the Backup Restore manager configuration:
\$ **cd /opt/bkresmgr/admin/bin**
\$ **./configure**

Example response:

Backup Restore Manager Configuration

```
1 - Backup Restore Manager SSH Setup
2 - Automated Synchronous Backup Restore
  Manager Service
X - exit
select - [X, 1-2]
```

6. When prompted select 2 for Automated Synchronous Backup Restore Manager Service.

Example Response:

Automated Synchronous Backup Restore Manager Service

```
1 - Configure Automated Synchronous Backup Restore
  Manager Service
2 - Start the Automated Synchronous Backup Restore
  Manager Service
3 - Stop the Automated Synchronous Backup Restore
  Manager Service
4 - View the Automated Synchronous Backup Restore
  Manager Service Configuration
X - exit
```

```
select - [X, 1-4]
```

7. When prompted select 2 for Start the Automated Synchronous Backup Restore Manager Service.

Example Response:

```
Start the Automated Synchronous Backup Restore  
Manager Service
```

```
WARNING: Running this script will start the  
Automated Synchronous Backup Restore Manager  
Service
```

```
Starting the service does not initiate a backup  
until the day and time configured.
```

```
Do you want to continue? - [y/n]:
```

8. When prompted enter Y to start the Automated Synchronous Backup Restore Manager Service.

Example Response:

```
Registering with SERVMAN.
```

```
Starting the Automated Synchronous Backup Restore  
Manager Service.
```

```
Starting AUTO_BACKUP_MANAGER through servstart  
AUTO_BACKUP_MANAGER Started
```

9. You have completed this procedure.

3.8.3.3 Stopping the Automated Synchronous Backup Restore Manager service

1. Telnet to the IEMS server where the Synchronous Backup Restore Manager is installed by typing
> **telnet <server>** and pressing the Enter key. Where the server is the IP address or hostname of the IEMS server where the Synchronous Backup Restore Manager is installed.
2. When prompted, enter your user ID and password.
3. Change to the root user by typing
\$ **su - root** and pressing the Enter key.
4. When prompted, enter the root password.

5. Run the Backup Restore Manager configuration. Change directory to the Backup Restore Manager configuration location and run the Backup Restore manager configuration:

```
$ cd /opt/bkresmgr/admin/bin
```

```
$ ./configure
```

Example response:

```
Backup Restore Manager Configuration
```

```
1 - Backup Restore Manager SSH Setup
```

```
2 - Automated Synchronous Backup Restore  
    Manager Service
```

```
X - exit
```

```
select - [X, 1-2]
```

6. When prompted select 2 for Automated Synchronous Backup Restore Manager Service.

Example Response:

```
Automated Synchronous Backup Restore Manager  
Service
```

```
1 - Configure Automated Synchronous Backup Restore  
    Manager Service
```

```
2 - Start the Automated Synchronous Backup Restore  
    Manager Service
```

```
3 - Stop the Automated Synchronous Backup Restore  
    Manager Service
```

```
4 - View the Automated Synchronous Backup Restore  
    Manager Service Configuration
```

```
X - exit
```

```
select - [X, 1-4]
```

7. When prompted select 3 for Stop the Automated Synchronous Backup Restore Manager Service.

Example Response:

```
Stop the Automated Synchronous Backup Restore  
Manager Service
```

```
WARNING: Running this script will stop the  
Automated Synchronous Backup Restore Manager  
Service
```


Stopping the service does not abort a backup in progress.

Do you want to continue? - [y/n]:

8. When prompted enter Y to stop the Automated Synchronous Backup Restore Manager Service.

Example Response:

Stopping the Automated Synchronous Backup Restore Manager Service.

Stopping group using servstop
AUTO_BACKUP_MANAGER Stopped

Deregistering with SERVMAN

9. You have completed this procedure.

3.8.3.4 Viewing the Automated Synchronous Backup Restore Manager service configuration

1. Telnet to the IEMS server where the Synchronous Backup Restore Manager is installed by typing
> **telnet <server>** and pressing the Enter key. Where the server is the IP address or hostname of the IEMS server where the Synchronous Backup Restore Manager is installed.
2. When prompted, enter your user ID and password.
3. Change to the root user by typing
\$ **su - root** and pressing the Enter key.
4. When prompted, enter the root password.
5. Run the Backup Restore Manager configuration. Change directory to the Backup Restore Manager configuration location and run the Backup Restore manager configuration:
\$ **cd /opt/bkresmgr/admin/bin**
\$ **./configure**

Example response:

Backup Restore Manager Configuration

1 - Backup Restore Manager SSH Setup

- ```
2 - Automated Synchronous Backup Restore
 Manager Service
X - exit
select - [X, 1-2]
```
6. When prompted select 2 for Automated Synchronous Backup Restore Manager Service.
- Example Response:
- ```
Automated Synchronous Backup Restore Manager
Service
1 - Configure Automated Synchronous Backup Restore
    Manager Service
2 - Start the Automated Synchronous Backup Restore
    Manager Service
3 - Stop the Automated Synchronous Backup Restore
    Manager Service
4 - View the Automated Synchronous Backup Restore
    Manager Service Configuration
X - exit
select - [X, 1-4]
```
7. When prompted select 4 for View the Automated Synchronous Backup Restore Manager Service Configuration.
- Example Response:
- ```
The Automated Synchronous Backup Restore Manager
Service is running
```
- 
- ```
Automated Synchronous Backup Restore Manager
Service Configuration Settings
```
-
- ```
Backup Enabled : Y
Backup Day : SATURDAY
Backup Hour : 23
```
8. You have completed this procedure.

### 3.8.4 Configuring CM access information for Backup

Before the software can automatically back up image on CM, the user needs to configure information to access CM. This section covers the necessary steps which needs to be done, before CM backup will be successful when initiated through the Synchronous Backup Restore Manager. On the SDM (AIX), as soon as the software is installed, this configuration script will be run automatically by SWIM. However on Core Billing Manager machine (Solaris), the user has to manually do the steps (1 - 6)

1. 1. telnet to Core Billing Manager machine, one of which would have been chosen in the network to interface with the CM by typing

```
#telnet <server>
```

2. When prompted, enter your user ID and password.
3. Change to the root user by typing  
\$ **su - root** and pressing the Enter key.
4. When prompted, enter the root password.
5. cd to /opt/nortel/bkresmgr/cbm/scripts directory
6. Run the configure script by typing

```
#./bkmgr_config.sh and hit the <enter> key
```

This script will prompt the following information

- a. user name: This is the user name which will be used to login to CM to initiate image dump. The script restricts you to have user name of 16 characters. First permit this user on the CM before doing this configuration. See Section 12.12.2.1 Setting user id on CM
- b. password: This is the password for the user entered above. The script restricts you to have password of 16 characters. First permit this user on CM before doing this configuration. See Section 12.12.2.1 Setting user id on CM
- c. Logical Volume: This is the device in which the image dump will be stored. User should ensure that this device has enough space for backup
- d. CM type: The type of CM, whether it is Xacore or Compact. This information is needed so the software knows whether CM will have Message Switch load also.

Shown below is screen output running this configure script.

```
./bkmgr_config.sh
Backup Restore Manager Configuration
```

---

Enter the CM user name: bkuser

Enter the password for bkuser:

Enter the Logical volume where backup is to be stored: sd01image

Enter the type of CM 1.XA-Core 2. Compact [1/2]: 2

Please wait while storing configuration information...

### 3.8.4.1 Setting user id on CM

#### At the CI prompt on the switch

```
> permit <backup-user> <password> 4 10000 ENGLISH ALL
```

where,

<backup-user> is the user name for user which will be used by Backup Restore Manager to login

<password> is the password for the <backup-user>

4 is the priority

10000 is the stacksize

and language is ENGLISH

privilege is ALL

The type of operations done by this user are shown below

- i. Set dump\_restore\_in\_progress field in ofcstd table
- ii. start image dump
- iii. should be able to run itocci command set
- iv. should be able to do diskut commands

**Note 1:** If Enhanced Password control is in effect on CM, the password should be atleast 6 characters long.

**Note 2:** If Enhanced Password control is in effect on CM, after the user is permitted on the switch, login to CM manually with this user first. The CM will prompt you to change the password at first login after being permitted. Change the password and then do the configuration on SDM/CBM with the

user and the changed password. Backup Restore Manager software does not have ability to manage passwords. Hence, the customer needs to ensure that when the passwords expire and change on CM for this 'backup-user', CBM/SDM configuration should be re-run to ensure the Device Backup Restore Manager has password in sync with CM.

## ***Product = CS 2000***

### **A00007024--Core Element Manager (CEM) Patching** ***Functional Description***

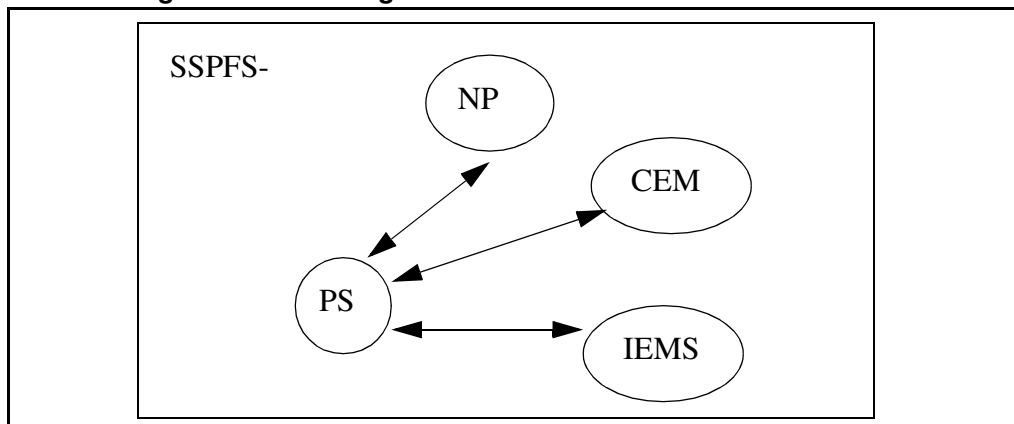
#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Description**

In SN08, the CEM will be integrated with the Integrated Element Management System (IEMS) on Solaris. IEMS is patched via the Network Patch Manager (NPM). It is required that one patch management system be used with all applications on the same node. Therefore, the CEM integrated with IEMS will also be patched by the NPM.

**Figure 2 CEM Integrated with IEMS**



##### **1.2.1 Incremental Cumulative Patching**

CEM patches are incrementally cumulative. Each patch contains the fixes that prior patches introduced, but only the fix content that has been introduced since the final compile version of the CEM load is included in each patch. This allows a customer to apply only the latest patch if desired, since it will contain all of the fix content included in previous patches. CEM patches are

delivered by RPS. There is only one Released patch at any given point in time, unless it is the first patch for the load which can be at Verified or Released status. After a patch is Released, all previous patches are set to Superseded in RPS and will no longer be delivered.

NPM is the patch management system to apply and remove CEM patches and perform maintenance patching activities on the CEM. All patching functionality available in NPM is available for CEM patching.

With this methodology of patching, if 3 patches have been released and all 3 have been downloaded to a customer site, the customer can choose to physically apply patch 1, patch 2, and patch 3, or the customer can choose to apply patch 3 only. If only patch 3 is applied, this essentially results in having patch 1, patch 2, and patch 3 applied. If only patch 3 is applied, patch 1 and patch 2 cannot be removed individually. If only patch 3 is applied, when patch 3 is removed, patch 2 and patch 1 are also removed.

## 1.2.2 Patching Maintenance

When the new NPM patchable CEM application is installed, the NPM automatically becomes aware of it. CEM appears in reports and the device list of the GUI. The following functions that exist for other targets are now available for CEM:

- apply
- remove
- audit
- restart
- set/report creation
- plans/automation
- alarms

### 1.2.2.1 CEM Patch Application and Removal

Like existing OAM Java-based applications such as SESM, SAM21EM, or IEMS components, the CEM requires 2 steps for application and 2 steps for removal of patches.

Application:

- apply command from the NPM GUI or CLUI (sets patch to applied/disabled)
- restart command from the NPM GUI or CLUI on IEMS (sets patch to applied/enabled)

Removal:

- remove command from the NPM GUI or CLUI (sets patch to removed/enabled)
- restart command from the NPM GUI or CLUI on IEMS to disable the patch (sets patch to removed/disabled)

When CEM is running in a clustered configuration, the 2 step application and removal of patches is necessary only on the active side of the SSPFS-based machine. A restart from the NPM GUI or CLUI on the inactive instance of the CEM application is not required to enable or disable patches. When a patch is applied or removed on the inactive CEM application, the patch is automatically enabled or disabled since the CEM application is not running on the inactive SSPFS-based machine.

The apply and restart operations from the NPM GUI and CLUI can be automatically scheduled via NPM plans (autoapply and autorestart).

### 1.2.3 Patchid Modification

The patchid has been modified to allow greater than 8 character patchids. The patchid format for CEM patches can have up to 32 alpha-numeric characters. The CEM patchid does not contain records that identify the target or release to which the patch is applicable. An example CEM patchid is CEM\_PATCH.17.1-20040901.

In SN08, CEM will be the only product to take advantage of the expanded patchid. The current 8 character patchid format will remain for all other products for which NPM manages patches.

### 1.2.4 Patch File Format Modifications

The patch file format is modified with this feature to implement the incremental cumulative nature of CEM patching. The following additions and changes have been made:

- A new **H** record is introduced to track included patches. This new record is stored in the ADM section of the patch file and is included only in CEM patches. Zero to many of these records can exist. The record format is:

**H INCLUDED\_PATCH <patchid>**

where patchid is the name of the patch included

- A new **V** record is introduced to track the patch file format version. This record is added to all NPM managed patches.
- The **I** record is enhanced. If a patchid is greater than 8 characters it will not fit in the normal patchid position of the I record. The placement for patchid will be filled with 8 characters of something other than the real patchid, and the E record will contain the actual patchid.

### 1.3 Hardware Requirements or Dependencies

None.

### 1.4 Software Requirements or Dependencies

The MTX18 CEM load is required to interact with NPM.

### 1.5 Limitations and restrictions

None

### 1.6 Interactions

Feature A00007304 - CEM I & C on IEMS

### 1.7 Glossary

| Term | Description             |
|------|-------------------------|
| NPM  | Network Patch Manager   |
| CEM  | Core Element Manager    |
| RPS  | Regional Patch Selector |

***Product = CS 2000***

## **A00007121--IW Bridge MAP maintenance for deload**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

UA-AAL1, PT-AAL1

#### **1.2 Description**

This feature has the following component.

- Provide an IW bridge Map maintenance for deload.
  - This feature introduces an IW bridge maintenance MAP level (BrgMtce) which provides a method to deload call processing from IW bridges.

##### **1.2.1 IW Bridge Maintenance**

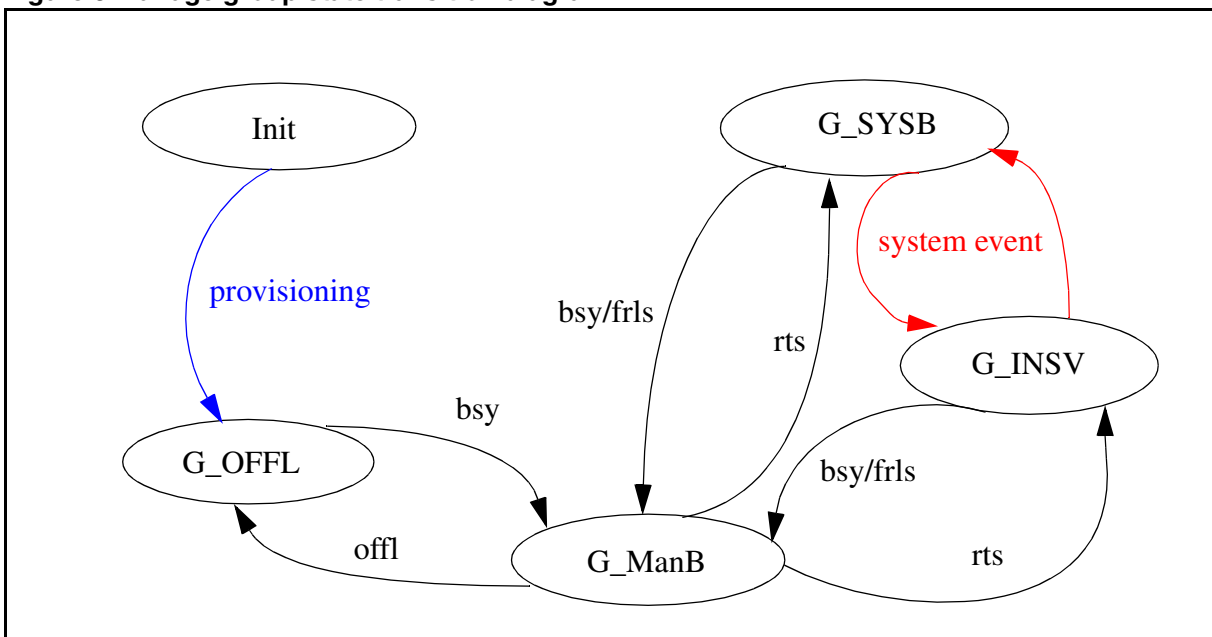
A new MAP level 'BRGmtce' will be provided to manage the state of the IW SPM bridge terminals. **Offl**, **Bsy**, **Rts**, **Frls**, **Post** and **Next** commands will be provided at this command subdirectory.



A new status for all terminals on an IW SPM bridge is going to be introduced: deload, which means that the bridge involving in a call will be put in a pending deload state before the call is terminated. The bridge will no longer be available to CallP when the old call terminates. This state will be set via the **Bsy** command. Prior to having deload status, the IW SPM bridge terminal has the following states: Idle, Call Processing Busy and System Busy. When combining the deload state with these three states, the following new terminal states are introduced: Call Processing Deload and Manual Busy. In addition, Offl state will be introduced to the state of bridge terminals. This will be the initial state and can only be set when the group state of bridges in a DS512 link is G\_ManB.

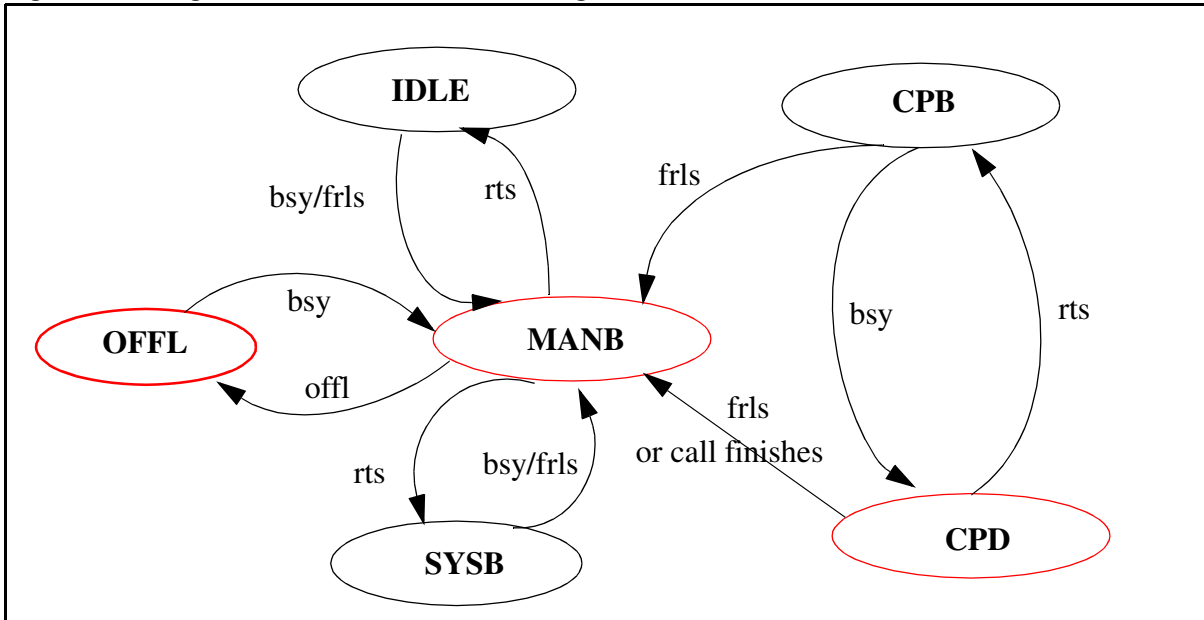
A new group state of bridge terminals in each DS512 link, {G\_OFFL, G\_MANB, G\_SYSB, G\_INSV}, will be introduced. These states are used to determine the individual bridge terminal state, which can be OFFL, MANB, SYSB, CPB, CPD, and IDLE. The state transition diagram for the bridge group state is depicted as follows:

**Figure 3 bridge group state transition diagram**



Note that rts command will be rejected if the group state of bridges in a DS512 link is G\_SYSB.

The bridge terminal state transition due to manual actions is shown in the following figure:

**Figure 4 Bridge terminal state transition diagram**

The following list describes the required IW SPM bridge terminal state transitions that result from the Bsy command:

- Idle to Manual Busy - this transition results from a 'Busy' command being issued to a bridge terminal that is in the 'idle' state.
- Call Processing Busy to Call Processing Deload - this transition results from a Bsy command being issued to a bridge terminal that is in the 'call processing busy' state.
- System Busy to Manual Busy - this transition results from a Bsy command being issued to a bridge terminal that is in the 'system busy' state.
- Off line to Manual Busy - this transition results from a Bsy command being issued to a bridge terminal that is in the 'Off Line' state.

Two options, "all" and "DS512\_link\_number", will be provided. "Bsy all" will "busy" all the bridge terminals of the posted IW SPM, while "Bsy number" will just busy the bridge terminals of the specified DS512 link. The group state of the DS512 link will be set to MANB.

Command **Offl** will be supported to allow the craftsmen to set the state of IW SPM bridge terminals to off line. This command can be issued on the bridge terminal link that is in a ManB state. The group state of the DS512 link will be set to OFFL.

Two options, "all" and "DS512\_link\_number" will be provided. "Offl all" will "offl" all the bridge terminals of the posted IW SPM, while "Offl number" will just offl the bridge terminals of the specified DS512 link.

Command **Rts** will be supported to allow the craftsperson to allow the IW SPM bridge terminals to be used by call processing. The following list illustrates the required IW SPM bridge terminal state transitions that result from the 'Rts' command:

- Manual Busy to Idle - this transition results from an 'Rts' command being issued to a bridge terminal that is in the 'manual busy' state and the associated IW SPM node is in service.
- Call Processing Deload to Call Processing Busy - this transition results from an 'Rts' command being issued to a bridge terminal that is in the 'call processing deload' state.
- Manual Busy to System Busy - this transition results from an 'Rts' command being issued to a bridge terminal that is in the 'manual busy' state and the associated IW SPM node is out of service.

Two options, "all" and "DS512\_link\_number", will be provided. "Rts all" will "Rts" all the bridge terminals of the posted IW SPM, while "Rts number" will just Rts the bridge terminals of the specified DS512 link. The group state of the DS512 link will be set to INSV.

Command **Frls** will be supported to allow the craftsperson to remove the IW SPM bridge terminals from use by call processing immediately. The following list illustrates the required IW SPM bridge terminal state transitions that result from the 'Frls' command:

- Idle to Manual Busy - This transition results from a 'Frls' command being issued to a bridge terminal that is in the 'idle' state.
- Call Processing Busy to Manual Busy - this transition results from a 'Frls' command being issued to a bridge terminal that is in the 'call processing busy' state.
- Call Processing Deload to Manual Busy - this transition results from a 'Frls' command being issued to a bridge terminal that is in the 'call processing deload' state.
- System Busy to Manual Busy - this transition results from a 'Frls' command being issued to a bridge terminal that is in the 'system busy' state.

Two options, "all" and "DS512\_link\_number", will be provided. "Frls all" will "Frls" all the bridge terminals of the posted IW SPM, while "Frls number" will just Frls the bridge terminals of the specified DS512 link. The group state of the DS512 link will be set to MANB.

Command **Post** will be supported to display the terminal states of the IW SPM currently posted. It supports the option "all" and "spm #". The following information will be displayed on the map:

- Number of bridge terminals in an 'Idle' state
- Number of bridge terminals in a 'Call Processing Busy' state
- Number of bridge terminals in a 'Call Processing Deload' state
- Number of bridge terminals in a 'Manual Busy' state
- Number of bridge terminals in a 'System Busy' state
- Number of bridge terminals in a 'Offl Line' state

The above terminal status window will be updated continuously.

Command Next will be supported to display the terminal states of the next IW SPM in the post set (post set is created via "post all"). If the current IW SPM is the last one in the post set, Next will clear the display on the map.

**Note 1:** The newly introduced deload state is independent of the IW node state. This means that the IW SPM bridge terminal states can be driven separately from the state of the IW SPM node.

**Note 2:** The requirements described above will be applicable to all types of IW SPMs.

#### 1.2.1.1 Accessing 'BrgMtce' from PKT MAPCI level

BrgMtce subdirectory is created up the MAPCI;MTC;APPL;PKT level of MAPCI as shown in Figure 1.

**Figure 5 Accessing BRGMtce level from PKT level**

```

XAC MS IOD Net PM CCS Lns Trks Ext APPL
. MSpair 1DDUOS 2CBSy 1EIU 10 RS . 333C.. 2Crit 2 PKT
C M M *C* *C* *C* *C* *C* M
PKT
0 Quit 2 PKT .
2
3
4 SPM_ATM Summary of PKT failures:
5 SPM_ATM SPM_ATM:
6
7
8 BRGMTCE
9
10
11
12
13
14
15
16
17 PKT:
18
19 MAP1
20 Time 02:28

```

**Figure 6 BRGmtce MAP level**

|     |        |                   |         |        |               |       |        |      |        |
|-----|--------|-------------------|---------|--------|---------------|-------|--------|------|--------|
| XAC | MS     | IOD               | Net     | PM     | CCS           | Lns   | Trks   | Ext  | APPL   |
| .   | MSpair | 2MPCOS            | 2CBsy   | 1EIU   | 8             | RS    | 38C..  | .    | .      |
|     | *C*    | M                 | M       | *C*    | *C*           |       | *C*    |      |        |
|     |        | OAMAP             | ATMFW   | SDM    | SPMCP         | SWMTC | SDMBIL | PKT  | TOPSIP |
| 0   | Quit   | .                 | .       | .      | .             | .     | .      | .    | .      |
| 2   | Post_  |                   |         |        |               |       |        |      |        |
| 3   |        |                   |         |        |               |       |        |      |        |
| 4   |        | SPM_ATM = .       |         |        |               |       |        |      |        |
| 5   | Bsy_   |                   |         |        |               |       |        |      |        |
| 6   | Rts_   | IWSPM: SPM 3 OFFL |         |        | BearNTWK: ATM |       |        |      |        |
| 7   | Offl_  | Link:             | BRGMTCE | STATE: | CPD:          | CPB:  | SYSB:  | IDL: | MANB:  |
| 8   | FrIs_  | 0                 | OFFL    |        | 0             | 0     | 0      | 0    | 504    |
| 9   |        | 1                 | OFFL    |        | 0             | 0     | 0      | 0    | 504    |
| 10  |        | 2                 | OFFL    |        | 0             | 0     | 0      | 0    | 504    |
| 11  |        | 3                 | OFFL    |        | 0             | 0     | 0      | 0    | 504    |
| 12  | Next   | -----             |         |        |               |       |        |      |        |
| 13  |        |                   |         |        | 0             | 0     | 0      | 0    | 2016   |
| 14  |        |                   |         |        |               |       |        |      |        |
| 15  |        |                   |         |        |               |       |        |      |        |
| 16  |        |                   |         |        |               |       |        |      |        |
| 17  |        |                   |         |        |               |       |        |      |        |
| 18  | YD     |                   |         |        |               |       |        |      |        |
| >   |        |                   |         |        |               |       |        |      |        |

### 1.2.1.2 New Logs

Four new logs are created: IWB502, IWB503, IWB504, IWB505.

The following new logs will be created to keep the users informed about the group state transitions.

- IWB502 - A Bsy command being requested for a set of IW SPM bridge terminals.

```
RTP708AK ** IWB502 AUG12 00:37:09 5900 INFO MBSY IW Bridge Terminals
 SPM Number: 3
 DS512 link: 3
 IW bridge group state changed from SYSB to MANB
 IW bridge terminal range: 1 through 504
 Reason: Manual Request
 Issued by: YD2
```

- IWB503 - A Rts command being requested for a set of IW SPM bridge terminals.

RTP708AK IWB503 AUG12 00:37:19 6700 INFO RTS IW Bridge Terminals  
SPM Number: 3  
DS512 link: 0  
IW bridge group state changed from MANB to SYSB  
IW bridge terminal range: 1513 through 2016  
Reason: Manual Request  
Issued by: YD2

- IWB504: An Offl command being requested for a set of IW SPM bridge terminals.

RTP708AK \*\* IWB504 AUG12 00:04:26 3200 INFO OFFL IW Bridge Terminals  
SPM Number: 3  
DS512 link: 3  
IW group terminal state changed from OFFL to MANB  
IW bridge terminal range: 1 through 504  
Reason: Manual Request  
Issued by: YD2

- IWB505 - A Frls command being requested for a set of IW SPM bridge terminals.

RTP708AK \*\* IWB505 AUG12 00:37:51 8000 INFO FRLS IW Bridge Terminals  
SPM Number: 3  
DS512 link: 3  
IW bridge group state changed from SYSB to MANB  
IW bridge terminal range: 1 through 504  
Reason: Manual Request  
Issued by: YD2

## 1.3 Hardware Requirements or Dependencies

N/A

## 1.4 Software Requirements or Dependencies

## 1.5 Limitations and restrictions

Since the newly introduced Offl state will be set as an initial bridge terminal state in SN08, the group state of bridges in each DS512 link and bridge terminal state need to be restored on the newly active side over swact. The bridge terminal state transition over swact will be as follows:

From SN08 to SN08, SysB -> SysB, Idle -> Idle, CPB -> CPB

From SN08 to SN08: OFFL -> OFFL, SysB -> SysB, Idle -> Idle, CPB -> CPB, ManB -> ManB, CPD -> CPD

## 1.6 Interactions

Once the deload state is ON (ManB) on a bridge terminal, new calls cannot be established using that bridge.

## 1.7 Applicable customer facing sections

### Fault Management

Logs ☒

Alarms ☐

### Configuration

Data Schema ☐

User Interface ☒

Element Management ☐

Security ☐

Service Order ☐

Office Parameters ☐

Accounting (includes AMA billing) ☐

Performance (includes operational measurements) ☐

## 1.8 Glossary

| Term  | Description                             |
|-------|-----------------------------------------|
| CI    | Command Interpreter                     |
| CPB   | Call Processing Busy                    |
| CPD   | Call Processing Deload                  |
| IWSPM | InterWorking Spectrum Peripheral Module |

***Product = CS 2000***

## A00007135--GWC DPT Audits and Counter Drift Prevention

**Note:** This activity also applies to MG4k and DPT SPM, not just GWC.



## 1.1 Applicable Solution(s)

UA-AAL1

## 1.2 Functional Description

This feature addresses two areas of weakness in the existing DPT application:

### 1. Counter drift.

DPT software has several counters, e.g., the total number of DPT terminals in use, that have been observed to drift from their proper values over time. Negative consequences of counter drift include network management and OM distortions, SWERRs on certain scenarios (e.g. dead shelf recovery), and artificially reduced DPT capacity.

### 2. Trunk OM anomalies

DPT OMs are both unlike regular trunk OMs and sometimes quite similar also. This “split personality” has led to issues both with documentation and behavior.

### 1.2.1 Counter drift

Any changes made by this activity to handle counter drift will be visible in greater accuracy of the OMs described in the next section of this document.

### 1.2.2 Trunk OM anomalies

The changes made by this activity to the OMs TRK, DPTOFC, and DPTNODE are behavioral and/or documentation clarifications:

- No new OMs are introduced by this activity.
- No new registers are introduced by this activity.
- No existing OMs are removed by this activity.
- No existing registers are removed by this activity.

### 1.2.3 Behavioral Changes

#### 1.2.3.1 OMs DPTOFC and DPTNODE

For registers DPTNODE::DPTGTAT and DPTOFC::DPGTAT/DPGTAT2 the “attempts” counted at the nodal level exclude failed optimization attempts whereas the office level OM includes them. The pegging of these registers will be changed such that both the nodal level and the office level are counted at the same point (except in cases where the code exits prior to knowing a particular node).

The DPTOFC::DPGTFLO/DPGTFLO2 registers & DPTNODE::DPTGTFLO registers will be changed such that failed optimized attempts on nodes “not DPT-enabled” are not pegged against these registers.

The changes described here will also change the corresponding registers in the DPTOFCP OM.

### 1.2.3.2 OM TRK

Register MAXBU is effectively disabled for DPT trunk groups. The value of the MAXBU register for a DPT trunk group will always be equal to zero.

The MAXBU register was designed to be used with non-DPT trunks. The DPTOFC and DPTNODE usage registers and high water registers are directly applicable to DPT trunks and should be used in the place of the MAXBU register.

This change was sourced in the SN07 stream by CR Q00868638.

## 1.2.4 Documentation Clarification

### 1.2.4.1 OM - DPTOFC

Customers have requested that the documented descriptions of the DPTOFC and DPTNODE OMs be clarified. The CR Q00881441, states “*Customer would like better explanation or data to reflect exactly what we are trying to determine with this field*”, i.e., the DPTNODE OM register DPTHWT. As well, Nortel employees have noted that the documentation is confusing for these OMs, especially the high water registers.

The intent of this activity is to increase the accuracy of the DPT OMs and to rewrite the customer facing documentation for OM DPTOFC and OM DPTNODE. To help understand the DPT OMs the following definitions are provided:

#### 1.2.4.1.1 Definitions

- optimized

In the context of the DPT OMs this means “occurring on the same device”. An “optimized” attempt is an attempt to get a TID from the same device (where “device” is an MG4K, DPT SPM, or DPT GWC) that hosts the other agent in the call.

- non-optimized

A “get” attempt not constrained to be on the same device (where “device” is an MG4K, DPT SPM, or DPT GWC).

- port depletion

The exhaustion of the DPT terminal pool, because the DPT SOC limit on usable DPT tids has been exceeded.

- cpb

The number of terminals that are call processing busy.

— cpd

The number of terminals that are call processing deloaded. Where CPD is a terminal that is CPB on a device that is no longer in service, such as, during an upgrade.

The DPTOFC OM provides information for the entire office and is composed of the registers described in “Table 1 OM - DPTOFC” shown below.

**Table 1 OM - DPTOFC**

| Register | Extension Register | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DPGTAT   | DPGTAT2            | <p>The number of attempts to get a DPT Terminal.</p> <p>This is an incremental register. The register is pegged every time an attempt to get a DPT terminal is made within a given transfer period.</p> <p>For a typical SIPT call the number of pegs is in the range of 1 peg per DPT agent per call.</p> <p>For a typical BICC<sup>a</sup> call the number of pegs is in the range of 1 to 3 pegs per DPT agent per call.</p>                                                                                                                                                                                                |
| DPGTFL   | DPGTFL2            | <p>The number of attempts to get a DPT Terminal that failed (non-optimized).</p> <p>This is an incremental register. The register is pegged every time an attempt to get a <i>non-optimized</i> DPT terminal fails within a given transfer period.</p>                                                                                                                                                                                                                                                                                                                                                                         |
| DPUSAG   | DPUSAG2            | <p>The number of DPT Terminals in use.</p> <p>This is an accumulator register. The register is pegged every one-hundred seconds within a given transfer period.</p> <p>The formula used for calculating the usage is as follows:</p> $\text{current\_usage} = (\text{current\_cpb} + \text{current\_cpd})$ $\text{usage\_om} = \text{usage\_om} + \text{current\_usage}$ <p>Since this register is an accumulator and is added to itself the register can be misleading.</p> <p>To interpret the usage register divide the value by the number of slow samples to determine the average usage for a given transfer period.</p> |

Table 1 OM - DPTOFC

| Register | Extension Register | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DPGTFLO  | DPGTFLO2           | <p>The number of attempts to get a DPT Terminal that failed (optimized).</p> <p>This is an incremental register. The register is pegged every time an attempt to get an <i>optimized</i> DPT terminal fails within a given transfer period.</p> <p>Optimized failure attempts on nodes “not DPT-enabled” are not pegged against this register.</p> <p>Pegs to this register do not signify call failures. The optimized failure attempt to get an optimized terminal is immediately followed by an attempt to get a non-optimized terminal instead.</p> |
| DPHWT    | DPHWT2             | <p>The high water mark for number of DPT Terminals in use.</p> <p>This register is pegged every ten seconds within a given transfer period.</p> <p>The formula used for calculating high water mark is as follows:</p> <pre> current_usage = (current_cpb + current_cpd) <b>if</b> current_usage &gt; high_water_mark_om <b>then</b>     high_water_mark_om = current_usage <b>else</b>     register is <i>NOT</i> updated <b>endif</b> </pre>                                                                                                          |
| DPDPL    | DPDPL2             | <p>The number of attempts to get a DPT Terminal that failed due to port depletion.</p> <p>This is an incremental register. The register is pegged every time an attempt to get a DPT terminal fails due to port depletion within a given transfer period.</p>                                                                                                                                                                                                                                                                                           |

a. For further information about BICC OMs see the FN of A89007299 in PLS FM-DOC.

### 1.2.5 Considerations

When using a customer defined long duration OM by using a customer defined “accumulating” class (rather than the active or holding class) the meaning of the high water registers (DPHWT/DPHWT2) changes. In this case the value of the high water mark is only valid when divided by the number of transfer periods within the duration of the long duration OM. The result of which is the *average* high water mark for the long term duration. For example, if we define a “weekly” long duration class, with 15 minutes transfer periods, we would need to divide the high water mark by 672 [(7days \* 24 hours \* 60 minutes)/15 minute transfer period].

**Note:** It is recommended that the DPTOFC/DPTOFCP/DPTNODE high water registers **not** be used in conjunction with long duration “accumulating” OMs. For more information on “accumulating” registers see NTP 297-1001-300, Section 1, Understanding the Operational Measurement System, sub section Measurement Classes, pg 1-9, v 03.08, May 2000.

Figure 1 below shows an example of the DPTOFC OM.

**Figure 1 OM DPTOFC**

|                                                               |         |         |          |   |
|---------------------------------------------------------------|---------|---------|----------|---|
| >omshow dptofc holding                                        |         |         |          |   |
| DPTOFC                                                        |         |         |          |   |
| CLASS: HOLDING                                                |         |         |          |   |
| START:2004/06/30 17:30:00 WED; STOP: 2004/06/30 18:00:00 WED; |         |         |          |   |
| SLOWSAMPLES: 18 ; FASTSAMPLES: 180 ;                          |         |         |          |   |
| DPGTAT                                                        | DPGTAT2 | DPGTFL  | DPGTFL2  |   |
| DPUSAG                                                        | DPUSAG2 | DPGTFLO | DPGTFLO2 |   |
| DPHWT                                                         | DPHWT2  | DPDPL   | DPDPL2   |   |
| 0                                                             | 0       | 0       | 0        | 0 |
|                                                               | 0       | 0       | 0        | 0 |
|                                                               | 0       | 0       | 0        | 0 |

### 1.2.5.1 OM - DPTNODE

The DPTNODE OM provides information per DPT node. Each is composed of the registers described in “Table 2 OM - DPTNODE”

**Table 2 OM - DPTNODE**

| Register | Extension Register | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DPTGTAT  | DPTGTAT2           | <p>The number of attempts to get a DPT Terminal for a particular DPT node.</p> <p>This is an incremental register. The register is pegged every time an attempt to get a DPT terminal is made within a given transfer period.</p> <p>For a typical SIPT call the number of pegs is in the range of 1 peg per DPT agent per call.</p> <p>For a typical BICC<sup>a</sup> call the number of pegs is in the range of 1 to 3 pegs per DPT agent per call.</p>                                                                                                                                                                                                |
| DPTGTFL  | n/a                | <p>The number of attempts to get a DPT Terminal that failed (non-optimized) for a particular DPT node.</p> <p>This is an incremental register. The register is pegged every time an attempt to get a <i>non-optimized</i> DPT terminal fails within a given transfer period.</p>                                                                                                                                                                                                                                                                                                                                                                         |
| DPTUSAG  | DPTUSAG2           | <p>The number of DPT Terminals in use for a particular DPT node.</p> <p>This is an accumulator register. The register is pegged every one-hundred seconds within a given transfer period.</p> <p>The formula used for calculating the usage is as follows:</p> $\text{current\_usage} = (\text{current\_cpb} + \text{current\_cpd})$ $\text{usage\_om} = \text{usage\_om} + \text{current\_usage}$ <p>Since this register is an accumulator and is added to itself the register can be misleading.</p> <p>To interpret the usage register divide the value by the number of slow samples to determine the average usage for a given transfer period.</p> |

Table 2 OM - DPTNODE

| Register | Extension Register | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DPTGTFLO | n/a                | <p>The number of attempts to get a DPT Terminal that failed (optimized) for a particular DPT node.</p> <p>This is an incremental register. The register is pegged every time an attempt to get an <i>optimized</i> DPT terminal fails within a given transfer period.</p> <p>Optimized failure attempts on nodes “not DPT-enabled” are not pegged against this register.</p> <p>Pegs to this register do not signify call failures. The optimized failure attempt to get an optimized terminal is immediately followed by an attempt to get a non-optimized terminal instead.</p> |
| DPTHWT   | n/a                | <p>The high water mark for number of DPT Terminals in use for a particular DPT node.</p> <p>This register is pegged every ten seconds within a given transfer period.</p> <p>The formula used for calculating high water mark is as follows:</p> <pre> current_usage = (current_cpb + current_cpd) <b>if</b> current_usage &gt; high_water_mark_om <b>then</b>     high_water_mark_om = current_usage <b>else</b>     register is <i>NOT</i> updated <b>endif</b> </pre>                                                                                                          |

a. For further information about BICC OMs see the FN of A89007299 in PLS FM-DOC.

Figure 2 below shows an example of the DPTNODE OM.

**Figure 2 OM DPTNODE**

```

>omshow dptnode holding
DPTNODE
CLASS: HOLDING
START:2004/06/30 17:30:00 WED; STOP: 2004/06/30 18:00:00 WED;
SLOWSAMPLES: 18 ; FASTSAMPLES: 180 ;
 INFO (DPT_NODE_OM_PM_INFO)
 DPTGTAT DPTGTAT2 DPTGTFL DPTGTFL0
 DPTUSAG DPTUSAG2 DPTHWT
0 GWC 4 83
 0 0 0 0
 0 0 0 0

```

**1.3 Hardware Requirements or Dependencies**

None.

**1.4 Software Requirements or Dependencies**

None.

**1.5 Limitations and restrictions**

None.

**1.6 Interactions**

None.

**1.7 Applicable customer facing sections**

Fault Management

Logs \_\_\_\_\_

Alarms \_\_\_\_\_

Configuration

Data Schema \_\_\_\_\_

User Interface \_\_\_\_\_

Element Management \_\_\_\_\_

Security \_\_\_\_\_

Service Order \_\_\_\_\_

Office Parameters \_\_\_\_\_

Accounting (includes AMA billing) \_\_\_\_\_

Performance (includes operational measurements)   X<sup>2</sup>



## 1.8 Glossary

| Term | Description             |
|------|-------------------------|
| DPT  | Dynamic Packet Trunk    |
| OM   | Operational Measurement |

### *Product = CS 2000*

## A00007243--Prevent Outage when CEM flash has not been erased

### 1.1 Applicable Solution(s)

PT-AAL1

### 1.2 Functional Description

CSR.Q00854598 reported an outage in the field, where a CEM card without erasing Flash from one SPM was inserted into another SPM. When the newly inserted CEM card tried recover to in-service, another in-service CEM present in SPM from which the CEM card was originally removed went down leading to an outage on that SPM. This occurred due to duplicate IP addressing causing the message to reach the incorrect CEM unit resulting in that unit being brought down.

This feature will ensure that when a CEM card is being inserted into a MG4K node, no other MG4K nodes in the office experience an outage due to this card insertion. This feature is applicable only for MG4K variant of the SPM.

When a CEM card is being inserted into a MG4K node, CEM card replacement MOP (Method of Procedure) for MG4K SPMs should be followed as described in the NTP document (NN10076-911 Title: **MG4000 Fault Management**).

If the MOP is not followed (either Flash is not erased or MAC address is not modified), it could lead to duplicate IP addressing and incorrect messaging between MG4K nodes. This incorrect addressing can cause an outage on another MG4K nodes in the office.

---

2. There is no performance section within this document since there are no visible changes to the OMs. However, the changes documented in this FN need to be propagated into any customer visible documentation that describes these OMs. The DPT OMs were originally defined in PLS FMDOC A59015752.

This activity in SN08 ensures that when a CEM card is being re-seated there is no outage on other MG4K nodes under following scenarios where CEM cards can obtain wrong IP addresses-

- a) the CEM's flash was not erased and the MAC address is wrong in Table MNCKTPAK
- b) the CEM's flash was not erased and the fiber cable had not been plugged in prior to insertion
- c) the CEM's flash was not erased and the WAN is slow to provide connectivity to the Call Server

*Note: This feature is only a best effort to prevent outage on another MG4K nodes in the office in case a CEM card is replaced without changing MAC in table MNCKTPAK or Flash is not erased. This feature does not replace the documented MOP to replace a CEM card in MG4K node. The MOP must be followed for all card replacements.*

The feature supports the following scenarios when a CEM card is being re-seated or replaced -

### **1.2.1 CEM card replaced in BootP suppressed node with Mate CEM available**

In a Bootp suppressed node MAC address is not used to provide node addressing information to the CEM unit. Node addressing information is provided by Mate CEM.

#### **1.2.1.1 MAC address of CEM card is not present in table MNCKTPAK**

- a. Once the CEM card is replaced Mate CEM initiates recovery and tries to recover the CEM card by mateloading.
- b. If the Mate recovery fails and load in flash is valid and not corrupt then the CEM card will recover by autoboot.
- c. RTS command takes the CEM card to ISTb state. MAP response to RTS command indicates MAC address mismatch.
- d. SPM313 log on the Call Server and NODE 300 log in SPM AER buffer are generated to indicate MAC address mismatch.
- e. QueryPM flt reason command displays MAC mismatch as non-critical fault on the CEM.
- f. Craftsperson should change the MAC address in table MNCKTPAK to contain the CEM MAC address as per NTP - **NN10076-911**

**1.2.1.2 MAC address of CEM card present in table MNCKTPAK but against a different MG4K node**

The result is same as mentioned in “MAC address of CEM card is not present in table MNCKTPAK” on page 813.

**1.2.1.3 MAC address of CEM card properly datafilled in table MNCKTPAK**

- a. As MAC address is correctly datafilled there will not be any NODE300 or SPM313 log.
- b. If no other faults are raised on the CEM then it recovers INSV state when RTS command is issued

**1.2.2 CEM card replaced in BootP suppressed node with Mate CEM not available**

The CEM card will not be provided with correct node addressing information as the Mate CEM is not available. The CEM card will not be able to recover to in-service due to incorrect node addressing. LCI shall be used to provide node addressing and load information to recover the CEM card to INSV. This feature will prevent outages on other CEM units due to incorrect node addressing information during this scenario.

**1.2.2.1 MAC address of CEM card is not present in table MNCKTPAK**

- a. If the load in flash is valid and not corrupt then it will autoboot from Flash.
- b. Since Node addressing information is incorrect it will not recover to INSV.
- c. CEM stays in SysB state till LCI is used to recover it.
- d. No outage will occur on other CEM units in the office due to incorrect node addressing.

**1.2.2.2 MAC address of CEM card present in table MNCKTPAK but against a different MG4K node**

The result is same as mentioned in “MAC address of CEM card is not present in table MNCKTPAK” on page 814.

**1.2.2.3 MAC address of CEM card properly datafilled in table MNCKTPAK**

- a. If the load in flash is valid and not corrupt then it will autoboot from Flash.
- b. Since node addressing information is correct, it will recover to INSV state.
- c. There will not be any NODE300/SPM313 log.

### **1.2.3 CEM card replaced in Non-BootP suppressed node with Mate CEM available**

#### **1.2.3.1 MAC address of CEM card is not present in table MNCKTPAK**

- a. BootP reply will not be sent by the Call Server.
- b. BOOT201 log will be generated to indicate that MAC address to IP address mapping could not be found.
- c. The node addressing information is provided by the Mate CEM.
- d. The CEM card recovers through mate loading.
- e. If Mate recovery fails then it tries to recover through autoboot.
- f. RTS command takes the CEM card to ISTb state. MAP response to RTS command indicates MAC address mismatch.
- g. SPM313 log on the Call Server and NODE 300 log in SPM AER buffer are generated to indicate MAC address mismatch.
- h. QueryPM flt reason command displays MAC mismatch as non-critical fault on the CEM.
- i. Craftsperson should change the MAC address in table MNCKTPAK to contain the CEM MAC address as per NTP - **NN10076-911**

#### **1.2.3.2 MAC address of CEM card present in table MNCKTPAK but against a different MG4K node**

- a. QUNI the CEM unit on which the BootP request is made. Reject the BootP request if the CEM unit is in software and accept the BootP request if the CEM unit is in firmware.
- b. If BootP request is rejected, a BOOT201 log will be generated if permission denial exceeds throttle number to indicate that BootP request was denied permission.
- c. Allow the CEM unit at firmware to recover through BootP.
- d. For the CEM card being replaced the node addressing information is provided by the Mate CEM.
- e. The CEM card recovers through Mate loading.
- f. If Mate loading fails then Unit tries to recover through autoboot.
- g. RTS command takes the CEM card to ISTb state. MAP response to RTS command indicates MAC address mismatch.
- h. SPM313 log on the Call Server and NODE 300 log in SPM AER buffer are generated to indicate MAC address mismatch.
- i. QueryPM flt reason command displays MAC mismatch as non-critical fault on the CEM.

- j. Craftsperson should change the MAC address in table MNCKTPAK to contain the CEM MAC address as per NTP - NN10076-911

#### **1.2.3.3 MAC address of CEM card properly datafilled in table MNCKTPAK**

The CEM card will recover to service either through BootP framework or through the Mate CEM with autonomous mate loading based on which request (BootP request or Mate Fallen signal) is processed first on the Call Server.

### **1.2.4 CEM card replaced in Non-BootP suppressed node with Mate CEM not available**

#### **1.2.4.1 MAC address of CEM card is not present in table MNCKTPAK**

- a. BootP reply will not be sent by the Call Server.
- b. BOOT201 log will be generated to indicate that MAC address to IP address mapping could not be found.
- c. The CEM card will autoboot from Flash but cannot recover to in-service since it does not have the correct node addressing information.
- d. This incorrect node addressing will not result in an outage of another MG4K node in the office.
- e. CEM will be recovered by correcting the MAC address in datafill as per NTP - NN10076-911.

#### **1.2.4.2 MAC address of CEM card present in table MNCKTPAK but against a different MG4K node**

- a. QUNI the CEM unit on which the BootP request is made. Reject the BootP request if the CEM unit is in software and accept the BootP request if the CEM unit is in firmware.
- b. If BootP request is rejected, a BOOT201 log will be generated if permission denial exceeds throttle number to indicate that BootP request was denied permission.
- c. Allow the CEM unit at firmware to recover through BootP.
- d. BootP reply will not reach the CEM card that is replaced.
- e. The CEM card will autoboot from Flash but cannot recover to in-service since it does not have the correct node addressing information.
- f. This incorrect node addressing will not result in an outage of another MG4K node in the office.
- g. CEM will be recovered by correcting the MAC address in datafill as per NTP - NN10076-911.

### 1.2.4.3 MAC address of CEM card properly datafilled in table MNCKTPAK

The CEM card will send a BootP request. QUNI the CEM card when the BootP request is made, if the card is at firmware then accept the request. Node address and load information is provided by BootP framework and the CEM card recovers to in-service.

This feature provides the functionality to detect MAC address mismatch between datafilled value in table MNCKTPAK and actual MAC address of the CEM card. A SPM 313 log on the Call Server and a NODE 300 log on the CEM is generated when the MAC address mismatch is detected.

RTS operation on the CEM card will take the CEM to ISTB state immediately if a MAC address mismatch is present followed by a response to MAP to indicate the reason as MAC mismatch. QUERYPM FLT REASON is enhanced to display MAC address mismatch.

## 1.3 Hardware Requirements or Dependencies

None.

## 1.4 Software Requirements or Dependencies

This functionality needs SN08 loads on the Call Server and MG4K21 CEM loads on MG4K SPMs.

## 1.5 Limitations and restrictions

- a. This functionality is applicable only on MG4K nodes.
- b. LCI shall be used for provisioning node address and load information during simultaneous replacement of both CEM cards or during initial commissioning.
- c. Whenever MAC mismatch is found please refer NTP document (NN10076-911 MG4000 Fault Management) for steps to correct the mismatch.
- d. When a MAC address mismatch is found on a CEM card, no maintenance operations on that CEM should **not be performed**. Due to MAC address mismatch, the command could cause an outage on another CEM unit in the office. MAC address mismatch must be first corrected before any maintenance operations are performed.

## 1.6 Interactions

None.

## 1.7 Glossary

| Term | Description           |
|------|-----------------------|
| CEM  | Common Element Module |

| Term     | Description               |
|----------|---------------------------|
| MG4K     | Media Gateway 4000 (SSPM) |
| LCI      | Local Craft Interface     |
| BootP    | Bootstrap Protocol        |
| MNCKTPAK | Managed Node Circuit Pack |
| ISTB     | InService Trouble state   |
| MOP      | Method Of Procedure       |
| MAC      | Media Access Control      |

## 1.8 References

- a. *NN10076-911 Title: MG4000 Fault Management Ver:6.2* (NTP document for replacing CEM card in MG4K node)

## *Fault Management for A00007243*

### 2.1 Fault management strategy

Feature Name: A00007243 - *Prevent Outage when CEM flash has not been erased*, uses Logs to report MAC mismatches on a CEM CPK in MG4K SPM. MAC mismatch detects difference between the MAC address datafilled in table MNCKTPAK and the actual MAC address of the physical card.

Note that this feature is applicable only for the MG4K SPMs. No new Logs are introduced by this feature. Existing SPM313, NODE300 logs are modified to report the MAC mismatch. INM959 is modified to report the unexpected Snego reply on CEM.

### 2.2 Fault management tools and utilities

Not Applicable.

### 2.3 Logs: SPM313

Log Title/Log ID: SPM313

#### 2.3.1 Formats

The Format for the SPM 313 log is as shown below in the example. This feature adds new Reason for the MAC address mismatch but format of the log is not changed.

Figure 1 SPM 313 log for MAC mismatch

```
<switch_name> ** SPM313 AUG07 03:31:07 9500 TBL Fault
SPM 5 CEM 1 : I Time: 03:31:07.525
Source: None State: Insv Type: None
Reason: CPK MAC address doesn't match prov.data.
Diagnostic: Autonomous fault detection
Comp:MCM RegAddr:0 Exp:0 Act:0
```

### 2.3.2 Explanation

Description: SPM313 log is generated, when TBL fault is detected. MAC mismatch is type of TBL fault, hence SPM313 will be generated when MAC mismatch is detected. SPM shows a Non-Critical fault. QueryPM flt reason command can be used to query the faults on SPM. SPM313 is part of TBL event reporting. Log reason reports mismatch trouble on the CEM CPK.

SPM313 log shall be generated periodically till the MAC mismatch is corrected by craft by changing table MNCKTPAK datafill. It shall display the actual CEM MAC address.

### 2.3.3 Action

Craft has to check the TBL reason and take corrective action. In this case change the MAC datafill in table MNCKTPAK to match with that on the physical card. The steps to change MAC address in table MNCKTPAK are mentioned in NTP document - **NN10076-911 Title: MG4000 Fault Management**.

### 2.3.4 Associated Operational Measurements or Performance Measurements

None.

### 2.3.5 Additional information

None.

## 2.4 Alarms

Not Applicable.

## 2.5 Related documentation

- a. *NN10076-911 Title: MG4000 Fault Management Ver:6.2* (NTP document for replacing CEM card in MG4K node)



## ***Configuration for A00007243***

### **3.1 Hardware and Software Requirements**

The functionality requires SN08 on the core with MG4K21 on MG4K nodes.

### **3.2 Initial Configuration**

Not Applicable.

### **3.3 Office/Subnet parameters (OP/SP) (CM & SESM)**

Not Applicable

### **3.4 Upgrade Considerations**

Not Applicable

### **3.5 Data schema (DS) (CM, MIBS, RDB)**

Not Applicable

### **3.6 Service Orders (SO) (CM & SESM)**

Not Applicable

### **3.7 Element Management**

Not Applicable

### **3.8 User interface changes**

#### **3.8.1 Directory: SPMDIR**

This feature changes a command response in the SPMDIR directory, but does not modify the directory itself.

##### **3.8.1.1 Directory description**

The commands in this directory help operating company personnel to operate and maintain the Spectrum Peripheral Module (SPM) at the node level.

##### **3.8.1.2 Accessing directory:**

###### **3.8.1.2.1 Access to directory or MAP level and return to CI**

To access the SPMDIR level from the CI environment, type:

```
>MAPCI;MTC;PM;POST SPM <node_no>
```

or

```
>MAPCI;MTC;PM;POST SPM <SPMNo> (0 to max.spm_no.)
```

or

```
>MAPCI;MTC;PM;POST SPM all
```

This is an example of entering the command:

```
>MAPCI;MTC;PM;POST SPM 0
```

To return to the CI environment, type:  
>QUIT ALL

or

>QUIT MAPCI

### 3.8.2 Command: QueryPM

#### 3.8.2.1 Command type: Listed MENU

#### 3.8.2.2 Command target: All

#### 3.8.2.3 Command availability: RES

#### 3.8.2.4 Command description

The QueryPM command displays miscellaneous information about the SPM, such as the shelf number, slot number, unit number, state and activity status for all the datafilled modules (such as CEM, DSP, VSP, OC3, ATM, SYNCRM, IEM, STM or DLC). This command applies to DMS Call Processing (DMSCP), Inter-working (IW) and Media Gateway 4000 (MG4K) class variants but enhancement is specific to MG4K nodes.

The QueryPM command has an optional parameter, OPTION to display the fault and load information of the currently posted SPM and all its devices. The OPTION parameter has two possible values: FLT and FILES. The optional parameter REASON for the FLT option value displays the reasons for the ISTB/SYSB state of the Resource Modules (RMs) of the posted SPM.

#### 3.8.2.5 Command syntax

The command syntax is as shown below.

**Figure 2 SPM QueryPM command syntax**

```
QueryPM: Display miscellaneous information about the PM.
Parms: [<OPTION> {FLT [<REASON> {REASON}]
 [<POSTSET> {All}],
 FILES}]
```

**Table 3 QueryPM command parameters and variables**

| Command                  | Parameters and variables                                                |
|--------------------------|-------------------------------------------------------------------------|
| QueryPM                  | [<OPTION> { FLT<br>[<REASON> {REASON}]<br>[<POSTSET> {All}],<br>FILES}] |
| Parameters and variables | Description                                                             |

**Table 3 QueryPM command parameters and variables**

| Command        | Parameters and variables                                                                                                                                                                                                                                                                                             |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FLT            | Fault (optional). This command provides a list of devices, on the posted SPM, that are currently reporting a fault (FLT) condition.                                                                                                                                                                                  |
| FLT REASON     | Fault Reason (optional). This command provides the reasons for the ISTB/SYSB state of the devices on the posted SPM.                                                                                                                                                                                                 |
| FLT ALL        | Fault All (optional). This command provides a list of devices, on all the posted SPMs that are currently reporting a fault condition regardless of the SPM currently displayed on the MAP.                                                                                                                           |
| FLT REASON ALL | Fault Reason All (optional). This command provides the reasons for the ISTB/SYSB states of devices, on all the posted SPMs regardless of the SPM currently displayed on the MAP.                                                                                                                                     |
| FILES          | Files (optional). This command displays the default load names and the currently running loads in all devices on the posted SPM. It also displays the Flash Loader's load file for each device that supports Flash Loader functionality. Additionally, it displays the image file for each device on the posted SPM. |

### 3.8.2.6 Qualifications and warnings

No warnings are displayed.

### 3.8.2.7 Responses

Neither the QueryPM command nor any of its options have required parameters; therefore, the user is never prompted for additional information when issuing any variant of the QueryPM command.

In all cases, the QueryPM options either output the data requested or output a message stating that the data are unavailable.

The following is enhanced response provided by this activity for MG4K nodes.

### 3.8.2.7.1 QUERYPM FLT REASON request response - when unit/device state is ISTB/SYSB

**Table 4 MAP outputs with associated meanings and actions**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Command</b><br>>MAPCI;MTC;PM; POST SPM <SPMNo><br>>QUERYPM FLT REASON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| CEM 0 ISTb NonCritical faults:<br><br><b>Board: CPK MAC address doesn't match prov.data. [SPM313].</b><br><br><b>Meaning:</b><br>The response means that MAC address of the CEM card does not match the datafill in table MNCKTPAK for that CEM card.<br><br>This new response has been added to QUERYPM FLT REASON command and is only for the CEM card of MG4K variant of the SPM.<br><br><b>System actions:</b><br><br>N/A<br><br><b>User actions:</b><br><br>Change the datafill in table MNCKTPAK to match the MAC address of the physical CEM card. |

### 3.8.2.8 Example

**Table 5 Usage examples for QueryPM flt reason command**

|                           |                                                                                                                                                                                                                                                                               |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description of task       | Querying Flt reason on an SPM/s.                                                                                                                                                                                                                                              |
| Command:<br>MAP response: | QueryPM flt reason<br><br><b>Board: CPK MAC doesn't match prov.data. [SPM313].</b> It shows that MAC datafill mismatch between physical card and MNCKTPAK datafill. Craft has to change the datafilled MAC to match MAC on physical card. Check SPM 313 log for more details. |

### 3.8.3 Directory: CEMDIR

This feature changes a command response in the CEMDIR directory, but does not modify the directory itself.

### 3.8.3.1 Directory description

The commands in this directory help operating company personnel to operate and maintain the CEM at the node level.

### 3.8.3.2 Accessing directory:

#### 3.8.3.2.1 Access to directory or MAP level and return to CI

To access the CEMDIR level from the CI environment, type:

```
>MAPCI;MTC;PM;POST SPM <node_no>;SELECT CEM <CEMNo>
```

This is an example of entering the command:

```
>MAPCI;MTC;PM;POST SPM 0; select cem 0
```

To return to the CI environment, type:

```
>QUIT ALL
```

or

```
>QUIT MAPCI
```

## 3.8.4 Command: RTS

### 3.8.4.1 Command type: Listed MENU

### 3.8.4.2 Command target: All

### 3.8.4.3 Command availability: RES

### 3.8.4.4 Command description

RTS command tries bring an MANB CEM running S/W to INSV state. RTS is available at the CEM MAP level. This command applies to DMS Call Processing (DMSCP), Inter-working (IW) and Media Gateway 4000 (MG4K) class variants.

### 3.8.4.5 Command syntax

The command syntax is as shown below.

**Figure 3 RTS command syntax**

```
RTS: Return the selected CEM to Service.
ALL option applies to all the selected CEMs (one or both).
Parms: [<All> {ALL}]
 [<Force> {FORCE}]
 [<Prompt> {NOPROMPT}]
 [<Options> {NOWAIT,
 NOREPLY}]
```

**Table 6 RTS command parameters and variables**

| Command                  | Parameters and variables                                                                                                            |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| RTS                      | <pre>[&lt;All&gt; {ALL}] [&lt;Force&gt; {FORCE}] [&lt;Prompt&gt; {NOPROMPT}] [&lt;Options&gt; {NOWAIT,              NOREPLY}]</pre> |
| Parameters and variables | Description                                                                                                                         |
| ALL                      | The ALL option will attempt to bring all the both CEMs of SPM to INSV state from a MANB (manual busy) state.                        |
| FORCE                    | Indicates that user wishes to override warnings, if any, during RTS.                                                                |
| NOPROMPT                 | Indicates that user does not wish any Yes/No prompting messages to be displayed. Response to prompts defaults to "Yes".             |
| NOWAIT                   | Indicates that user does not wish to wait for the command response.                                                                 |
| NOREPLY                  | Indicates that user does not desire a response from the map on execution of the command.                                            |

**3.8.4.6 Qualifications and warnings**

No warnings are displayed.

**3.8.4.7 Responses**

If RTS fails change CEM to INSV/ISTb state then on the MAP it displays reason for failure of the RTS command but enhancement is specific to MG4K nodes.

The following is enhanced response provided by this activity for MG4K nodes.

### 3.8.4.7.1 RTS request response - when unit/device state is MANB

**Table 7 MAP outputs with associated meanings and actions**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Command</b><br><br>>MAPCI;MTC;PM; POST SPM <SPMNo>;SELECT CEM <CEMNo><br><br>>RTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Request has been submitted.</b><br><br><b>Command completed. The state is now ISTb.</b><br><br><b>CPK MAC address doesn't match prov.data. Please update table MNCKTPAK to match physical MAC address.</b><br><br><b>Meaning:</b><br><br>Mismatch between MAC datafilled and actual MAC on the card. Change the datafill in MNCKTPAK to match the MAC address of the physical CEM card.<br><br><b>System actions:</b><br><br>N/A<br><br><b>User actions:</b><br><br>Change the datafill in table MNCKTPAK to match the MAC address of the physical CEM card. |

### 3.8.4.8 Example

**Table 8 Usage examples for RTS command**

|                           |                                                                                                                                                                                                                                                                                                                |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description of task       | Change CEM state to INSV from MANB.                                                                                                                                                                                                                                                                            |
| Command:<br>MAP response: | RTS<br><br><b>CPK MAC address doesn't match prov.data. Please update table MNCKTPAK to match physical MAC address.</b><br><br>Indicates that MAC mismatch exists between physical card MAC and MNCKTPAK datafill. Craft has to update MAC datafill in table MNCKTPAK so that it matches with the physical MAC. |

## 3.9 OSSGate Interface Changes

Not Applicable

## 3.10 Security

Not Applicable

## 3.11 Configuration Walkthrough

Not Applicable

***Product = CS 2000***

## **A00007250--ACDMIS over TCP**

### **1.1 Applicable Solution(s)**

DMS

### **1.2 Functional Description**

The ACDMIS feature provides informational ACD messaging concerning ACD events that are occurring on the DMS-100/CS2K to a downstream processor (DSP). Currently, the ACDMIS connectivity between the DMS-100/CS2K and DSP is via an X.25 link that is implemented on the DMS-100/CS2K through an MPC (Multi-Protocol Controller) card in the IOC (Input-Output Controller) module using X.25 protocol.

This SN08 activity will implement the necessary changes to enable the transport of ACDMIS messaging over TCP/IP to a DSP. The new TCP/IP transport will be in addition to the X.25 transport that already exists. The new TCP/IP transport will interface to the ethernet network via the EIU (Ethernet Interface Unit) or via the ethernet port that resides on a Call Agent card for the CS2KCompact.

#### **1.2.1 Functional Overview**

The ACDMIS link is a messaging interface provided by the DMS-100//CS2K to the host MIS computer (or DSP). The information carried across the messaging link allows ACD applications running on the DMS-100/CS2K to communicate with MIS applications running on the host computer. The two-way information flow allows the DMS and host computer to provide enhanced services to an ACD customer.

This feature will provide an ACDMIS link between the switch and the host computer using the TCP/IP protocol via EIU or Call Agent card that uses port 2700. This TCP/IP link may be used as an alternative to the X.25 MPC ACDMIS link. The transport (TCP/IP vs. MPC X.25) used is transparent to any application using the ACDMIS link to communicate with a host computer.

The functional areas of the feature are:

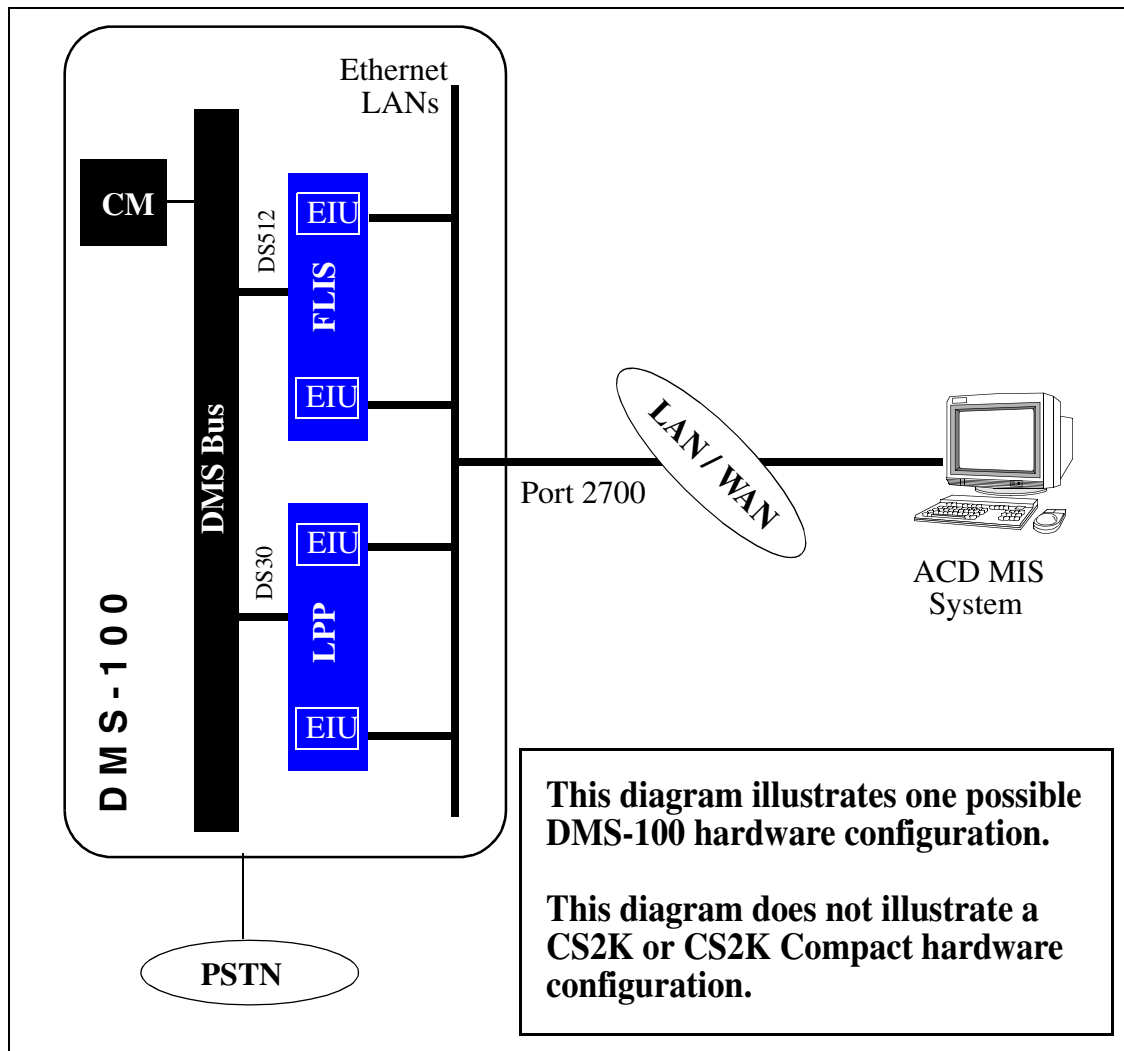


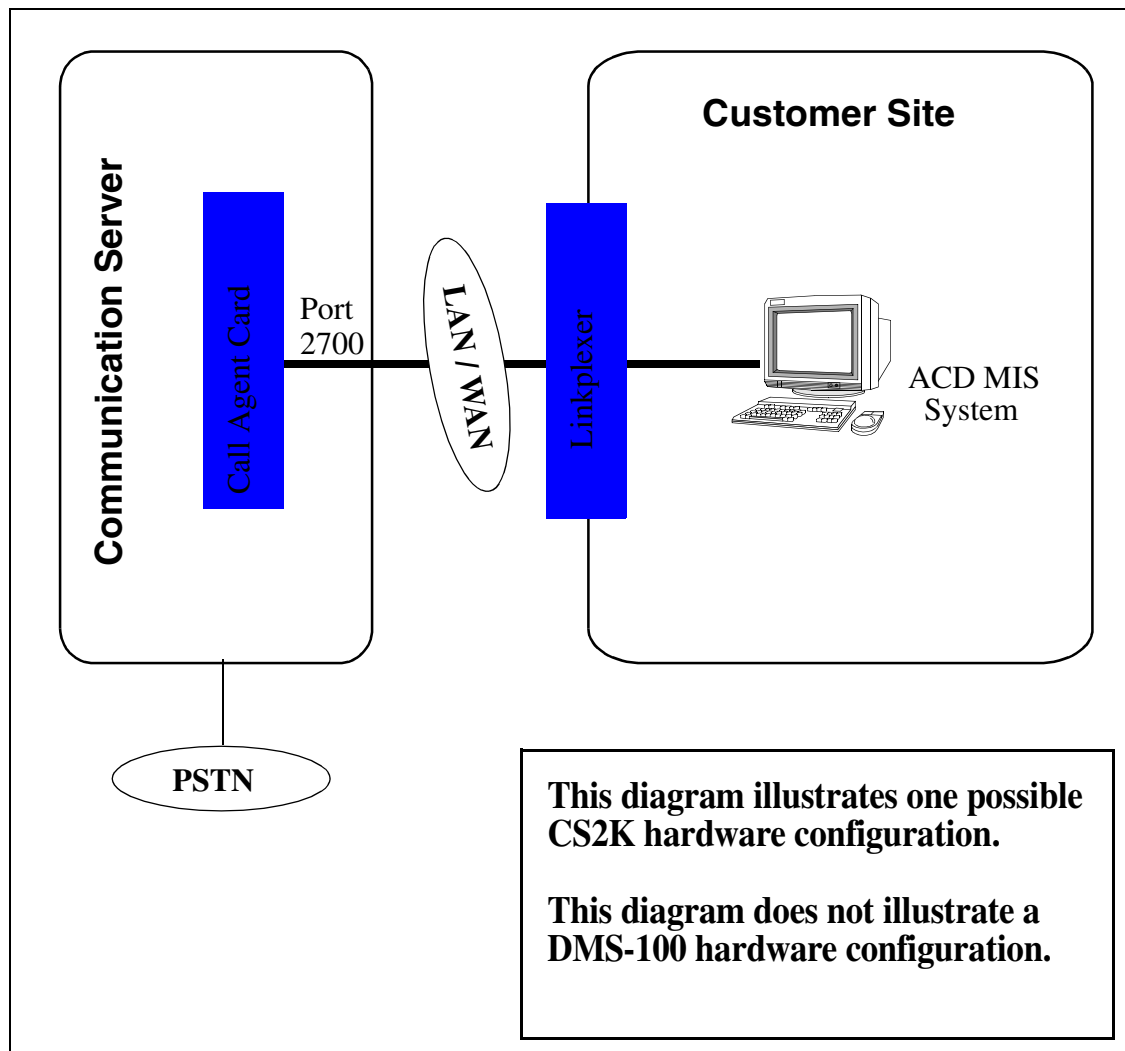
- **TCP/IP transport:** TCP/IP connectivity between the DMS-100/CS2K and the remote DSP through the EIU or Call Agent card on the switch and network access.
- **Table Control:** ACDMIS link datafill to support either X.25 or TCP/IP transport via the ACDMISPL table.
- **Operational Measurements:** There are no functional changes as a result of this feature however, existing ACDMIS OMs will be updated / pegged as necessary.

### 1.2.2 Hardware

The X.25 protocol is currently available on the DMS using the Multi-Protocol Controller (MPC 1X89AA/BA card). The MPC is downloadable input/output device that resides on a DMS I/O Controller (IOC) shelf. The MPC has two programmable data communication links. The MPC accomplishes real time savings in the CM by performing low-level data communications functions.

The TCP/IP transport uses the existing TLI interface to provide connectivity between the DMS-100/CS2K and a DSP. The DMS is provided with Local Area Network (LAN) connectivity by an Ethernet Interface Unit (EIU) or in the case of a CS2KCompact, the Call Agent card. This activity will utilize port 2700 for incoming and outgoing TCP message traffic. Messages originated from the DSP are routed via the network and terminate on the EIU/Call Agent which forwards the messages to the destination port (2700) on the DMS. For some hardware configurations internet routers may be used between the DMS-100/CS2K and DSP.





### 1.2.3 Software

This feature enhances existing ACDMIS software to handle the following areas:

- TCP/IP Transport.
- Table Control mechanism to support TCP/IP transport.
- OMs and Logs specific to the TCP/IP transport.

### 1.2.4 TCP/IP Transport

- TCP and X.25 ACD MIS Message Components

**TCP/IP Message****X.25 Message**

- **TCP connection checking**

For this feature the ACDMISPL table will be modified to include a LNKSEL type of either X25 or TCP that will be associated with each datafilled pool. The LNKSEL field for a TCP connection will contain a “TCP” designation as well as the remote ACD System’s IP Address, an Alternative ACD System IP Address, a User ID and a Login Password<sup>3</sup>.

Prior to establishing a TCP connection, the DMS-100/CS2K will crosscheck the incoming remote ACD System’s IP address against those IP addresses that are datafilled in the ACDMISPL. The incoming remote ACD System’s IP address must match either the IP Address or Alternative IP Address that is datafilled under the LNKSEL field for a given Pool in table ACDMISPL. Only one ACDMIS link/session is allowed per datafilled Pool.

If the incoming remote ACD System’s IP address is verified the events to establish a TCP connection will proceed, otherwise the connection will not be allowed.

- **Establishing a TCP connection**

Establishing the base TCP connection is a function of the existing base TCP/IP layers which will not be impacted by this feature. The following is provided as informational only and not as an indication of the work being done by this feature.

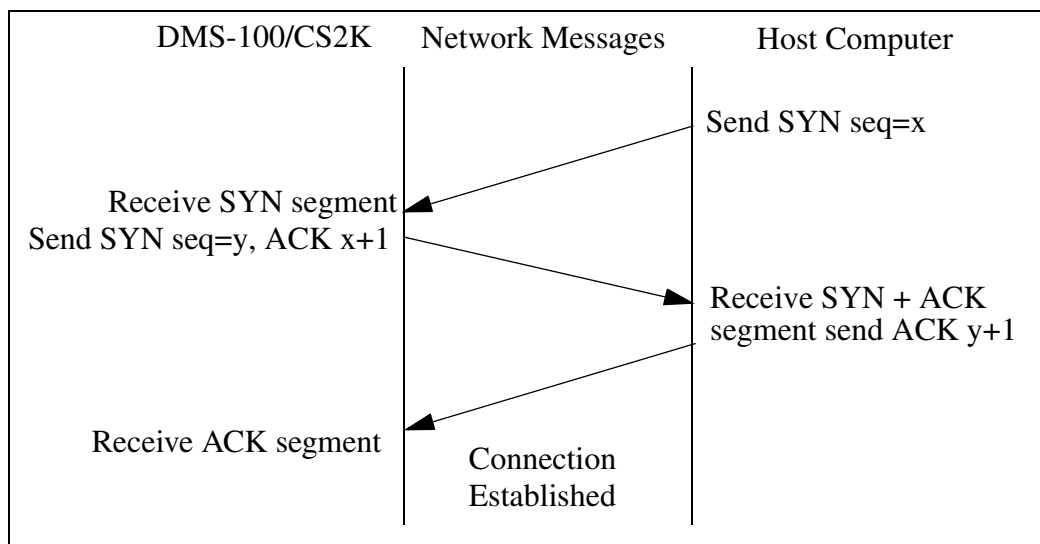
To establish a connection, TCP uses a three-way handshake. The DMS-100/CS2K will wait passively for the handshake that is initiated by the remote host (DSP) application.

---

3. Please see Section 1.3.5 for details on the table control changes associated with table ACDMISPL.

The IP address and the port number of the DMS-100/CS2K will be needed by the remote host application in order to establish a connection. Initially a SYN segment is sent by the host computer application requesting a connection to the DMS-100/CS2K. DMS-100/CS2K will then send an acknowledgment along with the SYN segment to the ACDMIS subscriber to indicate that it is ready to establish a session. The Host computer of the subscriber will then send an acknowledgment. Once the DMS-100/CS2K receives the acknowledgment, the connection is fully established as shown in Figure 1 below.

**Figure 4 Sequence of messages in Three way handshake.**



- **Establishing an ACDMIS Session**

When establishing the ACD MIS Session the remote ACD MIS System must initiate a nosLogon<sup>4</sup> message that is sent to the DMS-100/CS2K.

The nosLogon message contains the following arguments: Protocol Version, Userid, Password and Profile. As a result of this feature it is required that the Userid and Password that is sent in the nosLogon message match the Userid and Password that has been datafilled in table ACDMISPL<sup>5</sup> for a given Pool.

Other standard existing DSP Control messaging i.e. dspAssociatePool, dspRequestInit, dspStartTransfer etc. will be used to establish and setup the ACDMIS Session once the base TCP connection has been made.

- **Terminating TCP connection**

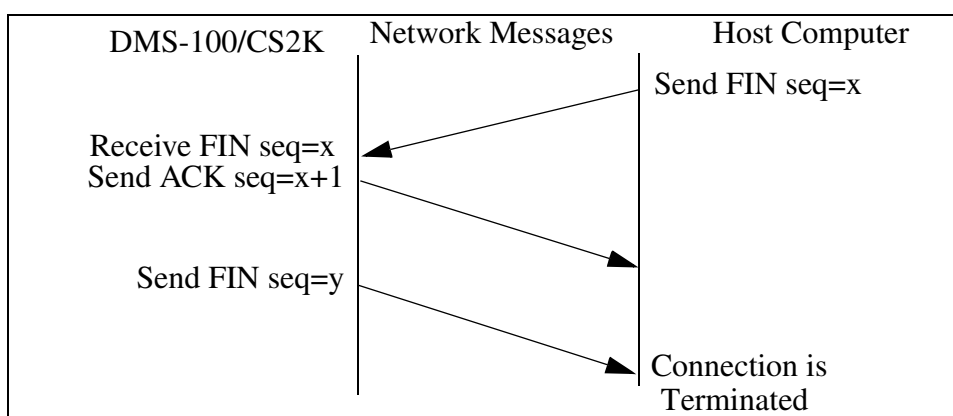
4. Please reference the NT NIS-Q209-2 ACD-MIS Interface Specification for detailed information on the nosLogon message and related arguments.

5. Please see Section 1.3.5 for details on the table control changes associated with table ACDMISPL.

Terminating the base TCP connection is a function of the existing base TCP/IP layers which will not be impacted by this feature. The following is provided as information only and not as an indication of the work being done by this feature.

To close the TCP connection, the remote host application will send the FIN segment as shown in Figure 2. The DMS-100/CS2K acknowledges the FIN segment and acknowledges that no more data is available. Once the connection is closed by the remote host application, TCP refuses to accept more data from the remote host application. The DMS-100/CS2K will then send a FIN segment. When both directions have been closed, the connection is deleted.

**Figure 5 Sequence of messages in terminating a TCP connection**



- **TCP connection Reliability**

TCP connection reliability is a function of the existing base TCP/IP layers which will not be impacted by this feature. The following is provided as information only and not as an indication of the work being done by this feature.

TCP has a “Keep Alive” option consisting of an out-of-band packet which is sent during idle line conditions. This is mainly used to detect any connection failures. The default delay is 45 seconds before the keep alive packet is sent. The keep alive timer value is configurable between 5 to 60 seconds by the user application via the TLI mechanism. An acknowledgment must be received from the peer, or TCP will retransmit the keep alive packet three times with the delay equal to the maximum of Round trip time-out or 10 seconds. If the peer does not respond, the connection is closed.

### 1.2.5 Table Control Mechanism

The existing ACDMISPL table will be modified to define the relationship between the ACDMIS pool and the transport type, X.25 or TCP/IP. This

feature will introduce a new field named LNKSEL to the ACDMISPL table. The new LNKSEL field will be datafillable with either X25 or TCP with the TCP designation having additional refinements of an IP address that refers to the remote DSP, an Alternative IP address for the remote DSP, a UserID and a Password. The newly created LNKSEL field will serve a dual purpose of defining which remote IP addresses are allowed access to the DMS-100/CS2K as well as defining the relationship between the pool and session link.

- **ACDMISPL Field Description**

| Field    | New or Changed | Subfield or refinement | Entry                                   | Explanation and action                                                                              |
|----------|----------------|------------------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------|
| POOL     |                | n/a                    |                                         | ACD Pool Name                                                                                       |
| PASSWORD |                | n/a                    |                                         | Pool Password                                                                                       |
| PROTOCOL |                | n/a                    |                                         | ACD MIS Protocol Version                                                                            |
| OUTEVENT |                | n/a                    | 10 to 200                               | Message Buffers                                                                                     |
| BUNDLING |                | n/a                    | Y or N                                  | Message Bundling                                                                                    |
| LNKSEL   | NEW            | n/a                    | X25 or TCP                              | Indicates whether this pool will use a X25 or TCP transport.                                        |
| X25      | NEW            | n/a                    | n/a                                     | If X25 is chosen no additional refinements are needed as existing X25 tables and datafill are used. |
| TCP      | NEW            | IP_ADDR                | IP Address                              | If TCP is chosen an additional refinement is required to indicate the remote systems IP Address.    |
|          | NEW            | ALT_IP_ADDR            | IP Address                              | Optional refinement to allow an alternative or "back-up" IP Address for the remote system.          |
|          | NEW            | USER_ID                | Alphanumeric<br>>=5 and <= 8 Characters | Mandatory refinement which will be used to verify the Userid field of the nosLogon message.         |
|          | NEW            | LOGIN_PASSWD           | Alphanumeric<br>>=5 and <=16 Characters | Mandatory refinement which will be used to verify the Password field of the nosLogon message.       |

- **ACDMISPL - LNKSEL Field Information**

The TCP refinement to the LNKSEL field allows datafilling of an alternative IP Address (ALT\_IP\_ADDR) to be used as a "back-up". Historically only one link is allowed per ACD Pool, therefore only one IP Address per ACD Pool is allowed to be active at any given time.

The TCP refinement to the LNKSEL field includes the mandatory refinements USER\_ID and LOGIN\_PASSWD that will be used for login

validation in conjunction with the nosLogon message that is sent by the DSP.

LNKSEL field datafill changes from X25 to TCP/IP or TCP/IP to X25 will require the ACDMIS link to be brought down and may require datafill changes to other X25 related tables as needed.

- **ACDMISPL Table Enhancement Example**

TABLE: ACDMISPL

| POOL   | PASS   | PROTOCOL | OUTEVENT | BUND | LNKSEL                   |
|--------|--------|----------|----------|------|--------------------------|
| POOL01 | POOL01 | BCS43    | 110      | N    | X25                      |
| POOL02 | POOL02 | BCS43    | 110      | N    | TCP 47 245 5 247 246 6 3 |

- **ACDMISPL Datafill Example for TCP Transport**

```
POOL:
>ACDPOOL
PASSWORD:
>PASSWD1
PROTOCOL:
>BCS35
OUTEVENT: 200
>110
BUNDLING:
>N
LNKSEL:
>TCP
IP_ADDR:
>47 245 5 2
ALT_IP_ADDR:
>47 246 6 3
USER_ID:
>USER2
LOGIN_PASSWD:
>PASS2
```

TUPLE TO BE ADDED:  
ACDPOOL PASSWD1 BCS35 110 N TCP 47 245 5 2 47 246 6 3 USER2 PASS2  
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

- **ACDMISPL Datafill Example for X25 Transport**

```
POOL:
>ACDPOOL
PASSWORD:
>PASSWD1
PROTOCOL:
>BCS35
OUTEVENT: 200
>110
BUNDLING:
>N
LNKSEL:
>X25
```

TUPLE TO BE ADDED:  
ACDPOOL PASSWD1 BCS35 110 N X25  
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.



### 1.2.6 Operational Measurements

This feature makes no functional changes to ACD MIS OM's, however the ACD MIS related OM's as described below will be updated / pegged as necessary using the new TCP transport.

#### 1.2.6.1 ACDMISPL - OM Group

The ACDMISPL OM Group will not be impacted by this feature. The following is provided as information only and not as an indication of the work being done by this feature.

- The OM group ACDMISPL monitors the ACD MIS output message buffer and provides buffer usage and peg count registers for messages lost or transmitted. The following is a brief description of the ACDMISPL OM registers:
- **MISLOST:** Pegs the number of valid MIS event messages that fail to enter the outgoing message buffer because the buffer is full. The message is subsequently discarded and no retransmission is attempted and further buffering is offered.
- **MISQUSAG:** Records the number of messages waiting to be transmitted in the outgoing message buffer every 100 seconds. Under normal traffic conditions, MISQUSAG should be zero since all messages are dispatched as soon as they enter the outgoing message buffer.
- **MISTRANS:** Pegs the number of valid outgoing messages that are transferred successfully to the MIS downstream processor via the X.25 data link through the MPC/EMPC card. The register counts each call event, return\_result, or initialization message that is transmitted.

### 1.3 Software Requirements or Dependencies

Not Applicable

### 1.4 Limitations and restrictions

- Maximum number of TCP/IP connections to a single DMS-100/CS2K is 96.
- The number of ACDMIS TCP/IP Links per single DMS-100/CS2K will be limited to 60.

### 1.5 Interactions

Not Applicable

### 1.6 Applicable customer facing sections

Fault Management

Logs

\_\_N/A\_\_

|                                                 |         |
|-------------------------------------------------|---------|
| Alarms                                          | __N/A__ |
| Configuration                                   |         |
| Data Schema                                     | __ X __ |
| User Interface                                  | __N/A__ |
| Element Management                              | __N/A__ |
| Security                                        | __N/A__ |
| Service Order                                   | __N/A__ |
| Office Parameters                               | __N/A__ |
| Accounting (includes AMA billing)               | __N/A__ |
| Performance (includes operational measurements) | __N/A__ |

Indicate with an X if you are completing the sections of the DDOC listed below. Indicate with “N/A” if these sections do not apply to this functionality.

## 1.7 Glossary

| Term | Description                   |
|------|-------------------------------|
| 3PC  | Third Party Core              |
| ACD  | Automatic Call Distribution   |
| CS2K | Communication Server 2000     |
| DMS  | Digital Multiplex System      |
| DSP  | Down Stream Processor         |
| EIU  | Ethernet Interface Unit       |
| IOC  | Input-Output Controller       |
| IP   | Internet Protocol             |
| MIS  | Management Information System |
| MPC  | Multi-Protocol Controller     |
| OM   | Operational Measurements      |
| TCP  | Transmission Control Protocol |
| TLI  | Transport Layer Interface     |

## 2: Configuration for A00007250

### 2.1 Hardware and Software Requirements

This feature will use the existing TLI interface to provide connectivity between the DMS-100/CS2K and a DSP. The DMS -100/CS2K is provided with Local Area Network (LAN) connectivity by an Ethernet Interface Unit (EIU) or in the case of a CS2KCompact, the 3PC card. The basic ACD software package is needed to use this feature.

## **2.2 Initial Configuration**

The configuration for this feature is detailed in the DS section of this document.

## **2.3 Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

## **2.4 Upgrade Considerations**

### **2.4.1 Dump and Restore (CM)**

No manual action is required. A reformat Procedure will be used as the software solution.

ONP reformat procedures will be written to default the LNKSEL field of table ACDMISPL to X25 as required. Transport datafill changes from X25 to TCP/IP or TCP/IP to X25 may require the ACDMIS link to be brought down and may require datafill changes to existing X25 related tables.

### **2.4.2 Element Management Upgrade**

N/A

### **2.4.3 Downgrade impact**

N/A

## **2.5 Data schema (DS) (CM, MIBS, RDB)**

### **2.5.1 New/modified tables, MIBs, or Database Schema**

The existing ACDMISPL table will be modified to define the relationship between the ACDMIS pool and the transport type, X.25 or TCP/IP. This feature will introduce a new field named LNKSEL to the ACDMISPL table. The new LNKSEL field will be datafillable with either X25 or TCP with the TCP designation having additional refinements of an IP address that refers to the remote DSP, an Alternative IP address for the remote DSP, a UserID and a Password. The newly created LNKSEL field will serve a dual purpose of defining which remote IP addresses are allowed access to the DMS-100/CS2K as well as defining the relationship between the pool and session link. Impacted tables are listed below in Table 1

**Table 1 New or modified tables**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| ACDMISPL       | CHANGED                  | UNCHANGED                          |

**2.5.1.1 Fields/OIDs**

The following table lists fields/OIDs for ACDMISPL

**Table 2 Table field descriptions**

| Field    | New or Changed | Subfield or refinement | Entry                                   | Explanation and action                                                                              |
|----------|----------------|------------------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------|
| POOL     |                | n/a                    |                                         | ACD Pool Name                                                                                       |
| PASSWORD |                | n/a                    |                                         | Pool Password                                                                                       |
| PROTOCOL |                | n/a                    |                                         | ACD MIS Protocol Version                                                                            |
| OUTEVENT |                | n/a                    | 10 to 200                               | Message Buffers                                                                                     |
| BUNDLING |                | n/a                    | Y or N                                  | Message Bundling                                                                                    |
| LNKSEL   | NEW            | n/a                    | X25 or TCP                              | Indicates whether this pool will use a X25 or TCP transport.                                        |
| X25      | NEW            | n/a                    | n/a                                     | If X25 is chosen no additional refinements are needed as existing X25 tables and datafill are used. |
| TCP      | NEW            | IP_ADDR                | IP Address                              | If TCP is chosen an additional refinement is required to indicate the remote systems IP Address.    |
|          | NEW            | ALT_IP_ADDR            | IP Address                              | Optional refinement to allow an alternative or "back-up" IP Address for the remote system.          |
|          | NEW            | USER_ID                | Alphanumeric<br>>=5 and <= 8 Characters | Mandatory refinement which will be used to verify the Userid field of the nosLogon message.         |
|          | NEW            | LOGIN_PASSWD           | Alphanumeric<br>>=5 and <=16 Characters | Mandatory refinement which will be used to verify the Password field of the nosLogon message.       |

### 2.5.1.2 Datafill example

- **ACDMISPL Datafill Example for TCP Transport**

```

POOL:
>ACDPOOL
PASSWORD:
>PASSWD1
PROTOCOL:
>BCS35
OUTEVENT: 200
>110
BUNDLING:
>N
LNKSEL:
>TCP
IP_ADDR:
>47 245 5 2
ALT_IP_ADDR:
>47 246 6 3
USER_ID:
>USER2
LOGIN_PASSWD:
>PASS2

TUPLE TO BE ADDED:
ACDPOOL PASSWD1 BCS35 110 N TCP 47 245 5 2 47 246 6 3 USER2 PASS2
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

```

- **ACDMISPL Datafill Example for X25 Transport**

```

POOL:
>ACDPOOL
PASSWORD:
>PASSWD1
PROTOCOL:
>BCS35
OUTEVENT: 200
>110
BUNDLING:
>N
LNKSEL:
>X25

TUPLE TO BE ADDED:
ACDPOOL PASSWD1 BCS35 110 N X25
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

```

- **Example of ACDMISPL table**

```

TABLE: ACDMISPL

POOL PASS PROTOCOL OUTEVENT BUND LNKSEL

POOL01 POOL01 BCS43 110 N X25
POOL02 POOL02 BCS43 110 N TCP 47 245 5 247 246 6 3 USER2 PASS2

```

### 2.5.1.3 Supplementary information

Any changes to existing tuples in the ACDMISPL table will require the ACD MIS LINK to be brought down if there is an active session on the Pool/tuple

being changed. If there is not an active session on the Pool/tuple being changed, then changes are allowed.

In addition to the above restriction, changes in the LNKSEL field from TCP to X25 will require the standard X25 datafill that has always been used when establishing a ACD MIS X.25 Link, which will involve changes/additions to table datafill in table MPCLINK.

#### **2.5.1.4 Translation verification and other tools**

N/A

### **2.6 Service Orders (SO) (CM & SESM)**

There are no SERVORD impacts for this feature.

### **2.7 Software optionality control (SOC)**

There is no SOC interaction with this feature.

### **2.8 Element Management**

Not applicable

### **2.9 User interface changes**

Not applicable

### **2.10 OSSGate Interface Changes**

Not applicable

### **2.11 Security**

Not applicable

### **2.12 Configuration Walkthrough**

Not applicable

***Product = CS 2000***

## **A00007277--LOGs Throttling**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

DMS

## 1.2 Description

This feature is required to implement LOGs throttling functionality for XA-Core.

The requirement of this feature is to use a datafill table for throttling logs. Customer can throttle the log report by specifying the time unit and threshold value.

There is also a requirement to throttle the DLOG when it is specified by the customer. By default throttled logs will go to DLOG, unless it is specified by the user.

Only core logs will be throttled.

Desired behavior of this feature is to implement the throttling mechanism for LOG Devices and DLOGs. New throttling functionality will allow customer to specify on Time Units and Thresholds per Report Name (REPNAME) through a Table LOGTHROT.

New threshold behavior:

- Logs to be throttled, will be output in each unit time until the log count reaches threshold value.
- Logs will then be throttled until the time unit expires.
- When the timer resets the logs will not be throttled.

The new Table LOGTHROT will contain the THRSHOLD and TUNITS values as we have them in table LOGCLASS.

Figure 1 Functional Diagram

| TABLE LOGTHROT: |          |           |       |
|-----------------|----------|-----------|-------|
| REPNAME         | THRSHOLD | TUNITS    | DLOG  |
| -----           |          |           |       |
| TRK 113         | [0-255]  | [0-32767] | Y / N |

Logs will be generated in each time unit until the log count reaches the threshold value. The logs will then be throttled until the time unit expires. When the timer resets, the logs will not be throttled.

e.g.

Suppose, we want to throttle TRK113 log. If the threshold value is set to 5 and tunits is 1, that means we only want five TRK113 log in one minute. Any TRK113 logs over five within a minute will be throttled. Because the DLOG field is set to 'NO', we won't be throttling TRK113 DLOGs.

**Figure 2 Functional Diagram**

**TABLE LOGTHROT:**

| REPNAME | THRSHOLD | TUNITS | DLOG |
|---------|----------|--------|------|
| -----   |          |        |      |
| TRK 113 | 5        | 1      | N    |

Recommended TUNITS value is 1 (min). Threshold value can be set based on site engineering information. Following are the some examples of threshold values used in CSP20, TUNITS id 1(mins):

| REPNAME  | THRSHOLD |
|----------|----------|
| -----    |          |
| AUDIT105 | 25       |
| AUDIT106 | 25       |
| TRK113   | 75       |
| C7UP103  | 25       |
| TRK138   | 75       |



### 1.3 Hardware Requirements or Dependencies

N/A.

### 1.4 Software Requirements or Dependencies

N/A

### 1.5 Limitations and restrictions

N/A

### 1.6 Interactions

N/A

### 1.7 Applicable customer facing sections

Fault Management

Logs ☐ Yes ☐

Alarms ☐ No ☐

Configuration

Data Schema ☐ No ☐

User Interface ☐ No ☐

Element Management ☐ No ☐

Security ☐ No ☐

Service Order ☐ No ☐

Office Parameters ☐ Yes ☐

Accounting (includes AMA billing) ☐ No ☐

Performance (includes operational measurements) ☐ No ☐

### 1.8 Glossary

| Term     | Description |
|----------|-------------|
| New term | Definition  |

***Product = CS 2000***

## **A00007300--Enable by default IPSec on All GWC Profiles**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Description**

This SN08 activity enables IPSec on all GWC profiles that do not currently have the IPSec capability. As a result of enabling IPSec on all remaining GWC profiles, the IPSec provisioning tab will now be available in the CS2000 Management Tools GUI for all GWC profiles.

#### **1.3 Hardware Requirements or Dependencies**

Not applicable

#### **1.4 Software Requirements or Dependencies**

Not applicable

#### **1.5 Limitations and restrictions**

Not applicable

#### **1.6 Interactions**

Not applicable

#### **1.7 Glossary**

| Term  | Description        |
|-------|--------------------|
| GWC   | Gateway Controller |
| IPSec | IP Security        |

***Product = CS 2000***

## **A00007383 - Directory Number Hunting Enhancements**

#### **1.1 Applicable Solution(s)**

DMS

## 1.2 Description

### 1.2.1 General

This feature provides two new facilities for DNH groups. For any call originated from any DNH group member DN (MDN) or pilot DN (PDN), the group's **pilot DN** will be:

- Charged for the call,
- Presented as the Calling Line Number nodally or to the network to be displayed at the far end, if the call provides Calling Line Identification (CLI) by default or upon Automatic Number Identification (ANI) request.

These facilities are provided for all members of all the DNH groups on an office basis. It is possible to turn on or off each functionality separately. Thus, each functionality can be either applied or not applied officewide at once, i.e. all DNH groups follow the same behavior. These facilities are enabled by defining a new tuple in table **ISERVOPT**. Operating company personnel use table ISERVOPT to configure switch information for service-related features. Figure 3 shows a sample datafill for table ISERVOPT.

**Figure 3 New ISERVOPT Tuple**

```
SOPTSKEY SOPTSVAR

DNH_OPTS DNH_OPTS Y Y
```

The tuple introduces: a new entry *DNH\_OPTS* in the field SOPTSKEY; a new entry *DNH\_OPTS* in the field SOPTSVAR/subfield OPTI; and two new boolean subfields *PILOT\_CHARGE*, *PILOT\_DISPLAY*. The subfields' values 'Y/N' serve to turn functionalities on/off in the office.

### 1.2.2 Pilot DN Charge

#### 1.2.2.1 Overview

The DNH group PDN can be charged for all calls originated by its members including calls originated by the PDN itself.

This functionality is achieved when the subfield *PILOT\_CHARGE* value is set to 'Y' in the new ISERVOPT tuple.

The pilot DN charge functionality uses the existing line option **SPB** (Special Billing). The SPB option allows a number other than the subscriber's DN to be used for billing.

Thus, to supply the desired functionality, every single member DN of a DNH group must have the SPB option assigned on it, with the field SPBDN (Special

Billing Directory Number) filled with the pilot DN of that group. As the PDN is also charged for its own calls, it is not allowed to have the SPB option.

#### 1.2.2.2 Service Order

Therefore, after the functionality is activated, a number of restrictions to SO commands take place:

The field SPBDN of the SPB line option being assigned or changed on any DNH group member, accepts only the value of the PDN of that group.

The supported SO commands are: ADO 'SPB', CHF 'SPB', ADD a new DNH member with the SPB option, and EST a new DNH group with the SPB option on a member.

- Addition of the SPB option to a pilot DN with the ADO and EST commands, is forbidden.
- Deletion of the SPB option from a DNH member with the command DEO, is forbidden.
- Definition of a new DNH member without the SPB option, is forbidden. It concerns commands ADO 'DNH', ADD, and EST.

Every restriction is accompanied by displaying an appropriate message.

Deletion of the DNH option from a member DN is allowed. A user gets a reminder message that the SPB option remains on this DN.

#### 1.2.3 Pilot DN Display

For any call providing CLI, originated from a DNH group MDN, only the group's PDN is presented as the Calling Line Number nodally or to the network to be displayed at far end, by default or upon ANI request. The functionality must be set in the new tuple of table ISERVOPT as described above.

The **IBN** and **ISDNKSET** originators and local terminators are supported.

The PDN sending as a calling number is supported for calls outgoing via **ISUP** and **MFC** trunks as described below.

**ISUP:** When a call initiated by a DNH group member, goes out through an ISUP trunk, the Calling Party Number parameter in the ISUP Initial Address Message (**IAM**) contains the pilot DN of that group instead of the MDN.

As well, the PDN is also provided instead of the MDN in the INformation message (**INF**) that is sent in response to the received INformation Request message (**INR**).

**MFC:** MFC (FDCP R2, Type-A) support: Similarly, instead of the DNH group MDN call originator, its PDN is presented as the DN of the calling party

in the **setup** message and also in the **information** message sent in response to the information request message.

### 1.3 Hardware Requirements or Dependencies

Not applicable.

### 1.4 Software Requirements or Dependencies

Not applicable.

### 1.5 Limitations and restrictions

For both Pilot Charge and Pilot Display only homogeneous IBN/ISDN DNH groups are supported, i.e. those consisting from only IBN or only ISDN lines.

#### 1.5.1 Pilot DN Charge.

All limitations and restrictions of the SPB feature take place.

After the functionality is activated in table ISERVOPT, this feature controls only **further** actions performed with **SO** commands. It is the responsibility of TELCO personnel to handle all SPB definitions on all DNH groups defined before the activation of the functionality. Any changes carried out by any other means, e.g. Table Control, are beyond the scope of the feature.

SO support performs **no automatic** actions (such as addition of the SPB option to a newly added MDN). An appropriate **message** is displayed each time any restriction to SO commands set by this feature is violated (see above), and the SO checking **rejects** the command. A user can then decide which further actions may be taken to achieve the goal, or may not take action at all.

#### 1.5.2 Pilot DN Display.

For network calls, only **ISUP** and **MFC** trunk types are supported to send PDN as a calling number:

- **ISUP:** ETSI ISUP V2 Ethiopia (ETC) variant only;  
To support other ISUP variants, additional development is required.
- **MFC:** FDCP R2 and Type A protocols.

Only **IBN** and **BRI** subscribers are supported as call originators, local terminators, and pilots.

### 1.6 Interactions

The key requirement of the Pilot Display is that the pilot DN must be seen on the terminator's telephone display as a calling number in every call originated by its member - if presentation of the CGN of the originator is not suppressed.

Therefore this feature, being in effect, takes precedence over all other features that modify the display of the CGN:

For local calls:

- All these features are ignored when the Pilot Display is active, and the pilot DN is displayed as it is datafilled in table DNINV etc without any modification;
- All the features that use CGN but that do not change its display for a terminator, are not affected.

For line-to-trunk calls:

As an originating switch always sends a PDN instead of its MDN as a CGN, all the features that manipulate with the CGN in their way, are suppressed by the Pilot Display.

Definite interest may be presented in analysis of the interaction with the **Call Forward** feature:

**Pilot Charge.** When a call forward subscriber forwards a call, it pays for the second call leg, i.e. that between him and the terminator. The SPB feature covers this interaction, therefore no additional development is required to charge a pilot when its member forwards a call.

**Pilot Display.** In a call forward scenario, the real originator, and not the call forwarder, is displayed at the terminator's display. Hence, if a member forwards a call, its DN does not appear as the calling party DN and therefore must not be replaced by the PDN in this interaction, which means that no development is required.

In **Malicious Call Trace** (MCT) feature, when MDN originated a call:

- For a **nodal** terminator, an MCT153 / MCT154 log is generated without any changes, i.e. the real originator (MDN, not PDN) appears at the field CALLING\_PARTY;
- For a **remote** terminator accessed via trunks, the PDN appears at the field CALLING\_PARTY.

## 1.7 Applicable customer facing sections

Fault Management

Logs \_N/A\_

Alarms \_N/A\_

Configuration

Data Schema \_X\_

User Interface \_N/A\_

Element Management \_N/A\_

|                                                 |       |
|-------------------------------------------------|-------|
| Security                                        | _N/A_ |
| Service Order                                   | _X_   |
| Office Parameters                               | _N/A_ |
| Accounting (includes AMA billing)               | _N/A_ |
| Performance (includes operational measurements) | _N/A_ |

## 1.8 Glossary

| Term | Description                                    |
|------|------------------------------------------------|
| CLI  | Calling Line Identification                    |
| CGN  | CallinG Number                                 |
| DN   | Directory Number                               |
| DNH  | Directory Number Hunting                       |
| PDN  | Pilot DN                                       |
| MDN  | Member DN                                      |
| ANI  | Automatic Number Identification                |
| SPB  | SPecial Billing                                |
| SO   | Service Order                                  |
| TC   | Table Control                                  |
| ETSI | European Telecommunication Standards Institute |
| ISUP | ISDN User Part                                 |
| ISDN | Integrated Services Digital Network            |
| MFC  | Multi Frequency Compelled                      |
| FDCP | Flexible Digital CAS Platform                  |
| CAS  | Common Channel Signalling                      |
| IBN  | Integrated Business Network                    |

## 2: Configuration for A00007383

### 2.1 Hardware and Software Requirements

The feature is developed in ISN08 (MMP21) s/w release and patched back to ISN04 (MMP17).

## 2.2 Initial Configuration

In loads older than ISN08 (MMP21), the patches containing the development code, are to be applied using the Post Release Software Manager (PRSM).

## 2.3 Office/Subnet parameters (OP/SP) (CM & SESM)

Not applicable.

## 2.4 Upgrade Impact

### 2.4.1 Dump and Restore

Data of the only modified table ISERVOPT are transferred from the old s/w release to the new s/w release as usual within the data transfer process during ONP. Table changes do not require a reformat, since area refinement is added only.

It is obvious that if the table ISERVOPT being transferred, has the new tuple in the old release side, the patches must be applied in the new release side (unless the new release is ISN08 or higher).

### 2.4.2 Element Management Upgrade

Not applicable.

## 2.5 Data schema (DS) (CM, MIBS, RDB)

### 2.5.1 New/modified tables, MIBs, or Database Schema

Table 1 New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|----------------|--------------------------|-----------------------------------|
| ISERVOPT       | changed                  | unchanged                         |

### 2.5.2 Table/MIB/Remote Database Schema information

#### 2.5.2.1 Name: ISERVOPT

International SERVICE OPTion

##### 2.5.2.1.1 Functional description

Operating company personnel use table ISERVOPT to configure switch information for service-related features. This table groups multiple related pieces of data in a single entry.

Each service that uses this table provides a subfield related to that service. Each subfield asks for information in a format relevant to the service. This



table accepts an entry if operating company personnel enter a service that is in the load.

#### 2.5.2.1.2 Usage sequence and implications (CM Only)

Current datafill order unchanged.

#### 2.5.2.1.3 Size

**Table 2 Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples             | Information on memory                                   |
|------------------------|----------------|----------------------------|---------------------------------------------------------|
| ISERVOPT               | Unchanged      | Current maximum tuples + 1 | Memory is automatically allocated for additional tuple. |

#### 2.5.2.1.4 Fields/OIDs

The following table lists fields for ISERVOPT.

**Table 3 Table field descriptions**

| Field    | New or Changed | Subfield or refinement | Entry    | Explanation and action                                                                                |
|----------|----------------|------------------------|----------|-------------------------------------------------------------------------------------------------------|
| SOPTSKEY | Changed        |                        | DNH_OPTS | Directory Number Hunting Options.<br><br>New entry DNH_OPTS in field SOPTSKEY is the key in ISERVOPT. |

**Table 3 Table field descriptions**

| Field    | New or Changed | Subfield or refinement | Entry    | Explanation and action                                                                                                                                                                                                                                     |
|----------|----------------|------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SOPTSVAR | Changed        | OPTION                 | DNH_OPTS | Directory Number Hunting Options.<br><br>New entry DNH_OPTS in field OPTION is the option name.                                                                                                                                                            |
|          |                | PILOT_CHARGE           | Y or N   | PILOT_CHARGE controls activation of the Pilot Charge functionality. When PILOT_CHARGE is set to N, the Pilot Charge functionality has no impact. When PILOT_CHARGE is set to Y, the Pilot Charge functionality is activated. The default value is N.       |
|          |                | PILOT_DISPLAY          | Y or N   | PILOT_DISPLAY controls activation of the Pilot Display functionality. When PILOT_DISPLAY is set to N, the Pilot Display functionality has no impact. When PILOT_DISPLAY is set to Y, the Pilot Display functionality is activated. The default value is N. |

**2.5.2.1.5 Datafill example**

The following example shows sample datafill for table ISERVOPT.

**Figure 4 Map display example for DNH\_OPTS option in table ISERVOPT**

```
SOPTSKEY SOPTSVAR

DNH_OPTS DNH_OPTS Y Y
```

**Note:** The following list gives datafill examples for the DNH\_OPTS service. They are based on the four possible values for the DNH\_OPTS tuple, namely: KEY (SOPTSKEY), OPTION (SOPTSVAR), PILOT\_CHARGE, and PILOT\_DISPLAY.

No enhancements are turned on:  
DNH\_OPTS DNH\_OPTS N N

With this datafill neither functionality has impact. The tuple can be absent.

- Only the pilot charge enhancement is operational:  
DNH\_OPTS DNH\_OPTS Y N

- Only the pilot display enhancement is operational:  
DNH\_OPTS DNH\_OPTS N Y
- Both pilot charge and pilot display enhancements are operational;  
DNH\_OPTS DNH\_OPTS Y Y

#### 2.5.2.1.6 Table release history update

The following information was added:

- Entry DNH\_OPTS added to field SOPTSKEY
- Entry DNH\_OPTS added to field SOPTSVAR/OPTION
- New subfields PILOT\_CHARGE and PILOT\_DISPLAY added to entry DNH\_OPTS in field SOPTSVAR/OPTION.

Maximum table size increased in number of one tuple.

#### 2.5.2.1.7 Supplementary information

This table does not contain initial datafill. The operating company using this table provides datafill that refers to indicated services.

The default values of parameters PILOT\_CHARGE and PILOT\_DISPLAY are N. Even if tuple does not exist in ISERVOPT, the state is considered to be N for both functionalities. If the state of either parameter is Y, the respective functionality of the feature is available officewide. If the state is N, the respective functionality is suppressed.

PILOT\_CHARGE and PILOT\_DISPLAY require no restarts.

Every change of PILOT\_CHARGE and PILOT\_DISPLAY values including tuple addition/deletion is accompanied by displaying an appropriate message. This message informs a user about which functionality is activated/deactivated (one or both), briefly describes it, and informs a user about what actions are required from his side, if any. For more information please refer to “1.5.1 Pilot DN Charge.” on page 848.

#### 2.5.2.1.8 Translation verification other tools

ISERVOPT does not use translation verification tools.

## 2.6 Service Orders (SO) (CM & SESM)

### 2.6.1 Service order change details

Only **pilot charge** functionality has impacts on Service Order.

The overall impact consists in **additional** servord **checking** carried out when the pilot charge functionality is in active state (subfield *PILOT\_CHARGE* value is set ‘Y’ in the *DNH\_OPTS* ISERVOPT tuple).

The brief background of this functionality explaining **why** additional SO checking is needed, is as follows.

The pilot DN charge functionality uses the existing line option **SPB** (SPecial Billing). The SPB option allows a number other than the subscriber's DN to be used for billing. To charge a pilot DN (PDN) for all the calls originated by its members DN (MDN), **every** single **MDN** of a DNH group **must have** the SPB option assigned on it, with the field **SPBDN** filled with the PDN of that group. The **PDN** is also charged for its own calls therefore it is **not allowed** to have the SPB option. Therefore any SO command that may **violate** this state, passes through additional checking to avoid this. Besides, in one special case the additional SO checking is done in order to only attract a user's **attention** to possible need of further actions. More detailed description is in "1.2.2.2 Service Order" on page 847.

SO support performs **no automatic** actions. That means:

- All the DNH groups that exist **at the moment** of activation of the pilot charge functionality, must be checked by the TELCO personnel for the correspondence with the state described above, and appropriate actions should be taken to bring them into this state. When setting this functionality 'Y', a user gets a message - see "2.5.2.1.7 Supplementary information" on page 854, and also "1.5.1 Pilot DN Charge." on page 848.
- If a performed SO command did not pass additional checking, only an appropriate **message** is displayed, and the command is **rejected** (except for the one special case mentioned above when the additional checking **allows** the command). A user can then decide which further actions may be taken to archive the goal, or may not take action at all.

This feature does not introduce any new LCC.

This feature does not introduce any new option.

#### 2.6.1.1 LCC and options

Neither a new LCC nor option is introduced by this feature.

All the limiting conditions of the SPB option remain valid.

This feature supports only **IBN** and **ISDNKSET** LCC.

#### 2.6.2 New commands

This feature does not provide any new commands.

## 2.7 Software optionality control (SOC)

Table 4 SOC

|                          |                                   |
|--------------------------|-----------------------------------|
| SOC option name:         | DNH Pilot Enh                     |
| SOC option title:        | DNH Pilot Num for CLI and Billing |
| SOC option control type: | Tracked                           |
| New SOC option?          | Yes                               |
| SOC option order code    | SVBI0035                          |
| Option defined in DRU:   | WT                                |
| Affected products:       | DMS100                            |

All tracked SOC are automatically created via PCA enforcement and no longer require design implementation.

## 2.8 Element Management

Not applicable.

## 2.9 Command interface changes

Not applicable.

## 2.10 Security

Not applicable.

## 2.11 Configuration Walkthrough

Not applicable.

***Product = CS 2000***

## A00007404 - IEMS Security Serialized Patching

### 1.1 Applicable Solution(s)

UA-IP

### 1.2 Description

This feature ensures that only one IEMS security module component is restarted at a time with respect to patching. Specifically if a request is initiated

from the NPM GUI, CLUI, or scheduler to restart all IEMS security module components, separate requests will be queued and executed serially.

To ensure the NPM server serializes IEMS security module restart requests for patching, a new platform type is implemented by this feature. The new platform type value is 'SCTY' and can be queried as part of report generation from the NPM GUI or CLUI.

### 1.3 Hardware Requirements or Dependencies

None.

### 1.4 Software Requirements or Dependencies

None.

### 1.5 Limitations and restrictions

During upgrades into SN08 from older releases, a PSE that is upgraded to SN08 will not be able to send its devices or be available for patching to an NPM that is SN08 or older. This configuration and patching support is not changed from the previous policy in SN08.

If patching is required to any components at a version of SN08 and the NPM has not been upgraded, the script utility called "Kelly's Update Script" should be used to patch those components on a given machine.

### 1.6 Interactions

### 1.7 Glossary

***Product = CS 2000***

## **A00007417--Ethernet link overload Control**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

DMS

#### **1.2 Description**

With the significant increase of the call processing power introduced by the XA-Core architecture, messaging resources including the bandwidth for the link and real-time, can be exhausted by the high call processing rate.

Without protection to the messaging resources, critical messages can be dropped due to the unavailable messaging resources.

The purpose of this activity is to provide a mechanism to prevent sustained over-utilization of Ethernet links and notify existing System Overload Control (SOC) which reacts by interacting with the peripherals to reduce the rate of incoming new originating calls.

### 1.3 Hardware Requirements or Dependencies

N/A

### 1.4 Software Requirements or Dependencies

Feature XA-Core IOCAP Monitoring toolset: A00006693 provides OMs of interest.

### 1.5 Limitations and restrictions

Ethernet link overload control is only applicable to XA-Core.

Peripherals must contain software which reacts to the core overload signal.

### 1.6 Interactions

This feature provides monitoring of the Ethernet messaging link. When the level of messaging through the Ethernet link is approaching the maximum capacity, it applies throttling through the System Overload Control (SOC) function.

### 1.7 Log

Table 1 New or modified logs

| Log name | Log number | NEW/MOD/DELETED | System (SOS/UNIX) |
|----------|------------|-----------------|-------------------|
| CAP      | 101        | MOD             | SOS               |

### 1.8 Glossary

N/A

## 2.1 Fault Management for A00007417

### 2.2 Logs

Log Title/Log ID: CAP Capacity Data/ CAP101

## 2.2.1 Formats

**Figure 1** Formats of log reports

```
<office name> CAP101 <date> <timestamp> INFO CAPACITY_DATA
UTIL <n> ENGLEVEL <BELOW/ABOVE> CCOVRD <OFF/ON>IOOVRD
<OFF/CMIC-ON/ETHR-ON/CMIC-ETHR-ON> PE_SC <YES/NO>
```

**Figure 2** Sample log reports

```
VENUS21AO CAP101 SEP07 09:42:35 8700 INFO CAPACITY_DATA
CATMP/HR 251881 SMS/HR 180 VLR_UPD/HR 331200 CAP 127%
ENGBHCA 196972 CCOVRD ON IOOVRD ETHR PES NO
```

## 2.2.2 Explanation

Description: This feature impacts the existing CAP101 log. Since this feature introduces the Ethernet overload control, the CMICOVLD field will be changed to IOOVRD. IOOVRD indicates the IO messaging link utilization status, including CMIC and Ethernet Link.



### 2.2.3 Field descriptions

Table 2 Field descriptions

| Field  | Value     | Description                                                 |
|--------|-----------|-------------------------------------------------------------|
| IOOVRD |           | Indicates the CMIC and Ethernet link overloading condition. |
|        | OFF       | When CMIC & ETHR are running under link capacity.           |
|        | CMIC      | When CMIC link is over utilized.                            |
|        | ETHR      | When ETHR link is over utilized.                            |
|        | CMIC-ETHR | When CMIC and ETHR links are over utilized.                 |

#### 2.2.4 Action

If the logs indicate IO link overload frequently, then it may suggest upgrading the IO capacity service hardware.

#### 2.2.5 Associated Operational Measurements or Performance Measurements

IOCAP OM group has registers.

#### 2.2.6 Additional information

Please refer A00006693 FN.

### 2.3 Related documentation

***Product = CS 2000***

## **A00007424--Alarm Enhancements on SAM21**

***Excerpts from the Design Summary***

### **1.1 Applicable Solution(s)**

PT-AAL1

## 1.2 Introduction

This document covers the SAM21 SC software robustness on following areas:

- Alarming of locked IO cards
- Alarming of recovering IO cards
- Alarming of the connectivity loss of boot server
- Alarming of the loss of NFS mount

## 1.3 Alarming of Locked Application Card

### 1.3.1 Design Solution

On the SAM21 Shelf Controller, the Salus application is responsible for all IO OAM actions and alarms should failures be detected during an OAM action. Following the infrastructure of IO card alarming, this feature will add Alarm ID 56 - **underlyingResourceUnavailable** and Alarm Type 4 - **Processing Error** for each application card. The severity of the alarm is **minor**, this will have yellow color high-lighting on the card on the SAM21 Manager GUI.

When a card is locked successfully, this alarm will be raised against the card, a trap (Informs) will be sent to the SAM21 Manager with following data:

- PhysicalIndex - the slot number of the card seats in plus 33,
- AlarmID - 56
- TimeStamp - the time when the alarm is raised
- AlarmType - 4
- Severity - 1
- DetailedInfo - "This application card is unavailable"

Considering during upgrade and roll back scenario, Salus will not alarm locked application cards when the Shelf Controller is in the process of upgrade from pre-SN08 release to SN08 release or plus.

## 1.4 Alarming of Application Card being Recovered

### 1.4.1 Design Solution

Same as above, Salus will be used to alarm application card being auto-recovered.

When a card is being recovered by NSS\_BOOT\_AUDIT, it sends a message to Salus to indicate the start and finish of the recovery, Salus will raise a major alarm against the card and clear the alarm after the recovery is successful done.

The alarm is raised through a trap (Informs) with following data:

- PhysicalIndex - the slot number of the card seats in plus 33,
- AlarmID - 56
- TimeStamp - the time when the alarm is raised
- AlarmType - 4
- Severity - 2
- DetailedInfo - "This application card is unavailable and being recovered"

## 1.5 Alarming of Boot Server Unavailable

### 1.5.1 Design Solution

This is a straight-forward extension of the other forms of alarming the loss of network elements. Hubble will ping the Boot Server address and will keep Mama informed of its status. Mama will raise an alarm based on the severity of the issue. And will clear the alarm if Hubble reports that it can be reached.

## 1.6 Alarming of NFS Mounts down

### 1.6.1 Design Solution

Salus will be modified to check the mounts periodically. It will attempt to remount any mounts found to be down, and raise an alarm for any mounts that remain down after the check. Only the mounts for provisioned applications will be checked.

Salus will schedule a reminder with Chronos, so that Chronos will send a message to Salus to kick off the check every 10 minutes. When the NFS mounts down is detected, the interval will be decreased to 1 minutes.

The recover script is currently responsible for the mounting the directories on start-up. It will be modified so that it can be called to check the mounts. This will allow the knowledge of the mount points to remain in one place.

## 1.7 Glossary

| Term | Description                               |
|------|-------------------------------------------|
| CS2K | Communication Server 2000                 |
| cPCI | Compact Peripheral Component Interconnect |
| EM   | Element Manager                           |
| GUI  | Graphical User Interface                  |
| OAM  | Operations, Administration, Maintenance   |
| SAM  | Service Application Module                |

|     |                         |
|-----|-------------------------|
| SC  | Shelf Controller        |
| SDM | Succession Data Manager |
| GWC | Gateway Controller      |

## ***Product = CS 2000***

### **A00007464--SBA PacketCable Event Messaging** ***Functional Description***

#### **1.1 Applicable Solution(s)**

DMS

#### **1.2 Description**

SN08 PacketCable Solution requires support for two entirely new billing streams. These streams are Accounting (PCEM) and LI (PCES).

This SN08 Activity A00007464(SBA PacketCable Event Messaging) provides modifications to SBA functionality on the 3PC-core as well as CBM to ensure end-to-end billing data delivery for Accounting (PCEM) and LI (PCES) streams.

It should be noted that valid PacketCable Product configuration is 3PC-core connected to CBM. There are no requirements to support this activity on any other configurations such as Xacore, Brisc, or SDM. Consequently, testing will be concentrated on 3pc/cbm configuration. This activity will provide following functionalities:

- CBM-3PCcore: Provides End-to-end delivery of billing data for PCEM stream
- CBM/3PC-core: Provides End-to-end delivery of billing data for PCES stream
- CBM/3PC-core: Will provide PCEM throughput capacity of 225 KBHCA(10 events / call, 200 byte average event) as per 'SN08 PacketCable EM requirements for Billing'.
- CBM/3PC-core: Will provide PCES throughput capacity of 0.2 KBHCA(10 events/call, 200 bytes average event)
- CBM-3PCcore: Will provide latency for PCEM stream as per 'SN08 PacketCable EM requirements for Billing'. This feature will provide latency of 2.5 seconds from Event generation to SBA CBM disk.

- CBM-3PCcore: Will provide latency for PCES stream as per ‘SN08 PacketCable EM requirements for Billing’. This feature will provide latency of 2.5 seconds from Event generation to IAA software.
- CBM: Configuration of PCEM stream from billmtc;confstrm;add level
- CBM: Configuration of PCES stream from billmtc;confstrm;add level
- CBM: query of PCEM stream from billmtc;confstrm;list level
- CBM: query of PCES stream from billmtc;confstrm;list level
- CBM: modification of already provisioned parameters for PCEM stream from billmtc;confstrm;change level. Note that modifications are not allowed if the stream is active.
- CBM: modification of already provisioned parameters for PCES stream from billmtc;confstrm;change level. Note that modifications are not allowed if the stream is active
- CBM: deactivation of PCEM stream from billmtc;confstrm;delete level
- CBM: deactivation of PCES stream from billmtc;confstrm;delete level
- 3PC-core: assignment of backup volumes for PCEM stream from mapci;mtc;appl;sdbil;addvol level
- 3PC-core: rejection of backup volumes configuration for PCES stream from mapci;mtc;appl;sdbil;addvol level
- 3PC-core: Activation of PCEM stream from mapci;mtc;appl;sdbil;post level
- 3PC-core: Activation of PCES stream from mapci;mtc;appl;sdbil;post level
- 3PC-core: query of PCEM stream from mapci;mtc;appl;sdbil;post pce;query level
- 3PC-core: query of PCES stream from mapci;mtc;appl;sdbil;post pces;query level
- 3PC-core: display banner for BKUP and REC subsystem for PCES stream will be set to offl at mapci;mtc;appl;sdbil;post pces level
- 3PC-core: deactivation of PCEM and PCES streams from mapci;mtc;appl;sdbil;post level

### 1.3 Hardware Requirements or Dependencies

Following hardware is required for PacketCable Event Messaging Solution:

- 2 x NTRX51GZ (Call Agent Blades with 1.5GBytes RAM)
- 2 x NTRX51GT (72GBytes STORM-IA disks)

### 1.4 Software Requirements or Dependencies

This activity is dependent on following activities for end-to-end delivery of PCEM and PCES billing streams from the core:

- **A00007196:** PacketCable Event Messaging. Allows successful datafill of CRSFMT and CRSMAP tables for PCES and PCEM streams

- **A00007465:** Integrated Accounting Application (IAA). Ensures PCEM, PCES event messages are delivered downstream.

## 1.5 Limitations and restrictions

- Filtered streams not supported for PacketCable streams PCEM and PCES.
- Some existing commands (such as query, closec, amadump, sendfile, and listfile) are modified for PacketCable streams. These commands are detailed in the Configuration Section (CN).

## 1.6 Interactions

None

## 1.7 Glossary

| Term | Description                                         |
|------|-----------------------------------------------------|
| 3PC  | Third Party Core                                    |
| CBM  | Core Billing Manager                                |
| IAA  | Integrated Accounting Application                   |
| LI   | Legal Intercept                                     |
| PCEM | PacketCable Event Messaging (ie. Accounting stream) |
| PCES | PacketCable Electronic Surveillance (ie. LI stream) |
| SBA  | SDM Billing Application                             |
| SPS  | Sterling PacketCable Software                       |

## 2: Configuration for A00007464

### 2.1 Hardware and Software Requirements

This feature is dependent on actid A00007196 (SBA PacketCable Event Messaging). Namely, it assumes successful datafill of CRSFMT and CRMAP tables for PCEM and PCES PacketCable streams.

TABLE: CRSFMT

| KEY         | FORMAT         | DATADUMP | CDRSRCH       | ALARMS   | TIMERDMP | TIMERVERAL |
|-------------|----------------|----------|---------------|----------|----------|------------|
| NIL         | NTFMT          | N        | NIL_FM        | N        | N        | 0          |
| AMA         | BCFMT          | N        | NIL_FM        | N        | N        | 0          |
| <b>PCEM</b> | <b>PCEMFMT</b> | <b>N</b> | <b>NIL_FM</b> | <b>N</b> | <b>N</b> | <b>0</b>   |
| <b>PCES</b> | <b>PCESFMT</b> | <b>N</b> | <b>NIL_FM</b> | <b>N</b> | <b>N</b> | <b>0</b>   |

TABLE: CRSMAP

| KEY         | STREAM      |
|-------------|-------------|
| -----       |             |
| CAMA        | AMA         |
| LAMA        | AMA         |
| TOPS        | AMA         |
| <b>PCEM</b> | <b>PCEM</b> |
| <b>PCES</b> | <b>PCES</b> |

## 2.2 Initial Configuration

This activity spans across switch core (3pc, xacore, brisc) and the CBM (Core Billing Manager).

Following is recommended:

- On CBM:
  - PacketCable Accounting stream (PCEM) must be configured for 6 hours of IAA (Integrated Accounting Application) downtime. This amounts to a logical volume requirement of 8Gbytes for SBA.
  - PCEM stream must be configured so that it grows to maximum possible size 20Mbytes. i.e. File closure based on max number of bytes.

## 2.3 Office/Subnet parameters (OP/SP) (CM & SESM)

Entire section is not applicable

## 2.4 Upgrade Considerations

### 2.4.1 Dump and Restore (CM)

Although new field (EXPEDITE) is introduced in table SDMBILL, the upgrade scenario is handled through the reformat proc. This proc., on upgrade to CSP21(SN08), will convert old tuple appropriately.

### 2.4.2 Element Management Upgrade

Not applicable

### 2.4.3 Downgrade impact

None.

## 2.5 Data schema (DS) (CM, MIBS, RDB)

### 2.5.1 New/modified tables, MIBs, or Database Schema

Table 1 New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|----------------|--------------------------|-----------------------------------|
| SDMBILL        | CHANGED                  | UNCHANGED                         |

### 2.5.2 Table/MIB/Remote Database Schema information

#### 2.5.2.1 Name: SDMBILL (SDM Billing Table)

This table is modified to include one additional field named EXPEDITE.

##### 2.5.2.1.1 Functional description

- Extra field named EXPEDITE is introduced in table SDMBILL
- PacketCable streams PCEM and PCES needs to provide PacketCable Event Messages as per 'SN08 PacketCable EM requirements for Billing' specifications. This is accomplished through new EXPEDITE field. This field will be set to Y for PCEM and PCES streams, and set to N for legacy streams such as AMA, OCC, SMDR
- Table SDMBILL is dependent on table CRSFMT. If an entry is added to CRSFMT table, corresponding entry will be created in SDMBILL through table dependency proc.
- for each entry in SDMBILL table, corresponding stream is visible in mapci;mtc;appl;sdbil;post level. Stream can be configured/activated/deactivated from this level
- If an entry is deleted from CRSFMT table, corresponding entry will be deleted from SDMBILL table through table dependency proc.
- EXPEDITE field in software controlled and is not editable

##### 2.5.2.1.2 Usage sequence and implications (CM Only)

There is no requirement to datafill table SDMBILL in any specific order



### 2.5.2.1.3 Size

**Table 2 Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory       |
|------------------------|----------------|----------------|-----------------------------|
| SDMBILL                | 1              | 15             | No additional memory impact |

### 2.5.2.1.4 Fields/OIDs

NA

### 2.5.2.1.5 Datafill example

The following example shows sample datafill for table SDMBILL

```

TABLE: SDMBILL
SDMBKEY SDMBACT SDMBSTAT EXPEDITE VOLUMES

--
 NIL OFF Off N $
 AMA ON InSv N (F02LAMA1) (F17LAMA1) $
 PCEM OFF Off Y (F02LPCEM1) (F17LPCEM1) $

```

### 2.5.2.1.6 Table release history update

Added field EXPEDITE to provide delivery of PacketCable Event Messages (billing data) to CBM.

### 2.5.2.1.7 Supplementary information

None

### 2.5.2.1.8 Translation verification and other tools

SDMBILL does not use translation verification tools.

## 2.6 Service Orders (SO) (CM & SESM)

Entire section is not applicable

## 2.7 Software optionality control (SOC)

Not applicable

## 2.8 Element Management

### 2.8.1 CLUI Interface

No new commands are introduced by this activity. Behavior of addvol command has changed for PacketCable Electronic Surveillance (PCES) steam. See "Configuration Walkthrough" on page 869.

## 2.9 User interface changes

No new commands are introduced by this activity. Behavior of addvol command has changed for PacketCable Electronic Surveillance (PCES) steam. See “Configuration Walkthrough” on page 869.

## 2.10 OSSGate Interface Changes

Entire section is not applicable

## 2.11 Security

Entire section is not applicable

## 2.12 Configuration Walkthrough

### 2.12.1 Provisioning of PacketCable Accounting stream (PCEM)

- core: create Accounting stream (PCEM) by datafilling CRSFMT table

TABLE: CRSFMT

| KEY | FORMAT | DATADUMP | CDRSRCH | ALARMS | TIMERDMP | TIMERVAL |
|-----|--------|----------|---------|--------|----------|----------|
|-----|--------|----------|---------|--------|----------|----------|

|             |                |          |               |          |          |          |
|-------------|----------------|----------|---------------|----------|----------|----------|
| NIL         | NTFMT          | N        | NIL_FM        | N        | N        | 0        |
| <b>PCEM</b> | <b>PCFMFMT</b> | <b>N</b> | <b>NIL_FM</b> | <b>N</b> | <b>N</b> | <b>0</b> |

- core: Due to CRSFMT / SDMBILL table dependency, creation of PCEM entry in CRSFMT creates following entry in table SDMBILL

TABLE: SDMBILL

| SDMBKEY | SDMBACT | SDMBSTAT | EXPEDITE | VOLUMES |
|---------|---------|----------|----------|---------|
|---------|---------|----------|----------|---------|

|             |            |            |          |                          |
|-------------|------------|------------|----------|--------------------------|
| NIL         | OFF        | Off        | N        | \$                       |
| AMA         | ON         | InSv       | N        | ( F02LAMA1) (F17LAMA1)\$ |
| <b>PCEM</b> | <b>OFF</b> | <b>Off</b> | <b>Y</b> | <b>\$</b>                |

- core: assign backup volumes to Accounting stream PCEM. This is done by issuing mapci;mtc;appl;sdbmil;addvol pcem f02lpcem1 f17lpcem1

TABLE: SDMBILL

| SDMBKEY | SDMBACT | SDMBSTAT | EXPEDITED | VOLUMES |
|---------|---------|----------|-----------|---------|
|---------|---------|----------|-----------|---------|

|             |            |            |          |                                  |
|-------------|------------|------------|----------|----------------------------------|
| NIL         | OFF        | Off        | N        | \$                               |
| AMA         | ON         | InSv       | N        | (F02LAMA1) (F17LAMA1)\$          |
| <b>PCEM</b> | <b>OFF</b> | <b>Off</b> | <b>Y</b> | <b>(F02LPCEM1) (F17LPCEM1)\$</b> |

- core: map calldata type PCEM to accounting stream PCEM by datafilling CRSMAP table

TABLE: CRSMAP

| KEY | STREAM |
|-----|--------|
|-----|--------|

|             |             |
|-------------|-------------|
| CAMA        | AMA         |
| LAMA        | AMA         |
| TOPS        | AMA         |
| <b>PCEM</b> | <b>PCEM</b> |

- cbm: configure PCEM bill
- ing stream using billmtc;confstrm;add command

example:

Stream Name [] {} : pcem

Is this a Filter Stream [NO] {NO YES } : no

Stream Record Format [] {SMDR BC CDR300 CDR250 PCEM PCES } : pcem

File Format Type [] {LW } : lw

Please specify the logical Volume [/cbmdata/00/billing/pcem] {} : /cbmdata/00/billing/pcem

Do you want Files closed based on time [NO] {NO YES } : no

Number of records per day [0] {} : 0

Maximum Number of records per file [500000] {10000 - 500000} : 500000

Maximum Number of bytes per file [20000000] {1000000 - 20000000} : 20000000

Stream Name -> PCEM

Is this a Filter Stream -> NO

Stream Record Format -> PCEM

File Format Type -> LW

Logical Volume Name -> /cbmdata/00/billing/pcem

Do you want Files closed based on time -> NO

Number of records per day -> 0

Average record size -> 80

Maximum Number of records per file -> 500000

Maximum Number of bytes per file -> 20000000

Commit ? [Save] {Save Edit Abort} : save

Saving stream

Configuration of Stream PCEM is now complete

- cbm: modify logical volume of already configured pcem stream (from billmtc;confstrm;change map level) while stream is still inactive

example:

Stream Name [] {} : pcem  
Stream Record Format [PCEM] {SMDR BC CDR300 CDR250 PCEM PCES } : pcem  
File Format Type [LW] {LW } : lw  
Please specify the logical Volume [/cbmdata/00/billing/pcem] {} :  
/cbmdata/00/billing/acct  
Do you want Files closed based on time [NO] {NO YES } : no  
Number of records per day [0] {} : 0  
Maximum Number of records per file [500000] {10000 - 500000} : 500000  
Maximum Number of bytes per file [20000000] {1000000 - 20000000} : 20000000

Stream Name -> PCEM  
Is this a Filter Stream -> NO  
Stream Record Format -> PCEM  
File Format Type -> LW  
Logical Volume Name -> /cbmdata/00/billing/acct  
Do you want Files closed based on time -> NO  
Number of records per day -> 0  
Average record size -> 80  
Maximum Number of records per file -> 500000  
Maximum Number of bytes per file -> 20000000  
Commit ? [Save] {Save Edit Abort} : save  
Saving stream  
Configuration of Stream PCEM is now complete

- cbm: query PCEM from billmtc;confstrm;list map level) while stream is inactive

example:

Stream Name [] {} : pcem

Displaying stream(s) PCEM  
Stream Name -> PCEM  
Stream Running status -> NO  
Is this a Filter Stream -> NO  
Stream Record Format -> PCEM  
File Format Type -> LW  
Logical Volume Name -> /cbmdata/00/billing/acct  
Do you want Files closed based on time -> NO  
Maximum Number of records per file -> 500000  
Maximum Number of bytes per file -> 20000000

- core: activate PCEM billing stream by issuing command  
“mapci;mtc;appl;sdbil;post pcecm;sdbctrl pcecm on”
- cbm: query PCEM from billmtc;confstrm;list map level) while stream is active

example:

Stream Name [] {} : pcecm

Displaying stream(s) PCEM

Stream Name -> PCEM

Stream Running status -> YES

Is this a Filter Stream -> NO

Stream Record Format -> PCEM

File Format Type -> LW

Logical Volume Name -> /cbmdata/00/billing/pcecm

Do you want Files closed based on time -> NO

Maximum Number of records per file -> 10000

Maximum Number of bytes per file -> 1000000

- cbm: modify ‘File closure criteria’ of already configured pcecm stream  
(from billmtc;confstrm;change map level) while stream is active

example:

Stream Name [] {} : pcem  
 Do you want Files closed based on time [NO] {NO YES } : yes  
 File Closure time limit [10080] {5 - 10080} : 5  
 Number of records per day [0] {} : 0  
 Maximum Number of records per file [500000] {10000 - 500000} : 500000  
 Maximum Number of bytes per file [20000000] {1000000 - 20000000} : 20000000

Stream Name -> PCEM  
 Stream Running status -> YES  
 Is this a Filter Stream -> NO  
 Stream Record Format -> PCEM  
 File Format Type -> LW  
 Logical Volume Name -> /cbmdata/00/billing/pcem  
 Do you want Files closed based on time -> YES  
 File Closure time limit -> 5  
 Number of records per day -> 0  
 Average record size -> 80  
 Maximum Number of records per file -> 500000  
 Maximum Number of bytes per file -> 20000000

- core: display of pcam map level (mapci;mtc;appl;sdbil;post pcam

|      |       |      |     |        |       |      |
|------|-------|------|-----|--------|-------|------|
| IOD  | PM    | CCS  | Lns | Trks   | Ext   | APPL |
| ITOC | 4LIU7 | 4 RS | .   | 132C.. | 1Crit | .    |
| *C*  | *C*   | *C*  |     | *C*    | *C*   |      |

|      |        |       |     |       |       |        |
|------|--------|-------|-----|-------|-------|--------|
| POST | OAMAP  | ATMFW | SDM | SPMCP | SWMTC | SDMBIL |
| PKT  | TOPSIP |       |     |       |       |        |

|           |        |      |       |      |       |      |   |
|-----------|--------|------|-------|------|-------|------|---|
| 0 Quit    | .      | .    | .     | .    | .     | .    | . |
| 2 Post_   |        |      |       |      |       |      |   |
| 3 Addvol_ |        |      |       |      |       |      |   |
| 4 Remvol_ | PCEM : | InSv | Pri:  | InSv | Rec:  | InSv |   |
| 5         |        |      | Bkup: | InSv | Comm: | InSv |   |
| 6 TST     |        |      |       |      |       |      |   |
| 7 Bsy     |        |      |       |      |       |      |   |
| 8 RTS     |        |      |       |      |       |      |   |
| 9 Conf_   |        |      |       |      |       |      |   |

```
10
11 DispAL
12
13 Status
14 Query POST:
15
16
17 Audit
18
19 D
Time 19:59 >
```

- cbm: query command

example:

```
query pcam
PCEM:
 PrimarySubStream: InSv
 Number of Records in Open Files: 100
 ClosedNotSent Files Available: 59
 Records within the ClosedNotSent files: 7244059
 Date of Last File Sent:
 Tue Oct 19 11:25:16 2004
```

- cbm: amadump command

example:

```
amadump pcam
```

Error: pcam record format is not supported.

- cbm: sendfile command

example:

```
sendfile pcam
```

Sendfile does not support the LW format.

- cbm: listfile command

example:

```
U.20041019.111713.01071.PCEM.P
 Date: Tue Oct 19 11:17:13 2004 Recs: 122527 Size: 15622128 CNS
U.20041019.112213.01072.PCEM.P
 Date: Tue Oct 19 11:22:13 2004 Recs: 122801 Size: 15657016 CNS
U.20041019.112713.01073.PCEM.P
 Date: Tue Oct 19 11:27:13 2004 Recs: 122675 Size: 15640904
```

- cbm: closec command

example:

```
closec pcm
```

```
No open files found
```

- cbm: attempt to create filter stream for already configured PCEM stream

```
Stream Name [] {} : emf
Is this a Filter Stream [NO] {NO YES } : YES
Associated Stream Name [] {} : pcm
```

Error: PCEM is a packet cable stream and cannot be specified as an associated stream.

## 2.12.2 Provisioning of PacketCable LI stream (PCES)

- core: create LI stream (PCES) by datafilling CRSFMT table

TABLE: CRSFMT

| KEY         | FORMAT         | DATADUMP | CDRSRCH       | ALARMS   | TIMERDMP | TIMerval |
|-------------|----------------|----------|---------------|----------|----------|----------|
| NIL         | NTFMT          | N        | NIL_FM        | N        | N        | 0        |
| <b>PCES</b> | <b>PCESFMT</b> | <b>N</b> | <b>NIL_FM</b> | <b>N</b> | <b>N</b> | <b>0</b> |



- core: Due to CRSFMT / SDMBILL table dependency, creation of PCES entry in CRSFMT creates following entry in table SDMBILL

TABLE: SDMBILL

| SDMBKEY     | SDMBACT    | SDMBSTAT   | EXPEDITE | VOLUMES                  |
|-------------|------------|------------|----------|--------------------------|
| NIL         | OFF        | Off        | N        | \$                       |
| AMA         | ON         | InSv       | N        | (F02LAMA1) (F17LAMA1) \$ |
| <b>PCES</b> | <b>OFF</b> | <b>Off</b> | <b>Y</b> | <b>\$</b>                |

- core: Note that backup volumes are not required for PCES stream. In fact, mapci;mtc;appl;sdbil;addvol pces f02lpces f17lpces command will alert user with 'backup volumes cannot be configured for PCES stream'.
- core: map calldata type PCES to LI stream PCES by datafilling CRSMAP table

TABLE: CRSMAP

| KEY         | STREAM      |
|-------------|-------------|
| CAMA        | AMA         |
| LAMA        | AMA         |
| TOPS        | AMA         |
| <b>PCES</b> | <b>PCES</b> |

- cbm: configure PCES billing stream using billmtc;confstrm;add command

example:

Stream Name [] {} : pces

Is this a Filter Stream [NO] {NO YES } : no

Stream Record Format [] {SMDR BC CDR300 CDR250 PCEM PCES } : pces

Stream Name -> NPES

Is this a Filter Stream -> NO

Stream Record Format -> PCES

Commit ? [Save] {Save Edit Abort} : save

Saving stream

Configuration of Stream PCES is now complet

- cbm: query PCES from billmtc;confstrm;list map level) when stream is inactive

example:

Stream Name [] {} : pces

Displaying stream(s) PCES

Stream Name -> PCES

Stream Running status -> NO

Is this a Filter Stream -> NO

Stream Record Format -> PCES

- core: activate PCES billing stream by issuing command  
“mapci;mtc;appl;sdbil;post pces;sdbctrl pces on”
- cbm: query PCES from billmtc;confstrm;list map level) when stream is active

example:

Stream Name [] {} : pces

Displaying stream(s) PCES

Stream Name -> PCES

Stream Running status -> YES

Is this a Filter Stream -> NO

Stream Record Format -> PCES

- cbm: attempt to modify already configured pces stream (from billmtc;confstrm;change map level) while stream is active. Note that no changes are allowed.

example:

Stream Name [] {} : pces

Stream Name -> PCES

Stream Running status -> YES

Is this a Filter Stream -> NO

Stream Record Format -> PCES

Commit ? [Save] {Save Edit Abort} :

Commit ? [Save] {Save Edit Abort} :

Saving stream

Configuration of Stream PCES is now complete

- cbm: attempt to create filter stream for already configured PCES stream

Stream Name [] {} : esf

Is this a Filter Stream [NO] {NO YES } : YES

Associated Stream Name [] {} : pces

Error: PCES is a packet cable stream and cannot be specified as an associated stream.

- core: display of pcam map level (mapci;mtc;appl;sdmbil;post pces

```

 IOD PM CCS Lns Trks Ext APPL
 ITOC 4LIU7 4 RS . 132C.. 1Crit .
 C *C* *C* *C* *C*

POST OAMAP ATMFW SDM SPMCP SWMTC SDMBIL
PKT TOPSIP

0 Quit
2 Post_
3 Addvol_
4 Remvol_ PCES: InSv Pri: InSv Rec: Offl
5 Bkup: Offl Comm: InSv
6 TST
7 Bsy
8 RTS
9 Conf_
10
11 DispAL
12
13 Status
14 Query POST:
15
16
17 Audit
18
D

```

Time 19:59 >

- cbm: amadump command

example:

```
amadump pces
```

Error: pces record format is not supported.

- cbm: sendfile command

example:

```
sendfile pces
```

No file formats supported for PCES stream.

- cbm: listfile command

example:

```
listfile pces
```

Error: No file formats supported for PCES stream

- cbm: closec command

example:

```
closec pces
```

No open files found

## 2.13 Recommended SBA configuration

This activity spans across switch core (3pc, xacore, brisc) and the CBM (Core Billing Manager).

Following is recommended:

- On CBM:
  - PacketCable Accounting stream (PCEM) must be configured for 6 hours of IAA (Integrated Accounting Application) downtime. This amounts to a logical volume requirement of 8Gbytes for SBA.
  - PCEM stream must be configured so that it grows to maximum possible size 20Mbytes. i.e. File closure based on max number of bytes.

## ***Product = CS 2000***

### **A00007465--Integrated Accounting Application** ***Functional Description***

#### **1.1 Applicable Solution(s)**

DMS

#### **1.2 Description**

This document covers the IAA Event Messaging and Legal Intercept processing functionality supported in the SN08 time frame. This functionality adds a packet cable transport mechanism to the Core Billing Manager 850 (CBM850) which is packet cable compliant.

Accounting and Legal Intercept Event Messages are received by the IAA from the SBA and Gateway Controllers (GWCs). When received, the messages do not contain the RADIUS header necessary to send the event messages to the down stream RKS pair or DF. When sending to a RKS pair ftp or secure ftp can be used as a primary transport protocol.

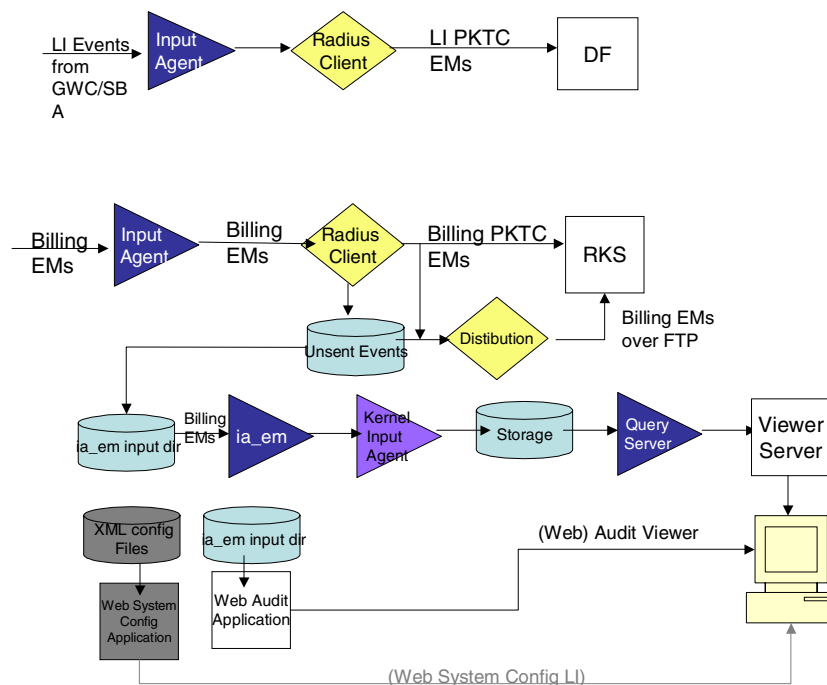
The accounting event messages will be reformatted to include a RADIUS header and a Sequence Number in the Event Message Header and then forwarded to a RKS pair. In the event that the accounting event messages cannot be delivered to the RKS, they are stored locally in the packet cable event message file format, and can be retrieved by the RKS or scheduled to be sent using the ftp or secure ftp protocol. In addition, the untransmittable accounting event messages are stored in the internal storage layer and made available to users via a record viewer web interface.

The legal intercept event messages are reformatted to include a RADIUS header and add a Sequence Number in the Event Message Header and then forwarded to a DF over a secure transport path. In the event the messages cannot be sent for any reason the events are dropped.

##### **1.2.1 System Behavior**

Accounting and Legal Intercept Event Messages will be received by the IAA application from the SBA (Supernode Billing Application) and GWCs (Gateway Controllers) via various interfaces.

There will be two SBA Input agents for processing primary and recovery files from the SBA. There will be a LI Collector module which the SBA and different GWCs interface with to transmit LI messages over UDP.



At the output side, there will be two Event Message Distribution Agents configured within the Accounting Server - one to handle LI messages and the other for Billing Accounting messages. These two instances will be identified by configuration as to what type of Event Messages each one handles.

The Billing/Accounting EMDA will send RADIUS messages to Record Keeping Server (RKS) pairs and the LI EMDA will send messages to one or more Delivery Function (DF) Servers.

The routing to various destinations will be done on the basis of the Channel ID field present in the LI and Billing Messages obtained from the SBA and GWCs. Each Channel ID will have corresponding to it (in a lookup table), a DF or RKS Pair to which the data needs to be sent to.

The accounting event messages will be reformatted to include a RADIUS header and add a Sequence Number in the Event Message Header and then forwarded to a RKS pair. In the event that the accounting event messages cannot be delivered to the RKS, they are stored locally and can be retrieved by the RKS or scheduled to be sent using the ftp or secure ftp protocol. In addition, the untransmittable accounting event messages are stored in the internal storage layer and made available to users via a record viewer web interface.

The legal intercept event messages are reformatted to include a RADIUS header and add a Sequence Number in the Event Message Header and then forwarded to a DF over a secure transport path. In the event the messages cannot be sent for any reason the events are dropped.

A FTP agent will take care of sending the data over FTP downstream to the RKS, if configured to do so.

A Web-based User Interface (and Command line tool) will allow configuration and ability to view untransmitted event messages.

## 1.2.2 Configuration

The configuration information used by the IAA is contained in various XML files. These files are found in the directory `/iaa/<xx>/data/config`. The items that can be configured by the user, using the web interface or command line tool (iaa\_config) are found in table 1 and 2 below.

**Table 2: Packet Cable Global Parameters**

| Parameter      | Description / List of Values                              | Data Format      | Validation Description | Max. Value | Max Field Size | Default Value |
|----------------|-----------------------------------------------------------|------------------|------------------------|------------|----------------|---------------|
| Element ID     | 5 digit unique Network Element ID                         | integer          | required               | 99999      |                |               |
| Format Version | 1 - PktCbl 1.0<br>2 - PktCbl 1.1<br>3 - PktCbl Multimedia | positive integer | required               | 3          |                |               |
| TimeZone DST   | 0 - Standard<br>1 - DST                                   | integer          | required               | 1          |                |               |

**Table 2: Packet Cable Global Parameters**

| Parameter                            | Description / List of Values                       | Data Format                     | Validation Description | Max. Value | Max Field Size | Default Value |
|--------------------------------------|----------------------------------------------------|---------------------------------|------------------------|------------|----------------|---------------|
| TimeZone UTC Offset                  | +/- HHMMSS                                         | alphanumeric                    | required               |            | 10             |               |
| Sending Mode for Accounting Messages | 0 - RADIUS Realtime<br>1 - RADIUS Batch<br>2 - FTP | integer                         | required               |            | 1              | 0             |
| EM File Path                         | Unix File Path                                     | Printable ASCII Characters Only | required               |            | 256            | 0             |

**Table 3: Output Destination Streams**

| Parameter                              | Description / List of values | Data Format      | Validation      | Max Value | Max Field Size | Default Value |
|----------------------------------------|------------------------------|------------------|-----------------|-----------|----------------|---------------|
| Channel Id                             | 1 byte field                 | integer          | required        | 255       |                |               |
| Destination Type                       | 0 - DF<br>1 - RKS            | integer          | required        |           | 1              |               |
| Description                            | Free Form Text               | alphanumeric     | optional        |           | 32             |               |
| DF Collector / Primary RKS IP          | IP address                   | alphanumeric     | required        |           | 15             |               |
| DF Collector / Primary RKS Radius Port |                              | positive integer | required        | 65535     |                |               |
| Primary RKS FTP Port                   |                              | positive integer | required if RKS | 65535     |                | 21            |
| Primary RKS FTP Username               |                              | alphanumeric     | required if RKS |           | 32             |               |



**Table 3: Output Destination Streams**

| Parameter                           | Description /<br>List of values                 | Data Format                     | Validation              | Max<br>Value | Max<br>Field<br>Size | Default<br>Value     |
|-------------------------------------|-------------------------------------------------|---------------------------------|-------------------------|--------------|----------------------|----------------------|
| Primary RKS FTP Password            |                                                 | alphanumeric<br>[not displayed] | required if<br>RKS      |              | 32                   |                      |
| Primary RKS Destination Directory   |                                                 | alphanumeric                    | Optional                |              | 512                  |                      |
| Secondary RKS IP                    | IP address                                      |                                 | required if<br>RKS      |              | 15                   |                      |
| Secondary RKS Radius Port           |                                                 | positive integer                | required if<br>RKS      | 65535        |                      |                      |
| Secondary RKS FTP Port              |                                                 | positive integer                | optional                | 65535        |                      | 21                   |
| Secondary RKS FTP Username          |                                                 | alphanumeric                    | optional                |              | 32                   |                      |
| Secondary RKS FTP Password          |                                                 | alphanumeric<br>[not displayed] | optional                |              | 32                   |                      |
| Secondary RKS Destination Directory |                                                 | alphanumeric                    | Optional                |              | 512                  |                      |
| Retry Limit                         | Number of<br>retries                            | integer                         | required                | 9            |                      | 3                    |
| Retry Interval                      | in seconds                                      | positive integer                | required                | 9            |                      | 1                    |
| Batch Interval                      | in seconds                                      | positive integer                | required                | 30           |                      | 2                    |
| Messages in Batch                   | Number of<br>messages                           | positive integer<br>> 1         | required                | 10           |                      | 5                    |
| Shared Secret                       |                                                 | alphanumeric                    | required                |              | 32                   | 00000000<br>00000000 |
| Security Protocol                   | 0 - None<br>1 - IPSec                           | Integer                         | required                | 1            |                      | 0 - None             |
| FTP Inbound / Outbound              | 0 - Outbound<br>(Push)<br>1 - Inbound<br>(Pull) | integer                         | required                | 1            |                      |                      |
| FTP Schedule                        | List of Configured Schedules                    | alphanumeric                    | only if<br>FTP Outbound |              |                      |                      |

**Table 3: Output Destination Streams**

| Parameter        | Description /<br>List of values  | Data Format           | Validation                   | Max<br>Value | Max<br>Field<br>Size | Default<br>Value |
|------------------|----------------------------------|-----------------------|------------------------------|--------------|----------------------|------------------|
| FTP Mode         | 0 - FTP<br>1 - Secure FTP        | integer               | only if<br>FTP Out-<br>bound | 1            |                      | sFTP             |
| Max. File Length | size of file in<br>bytes, kB, MB | positive inte-<br>ger | required                     |              | 3                    | 2 MB             |
| Max. Open Time   | time in min-<br>utes             | positive inte-<br>ger | required                     | 120          |                      | 60               |
| File Priority    | 1, 2, 3, 4                       | positive inte-<br>ger | required                     | 4            |                      | 1 - lowest       |

The configuration files that control the operation of the IAA modules can be found in **/iaa/<xx>/data/<modulename>/<modulename>.config**. This information is updated during the application installation and should not be modified by the end user. Below is an example of the xml configuration file for the emda module:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<!DOCTYPE config SYSTEM "config.dtd">

<!--
#
FILE NAME
emda.config
#
FILE CREATION
19 July'2004 By Ashwini Ravindra.
#
FILE REVISION
$Id: emda_li.config,v 1.1.2.1 2004/08/06 10:21:36 vjohn Exp $
#
FILE HISTORY
$Log: emda_li.config,v $
Revision 1.1.2.1 2004/08/06 10:21:36 vjohn
Initial checkin for EMDA
#
#
-->
<!--
```

```
<!-- -->
<!-- Module Event Message Distribution Agent -->
<!-- -->
<!-- Start of configuration settings -->

<config>

 <import file="common.xml">
 <section name="processTable">
 <param name="processID" value="302"/>
 <param name="processType" value="emda"/>
 <param name="processMgmtPort" value="6071"/>
 </section>

 <section name="urf"/>

 <section name="clientCom">
 <param name="clientId" value="401"/>
 <param name="clientUnixSocketPath" value="/tmp/kernel_1.sck"/>
 <param name="serverPort" value="5000"/>
 </section>

 <section name="serverCom">
 <param name="serverPort" value="7001"/>
 <param name="serverUnixSocketFile" value="/tmp/emda_li.sck"/>
 </section>

 <section name="miscSettings"/>

 <section name="log">
 <param name="logFileName" value="emda_li"/>
 </section>

 <section name="progressStorage"/>
 <section name="lightStorage"/>
 <section name="shmBuffer">
 <param name="shmPath" value="/shmpath/li_emda"/>
 </section>
 <section name="inputurf"/>
 <section name="io">
 <param name="outputMechanism" value="0"/>
 <param name="inputMechanism" value="0"/>
 </section>
 </import>

 <section name="EMDAMisc">
 <dir name="tablepath" value="$(RECO_HOME)"/>
 <bool name="useReferenceData" value="TRUE"/>
 <int name="numOfSeconds" value="10"/>
 <int name="DestinationType" value="0" />
 <int name="DistributionCapFactor" value="2"/>
 <int name="KeepVSAHeader" value="0"/>
 </section>
</config>
```

```

<int name="SenderThreadSleepTime" value="1000"/>
<int name="MonitorThreadSleepTime" value="1000"/>
<int name="ReceiverThreadSleepTime" value="1000"/>
<int name="FileWriterThreadSleepTime" value="1000"/>
<int name="ShmFlushInterval" value="100"/>
</section>

<import file="global_parameters_list.config">
 <section name="GlobalParameters"/>
 <table name="GlobalParametersTable"/>
</import>
<import file="destination_streams_list.config">
 <section name="DestinationStreams"/>
 <table name="DestinationStreamsTable"/>
</import>

<table name="refDataSectionNames">
 <string column="refDataSectionName"/>
 <string column="tableSectionName"/>
 <row>
 <cell column="refDataSectionName" value="GlobalParameters"/>
 <cell column="tableSectionName" value="GlobalParameters"/>
 </row>
 <row>
 <cell column="refDataSectionName" value="DestinationStreams"/>
 <cell column="tableSectionName" value="DestinationStreams"/>
 </row>
</table>
</config>

```

### 1.2.3 Starting the IAA

The IAA modules are started and controlled by the SDM Application Manager (SAM). Upon startup the input agents bind to ports as defined in `/etc/services` to listen for LI event messages as well as messages from the SBA to indicate that data was written to a file.

### 1.2.4 Stopping the IAA

The IAA modules are stopped by the SDM Application Manager (SAM).

### 1.2.5 File Management

Temporary files used by the IAA modules are removed after they are no longer needed. Files created by the EMDA (if configured to send to the RKS via ftp or sftp or if it cannot send events to the downstream RKS in realtime) are moved to the `/iaa/<nn>/secondary` directory by the `fdsend` program. If the filesystem is full the oldest secondary (already transmitted) file or files will be removed to make room for the new file. It is anticipated that this filesystem will remain at 80 to 100 percent capacity.

The event messages that are not sent downstream are also stored in the IAA storage layer and made available to the end user for viewing via the web. This data is stored in the directory `/iaa/<nn>/kdb`. These files are removed by the utility 'remove\_aged\_file'. When invoked it will take as parameters: the number of days old as a reference and the list of directories to search for old files.

### 1.2.6 Filesystems and Directories

Upon installation of the IAA the following filesystems and directories will be created to hold executables, libraries and data used and created by the application.

#### FileSystems:

- `/cbmdata/<slices>/iaa/data`
- `/cbmdata/<slices>/iaa/ftpout`
- `/cbmdata/<slices>/iaa/kdb`
- `/cbmdata/<slices>/iaa/config`

#### Directories:

- `/opt/nortel/cbm/<xx>/iaa`
- `/opt/nortel/cbm/<xx>/iaa/bin`
- `/opt/nortel/cbm/<xx>/iaa/slib`
- `/opt/nortel/cbm/<xx>/iaa/webapps`

### 1.2.7 Security

Accounting messages are sent to the downstream RKS pairs via the RADIUS protocol or using ftp or secure ftp. When using RADIUS or regular ftp IPsec can be used as the underlying security protocol if configured. This is not necessary if using secure ftp.

Legal Intercept messages are sent to the downstream DF over an IPsec connection. Should the connection to the downstream DF become unavailable the LI messages will be discarded after the configured number of retry attempts have been exhausted, this will result in a GAP in the LI messages. LI messages will not be viewable in the web based event viewer nor will they be stored on disk while being processed by the IAA.

## 1.3 Hardware Requirements or Dependencies

The IAA has the following requirements:

- SUN Netra 240
- 2GB of RAM Dedicated for the IAA modules

## 1.4 Software Requirements or Dependencies

SSPFS 3rd party Software Suite Version 08 with the following version dependencies:

- Apache Web Server 2.0.47 or above
- JRE 1.4.2\_04 or above
- Apache Tomcat 4.1.24 or higher
- SBA

## 1.5 Limitations and restrictions

Due to disk storage requirements only records not sent to the downstream RKS over the RADIUS protocol, will be viewable via the IAA record viewer.

## 1.6 Interactions

- Syslog daemon Server (Designer logs)
- Customer Logs
- State Changes

## 1.7 Applicable customer facing sections

### Fault Management

Logs ☒

Alarms ☒

### Configuration

Data Schema ☐

User Interface ☒

Element Management ☐

Security ☐

Service Order ☐

Office Parameters ☐

Accounting (includes AMA billing) ☐

Performance (includes operational measurements) ☒

## 1.8 Glossary

| Term  | Description                       |
|-------|-----------------------------------|
| DF    | Delivery Function Server          |
| GWC   | Gateway Controllers               |
| IAA   | Integrated Accounting Application |
| LI    | Legal Intercept                   |
| PC EM | Packet Cable Event Message        |
| RKS   | Record Keeping Server             |
| SBA   | Supernode Billing Application     |
| XML   | eXtensible Markup Language        |

## 2: Fault Management for A00007465

### 2.1 Fault management strategy

Faults and alarms generated by the IAA modules are sent to Customer logs using the API provided and defined in the Log Reporting Rules and Guidelines document. (IEMPG, AF01). The IAA modules will use Log Number SDM799 and SDM399 when generating messages viewable by the customer. Designer information is written to the designer logs using the syslog mechanism directly.

### 2.2 Fault management tools and utilities

As a result of using the API provided by Nortel, the customer logs, state changes and designer logs can be managed using the existing tools Nortel has in place.

### 2.3 Logs

The following new alarms and log ID are being added as part of the IAA feature.

**Table 4 IAA logs**

| LOG NAME | LOG NUMBER | NEW/MOD DELETED | SYSTEM (SOS/UNIX) |
|----------|------------|-----------------|-------------------|
| IAA      | 314        | NEW             | UNIX              |
| IAA      | 342        | NEW             | UNIX              |
| IAA      | 343        | NEW             | UNIX              |
| IAA      | 344        | NEW             | UNIX              |
| IAA      | 345        | NEW             | UNIX              |

**Table 4 IAA logs**

| LOG NAME | LOG NUMBER | NEW/MOD<br>DELETED | SYSTEM (SOS/UNIX) |
|----------|------------|--------------------|-------------------|
| IAA      | 346        | NEW                | UNIX              |
| IAA      | 347        | NEW                | UNIX              |
| IAA      | 641        | NEW                | UNIX              |
| IAA      | 646        | NEW                | UNIX              |
| IAA      | 701        | NEW                | UNIX              |

### 2.3.1 Log Report - IAA314

Example:

CA108CD \*\*\* IAA314 APR08 14:50:47 3800 TBL IAA Module Initialization Failure

Module: <Module Name>

Reason: <Reason>

#### 2.3.1.1 Overview

The IAA314 log is generated whenever an IAA module fails to initialize. The reason text field may contain one of the following strings.

##### “Error Loading URF Specification File”

**Cause:** This log message is generated when the modules URF specification File is corrupted or missing.

**Action:** Verify URF specification file for the module is in the correct location and is not corrupted. Otherwise contact next level of support.

##### “Error Initializing spathreaddata object”

**Cause:** This log message is generated when system resources are not available.

**Action:** Determine cause of unavailable system resources and restart application. Otherwise contact next level of support.

##### “License check failed”

**Cause:** This log message is generated if the software license needed to run the IAA application is missing.

**Action:** Verify license file is in the correct directory and restart application. Otherwise contact next level of support.



**“Cannot create socket, Port # %u”**

**Cause:** This log message is generated if system resources are unavailable, or if another process is attached to the port number displayed in the alarm.

**Action:** Determine if another application is connected to the port number in question. Determine cause of unavailable system resources and restart the application. Otherwise contact next level of support.

**“Shared Memory Initialization Failed”**

**Cause:** This log message is generated if system resources are unavailable.

**Action:** Determine cause of unavailable system resources and restart the application. Otherwise contact next level of support.

**“Failed to flush shared memory queue to disk”**

**Cause:** This log message is generated if the file system the module is attempting to write its shared memory queue to is full or the permissions are not correct.

**Action:** Verify that the files system has the correct permissions set and that there is space available on the filesystem. Otherwise contact next level of support.

**“Bad Parameters Passed at Startup”**

**Cause:** An invalid parameter was passed to the IAA module.

**Action:** Verify startup script is passing correct parameters, and restart application. Otherwise contact next level of support.

## **2.3.2 Log Report - IAA342**

Example:

```
CA108CD *** IAA342 APR08 14:50:47 3800 TBL IAA Module Interprocess Communication Failure
Module: <Module Name>
Reason: <Reason>
```

### **2.3.2.1 Overview**

The IAA342 log is generated whenever an IAA module cannot communicate with other IAA modules. The reason text field may contain one of the following strings.

**“Error Communicating to EMDA”**

**Cause:** This log message is generated when a module cannot communicate with the EMDA module.

**Action:** Verify that the EMDA modules is operational and listening to the correct port. Otherwise contact next level of support.

### 2.3.3 Log Report - IAA343

Example:

CA108CD \*\*\* IAA343 APR08 14:50:47 3800 TBL IAA PCEM Processing Error

Module: <Module Name>

FileName: <Name of Bad file if Available>

Reason: <Reason>

#### 2.3.3.1 Overview

The IAA343 log is generated when a PCEM processing error occurs. The reason text field may contain one of the following strings.

##### “Error Reading Input File”

**Cause:** This log message is generated if there is a problem reading an input data file.

**Action:** Verify that the correct permissions are set on the file displayed in the alarm.

##### “Error Renaming or Accessing file”

**Cause:** This log message is generated if the IAA module cannot access the specified file or rename it.

**Action:** Verify the correct permissions of the file and filesystem displayed in the log messages. Otherwise contact next level of support.

##### “Error generating checksum”

**Cause:** IAA module was unable to create the correct checksum.

**Action:** Verify that the input file is not corrupted. Otherwise contact next level of support.

##### “Error writing to File”

**Cause:** This log message is generated if IAA module cannot write to its output file.

**Action:** Verify that the permissions on the file and filesystem are correct. Verify there is space available on the filesystem. Otherwise contact next level of support.

**“Failed to receive UDP messages”**

**Cause:** This log message is generated if the IAA application cannot receive UDP messages.

**Action:** Determine cause of unavailable system resources and restart the application. Otherwise contact next level of support.

**“Failed to flush shared memory queue to disk”**

**Cause:** This log message is generated if the file system the module is attempting to write its shared memory queue to is full or the permissions are not correct.

**Action:** Verify that the files system has the correct permissions set and that there is space available on the filesystem. Otherwise contact next level of support.

**2.3.4 Log Report - IAA344**

Example:

CA108CD \*\*\* IAA344 APR08 14:50:47 3800 TBL IAA PCEM Audit Error

Module: <Module Name>

AuditName: <Name of Audit>

Reason: <Reason>

**2.3.4.1 Overview**

The IAA344 log is generated when an IAA module cannot create an audit entry. The reason text field may contain one of the following strings.

**“Error Creating Audit”**

**Cause:** This log message is generated if there is a problem creating an audit entry.

**Action:** Verify that the correct permissions are set in the audit directory and that there is space on that filesystem.

**2.3.5 Log Report - IAA345**

Example:

CA108CD \*\*\* IAA345 APR08 14:50:47 3800 TBL IAA Module Configuration Error

Module: <Module Name>

Parameter: <Name of Parameter>

Reason: <Reason>

**2.3.5.1 Overview**

The IAA345 log is generated when an IAA module detects a configuration problem. The reason text field may contain one of the following strings.

**“Required Configuration parameter not found”**

**Cause:** This log message is generated if a required configuration value is not defined.

**Action:** Datafill the required configuration parameter.

**“Received messages for Unknown Channel ID <%d>”**

**Cause:** This log message is generated if the IAA module receives a PCEM or PCES messages for an unconfigured Channel ID.

**Action:** Datafill the Channel ID for the appropriate RKS pair or DF.

**2.3.6 Log Report - IAA346**

Example:

CA108CD \*\*\* IAA346 APR08 14:50:47 3800 TBL IAA Downstream Communication Error

Module: <Module Name>

Destination ID: <Name of Bad file if Available>

Reason: <Reason>

**2.3.6.1 Overview**

The IAA346 log is generated when the IAA cannot communicate to the downstream RKS pair or DF. The reason text field may contain one of the following strings.

**“Destination is down - Writing to file”**

**Cause:** This log message is generated if the downstream RKS pair is unreachable and the message is save to a file for transmission at a later time.

**Action:** The craftsperson should ascertain what was the cause of the problem and correct the problem. Once the connection to the RKS pair is re-established the IAA application will return to InSrv.

**“DF: Destination is Down - Message dropped for ChannelID <%d>, Dropped Message Count <%d>”**

**Cause:** This log message is generated if the downstream DF is unreachable.

**Action:** The craftsperson should ascertain what was the cause of the problem and correct the problem. Once the connection to the DF is re-established the IAA application will return to InSrv.

**“Cannot Connect to Primary RKS”**

**Cause:** The IAA cannot connect to the RKS when trying to ftp a file.

**Action:** The craftsperson should ascertain what was the cause of the problem and correct the problem. Once the connection to the RKS pair is re-established the IAA application will return to InSrv.

**“Cannot place file on RKS.”**

**Cause:** This log message is generated if the IAA cannot place the file on the RKS after the connection is made.

**Action:** The craftsperson should ascertain what was the cause of the problem and correct the problem. Once the connection to the RKS pair is re-established the IAA application will return to InSrv.

### 2.3.7 Log Report - IAA347

Example:

CA108CD \*\*\* IAA347 APR08 14:50:47 3800 TBL IAA Filesystem Management Error

Module: <Module Name>

Directory: <Directory Name>

Reason: <Reason>

#### 2.3.7.1 Overview

The IAA347 log is generated when an IAA module detects a problem when trying to manage its filesystem storage. The reason text field may contain one of the following strings.

**“Unable to move files to Secondary Directory”**

**Cause:** This log message is generated if the IAA module fdsend cannot move a file it successfully transferred to a RKS to a secondary directory.

**Action:** Verify permissions and space on filesystem.

### 2.3.8 Log Report - IAA641

Example:

CA108CD \*\*\* IAA641 APR08 14:50:47 3800 INFO IAA Module Startup

Module: <Module Name>

Reason: <Reason>

#### 2.3.8.1 Overview

The IAA641 log is generated when an IAA module goes into service.

**“IAA Module has been restarted”**

**Cause:** This log message is generated when an IAA module is successfully started.

**Action:** No Action is needed as this is purely for informational purposes.

## 2.3.9 Log Report - IAA646

Example:

CA108CD \*\*\* IAA646 APR08 14:50:47 3800 INFO IAA Communication Restored

Module: <Module Name>

Reason: <Reason>

### 2.3.9.1 Overview

The IAA646 log is generated when Communications between the IAA and the downstream RKS pair or DF has been restored.

#### “Communications has been re-established”

**Cause:** This log message is generated when Communications between the IAA and the downstream RKS pair or DF has been restored.

**Action:** No Action is needed as this is purely for informational purposes.

### 2.3.10 Field Description

Field Name: Module

Field optionally: mandatory

Type: Alphanumeric

Size: Variable

Value(s): Variable

Descriptions: Identifies the module generating the log.

NTP table reference: Not applicable.

Field Name: Destination ID

Field optionally: mandatory

Type: Alphanumeric

Size: Variable

Value(s): Variable

Descriptions: Identifies the Destination the IAA is attempting to communicate to.

NTP table reference: Not applicable.

Field Name: Parameter

Field optionally: mandatory

Type: Alphanumeric

Size: Variable

Value(s): Variable

Descriptions: Identifies the Parameter the is not configured correctly.

NTP table reference: Not applicable.

Field Name: AuditName

Field optionally: mandatory

Type: Alphanumeric

Size: Variable  
Value(s): Variable  
Descriptions: Identifies the audit that the module is attempting to create.  
NTP table reference: Not applicable.

Field Name: FileName  
Field optionally: mandatory  
Type: Alphanumeric  
Size: Variable  
Value(s): Variable  
Descriptions: Identifies the file the IAA module is attempting to operate on.  
NTP table reference: Not applicable.

Field Name: Reason  
Field optionally: mandatory  
Type: Alphanumeric  
Size: Variable  
Value(s): Variable  
Descriptions: Provides an explanation of why the log was generated.  
NTP table reference: Not applicable.

## 2.4 Alarms

### 2.4.1 Alarm - IAA701

Example:

CA108CD \*\*\* IAA701 APR08 14:50:47 3800 TBL IAA Data Corruption

Module: <Module Name>

Reason: <Reason>

#### 2.4.1.1 Overview

The IAA701 log is generated when the data being process by the IAA is corrupted.

**“Could not get EM Header in Message. Got %u at byte no %u. Channel ID= %u”**

**Cause:** This log message is generated when the EM messages being processed by the IAA is corrupted.

**Action:** Contact next level of support.

### 2.4.2 Field Description

Field Name: Module  
Field optionally: mandatory  
Type: Alphanumeric

Size: Variable

Value(s): Variable

Descriptions: Identifies the module generating the log.

NTP table reference: Not applicable.

## **2.5 Related documentation**

# **3: Configuration for A00007465**

## **3.1 Hardware and Software Requirements**

The IAA has the following Hardware requirements:

- SUN Netra 240
- 2GB of RAM Dedicated for the IAA modules

The IAA has the following Software requirements:

- SSPFS 3rd party Software Suite Version 08 with the following version dependencies:
- Apache Web Server 2.0.47 or above
- JRE 1.4.2\_04 or above
- Apache Tomcat 4.1.24 or higher
- SBA

## **3.2 Initial Configuration**

Following the installation of the IAA modules the following items must be configured:

- RKS pair
- DF
- Distribution Schedule
- Global System parameters

## **3.3 Upgrade Considerations**

This is the first installation of this application, there are no upgrade considerations for this release. The software is designed and packaged such that two or more versions can reside on the same platform, this allows the system to be upgraded without interruption of service. Tools will be provided to migrate the configuration of previous release to the latest release, beginning with SN09.



### 3.3.1 Patching

Fixed required to an existing IAA application will be delivered in the form of a solaris patch. The patch will follow the conventions set forth in the CBM Designer's Guide.

### 3.3.2 Dump and Restore (CM)

For SN08 the ability to backup the current configuration to a removable storage media is supported. This configuration information can be used to populate the configuration of a second instance on the same system or on a second system.

Beginning with SN09 a migration tool will be supplied to take an existing configuration and use the information to populate the configuration of the new version. Once the new release is loaded on the system the command "migrate\_configuration -p<prev\_rel> -c<current\_rel>" is used to move the previous release's configuration information to the new release's configuration.

### 3.3.3 Downgrade impact

Providing that the old software has not been removed, the old software only needs to be re-registered with SAM.

## 3.4 Element Management

Configuration changes for the IAA modules can be done via a Web interface or via a command line program. On-line help is available from each web page, by selecting the help button at the top of each page.

### 3.4.1 New/modified GUIs

**Table 1 New or modified GUIs**

| GUI name                 | NEW, CHANGED, or DELETED |
|--------------------------|--------------------------|
| Scheduler                | NEW                      |
| RKS Output Destination   | NEW                      |
| DF Output Destination    | NEW                      |
| Global System Parameters | NEW                      |

### 3.4.2 GUI information

Host: oak > Configuration

Network Elements | Process Groups | **Schedules** | Global Parameters | Output Destinations

**Schedules**

[Create a new Schedule](#)

Schedule name:

- null
- schedone
- schedtwo
- schedthree
- schedfour
- afifthschedule

**Scheduled Task List**

**Managing Schedules**

Click on a button to:

- edit
- delete
- or create a copy of

a schedule.

One way to create a new schedule that is similar to an existing schedule is to copy the schedule using the copy button on this page, then edit the new schedule.

Host: oak > Configuration

Network Elements | Process Groups | **Schedules** | Global Parameters | Output Destinations

**Schedule Configuration**

Schedule name: schedone [View times](#)

**Schedule range**

Applies to: ☒ Weekdays ☐ Special dates

Between 00:00 (00:00 - 23:59)

and 23:00 (00:00 - 23:59)

Start every 60 minutes

☒ Mon ☐ Sat

☒ Tue ☐ Sun

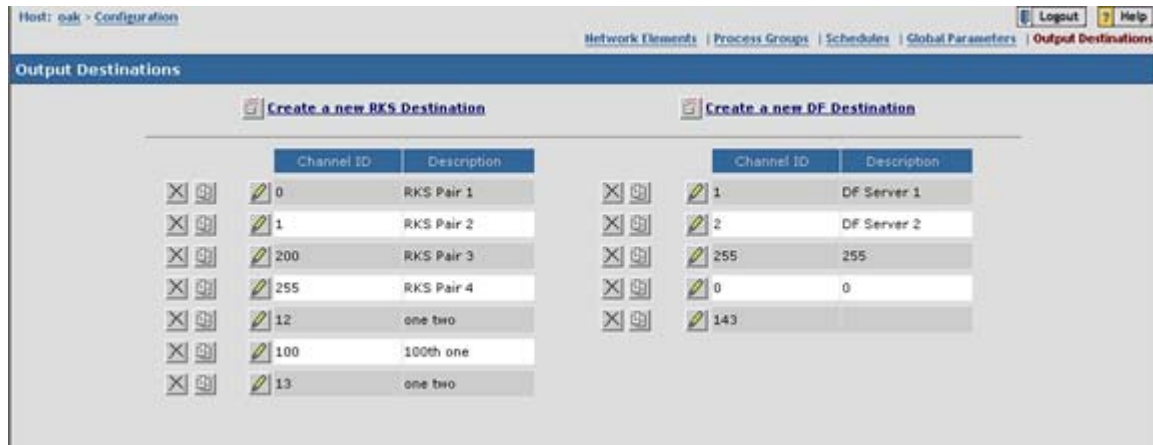
☒ Wed

☒ Thu

☒ Fri

[Delete this range](#) [Copy to a new range](#)

[Reset form](#) [Add range](#) [Save changes](#)



### 3.4.2.1 GUI name: RKSOD

RKS Output Destination

#### 3.4.2.1.1 Functional description

This GUI is used to configure the downstream RKS pairs which the EMDA sends event messages as well as the protocol to use.

**Example:**

### 3.4.2.1.2 GUI usage and implications

The Schedule GUI must be datafilled prior to datafill of this GUI.

### 3.4.2.1.3 GUI size

Table 2 New or modified GUIs

| Abbreviated GUI name | Minimum instances | Maximum instances | Information on memory |
|----------------------|-------------------|-------------------|-----------------------|
| RKSOD                | 1                 | 1                 | N/A                   |

### 3.4.2.1.4 GUI fields

On-line help is available on this web page which defines the meanings of each field contained on the page.

Table 5: Output Destination Streams

| Parameter  | Description / List of values | Data Format | Validation | Max Value | Max Field Size | Default Value |
|------------|------------------------------|-------------|------------|-----------|----------------|---------------|
| Channel Id | 1 byte field                 | integer     | required   | 255       |                |               |

**Table 5: Output Destination Streams**

| Parameter                                 | Description /<br>List of values | Data Format                     | Validation         | Max<br>Value | Max<br>Field<br>Size | Default<br>Value |
|-------------------------------------------|---------------------------------|---------------------------------|--------------------|--------------|----------------------|------------------|
| Destination Type                          | 0 - DF<br>1 - RKS               | integer                         | required           |              | 1                    |                  |
| Description                               | Free Form Text                  | alphanumeric                    | optional           |              | 32                   |                  |
| DF Collector / Primary RKS IP             | IP address                      | alphanumeric                    | required           |              | 15                   |                  |
| DF Collector / Primary RKS<br>Radius Port |                                 | positive integer                | required           | 65535        |                      |                  |
| Primary RKS FTP Port                      |                                 | positive integer                | required if<br>RKS | 65535        |                      | 21               |
| Primary RKS FTP Username                  |                                 | alphanumeric                    | required if<br>RKS |              | 32                   |                  |
| Primary RKS FTP Password                  |                                 | alphanumeric<br>[not displayed] | required if<br>RKS |              | 32                   |                  |
| Primary RKS Destination Direc-<br>tory    |                                 | alphanumeric                    | Optional           |              | 512                  |                  |
| Secondary RKS IP                          | IP address                      |                                 | required if<br>RKS |              | 15                   |                  |
| Secondary RKS Radius Port                 |                                 | positive integer                | required if<br>RKS | 65535        |                      |                  |
| Secondary RKS FTP Port                    |                                 | positive integer                | optional           | 65535        |                      | 21               |
| Secondary RKS FTP Username                |                                 | alphanumeric                    | optional           |              | 32                   |                  |
| Secondary RKS FTP Password                |                                 | alphanumeric<br>[not displayed] | optional           |              | 32                   |                  |
| Secondary RKS Destination<br>Directory    |                                 | alphanumeric                    | Optional           |              | 512                  |                  |
| Retry Limit                               | Number of<br>retries            | integer                         | required           | 9            |                      | 3                |
| Retry Interval                            | in seconds                      | positive integer                | required           | 9            |                      | 1                |
| Batch Interval                            | in seconds                      | positive integer                | required           | 30           |                      | 2                |
| Messages in Batch                         | Number of<br>messages           | positive integer<br>> 1         | required           | 10           |                      | 5                |

**Table 5: Output Destination Streams**

| Parameter              | Description /<br>List of values                 | Data Format      | Validation              | Max<br>Value | Max<br>Field<br>Size | Default<br>Value         |
|------------------------|-------------------------------------------------|------------------|-------------------------|--------------|----------------------|--------------------------|
| Shared Secret          |                                                 | alphanumeric     | required                |              | 32                   | 000000<br>000000<br>0000 |
| Security Protocol      | 0 - None<br>1 - IPSec                           | Integer          | required                | 1            |                      | 0 -<br>None              |
| FTP Inbound / Outbound | 0 - Outbound<br>(Push)<br>1 - Inbound<br>(Pull) | integer          | required                | 1            |                      |                          |
| FTP Schedule           | List of Config-<br>ured Schedules               | alphanumeric     | only if FTP<br>Outbound |              |                      |                          |
| FTP Mode               | 0 - FTP<br>1 - Secure FTP                       | integer          | only if FTP<br>Outbound | 1            |                      | sFTP                     |
| Max. File Length       | size of file in<br>bytes, kB, MB                | positive integer | required                |              | 3                    | 2 MB                     |
| Max. Open Time         | time in minutes                                 | positive integer | required                | 120          |                      | 60                       |
| File Priority          | 1, 2, 3, 4                                      | positive integer | required                | 4            |                      | 1 -<br>lowest            |

**3.4.2.2 GUI name: DFOD**

DF Output Destination

**3.4.2.2.1 Functional description**

This GUI is used to configure the downstream DF which the EMDA sends LI event messages as well as the protocol to use.

Host: oak > Configuration Logout Help

Network Elements | Process Groups | Schedules | Global Parameters | **Output Destinations**

### DF Output Destination Configuration

|                                 |                      |
|---------------------------------|----------------------|
| Channel ID: 2                   | Destination Type: DF |
| Description: DF Server 2        |                      |
| IP Address: 212.12.34.169       | RADIUS Port: 21      |
| Retry Limit: 3                  | Retry Interval: 3    |
| Shared Secret: 0000000000000000 |                      |

### 3.4.2.2.2 GUI usage and implications

No other datafill is required prior to datafill of this GUI.

### 3.4.2.2.3 GUI size

**Table 3 New or modified GUIs**

| Abbreviated GUI name | Minimum instances | Maximum instances | Information on memory |
|----------------------|-------------------|-------------------|-----------------------|
| DFOD                 | 1                 | 1                 | N/A                   |

### 3.4.2.2.4 GUI fields

On-line help is available on this web page which defines the meanings of each field contained on the page.

**Table 6: Output Destination Streams**

| Parameter                              | Description / List of values | Data Format      | Validation | Max Value | Max Field Size | Default Value        |
|----------------------------------------|------------------------------|------------------|------------|-----------|----------------|----------------------|
| Channel Id                             | 1 byte field                 | integer          | required   |           | 255            |                      |
| Channel Type                           | 0 - DF<br>1 - RKS            | integer          | required   |           | 3              |                      |
| Description                            | Free Form Text               | alphanumeric     | optional   |           | 32             |                      |
| DF Collector / Primary RKS IP          | IP address                   | alphanumeric     | required   |           | 16             |                      |
| DF Collector / Primary RKS Radius Port |                              | positive integer | required   | 65535     |                | 21                   |
| Retry Limit                            | Number of retries            | integer          | required   | 9         |                | 3                    |
| Retry Interval                         | in seconds                   | positive integer | required   | 9         |                | 1                    |
| Shared Secret                          |                              | alphanumeric     | required   |           | 32             | 00000000<br>00000000 |

### 3.4.2.3 GUI name: GSP

Global System Parameters.

#### 3.4.2.3.1 Functional description

This GUI is used to configure the NE providing the Accounting messages.

Global Parameters

Packet Cable Element ID: 05050

Format Version: PacketCable Multimedia

Time Zone Daylight Savings Time: ☐

Time Zone UTC Offset (h:mm:ss):

Accounting Message Sending Mode: FTP

Event Message File Path: /cbndata/00/meddata/outgoing/

Reset form Save changes

### 3.4.2.3.2 GUI usage and implications

No other datafill is required prior to datafill of this GUI.

### 3.4.2.3.3 GUI size

**Table 4 New or modified GUIs**

| Abbreviated GUI name | Minimum instances | Maximum instances | Information on memory |
|----------------------|-------------------|-------------------|-----------------------|
| GSP                  | 1                 | 1                 | N/A                   |

### 3.4.2.3.4 GUI fields

On-line help is available on this web page which defines the meanings of each field contained on the page.

**Table 7: Packet Cable Global Parameters**

| Parameter           | Description / List of Values                              | Data Format      | Validation Description | Max. Value | Max Field Size | Default Value |
|---------------------|-----------------------------------------------------------|------------------|------------------------|------------|----------------|---------------|
| Element ID          | 5 digit unique Network Element ID                         | integer          | required               | 99999      |                |               |
| Format Version      | 1 - PktCbl 1.0<br>2 - PktCbl 1.1<br>3 - PktCbl Multimedia | positive integer | required               | 3          |                |               |
| TimeZone DST        | 0 - Standard<br>1 - DST                                   | integer          | required               | 1          |                |               |
| TimeZone UTC Offset | +/- HHMMSS                                                | alphanumeric     | required               |            | 10             |               |



**Table 7: Packet Cable Global Parameters**

| Parameter                            | Description / List of Values                       | Data Format                     | Validation Description | Max. Value | Max Field Size | Default Value |
|--------------------------------------|----------------------------------------------------|---------------------------------|------------------------|------------|----------------|---------------|
| Sending Mode for Accounting Messages | 0 - RADIUS Realtime<br>1 - RADIUS Batch<br>2 - FTP | integer                         | required               |            | 1              | 0             |
| EM File Path                         | Unix File Path                                     | Printable ASCII Characters Only | required               |            | 256            | 0             |

## 3.5 User interface changes

### 3.5.1 Command: `iaa_config_cli`

#### 3.5.1.1 Command type: NON-MENU

#### 3.5.1.2 Command target: CBM

#### 3.5.1.3 Command availability: RES

#### 3.5.1.4 Command description

This command is used to provide the user with a means to configure the IAA modules from the command line.

#### 3.5.1.5 Command syntax

From the command line a user in the maint group may execute this command to configure the IAA application.

**Table 5 <CommandName> command parameters and variables**

| Command                 | Parameters and variables |
|-------------------------|--------------------------|
| <code>iaa_config</code> | None (displays a menu)   |

1. From the main menu the user can select to configure Global system parameters or Output Destinations, which includes DFs or RKS pairs.

```

=====
Main Menu Page 1 of 1
=====

1. Global Parameters
2. Output Destinations

[Slave e[X]it [N]extPage [P]revPage [Q]uit

Select: █

```

2. From the Global Parameter Screen the user can change the any of the Global Parameters as described in section 3.4.2.3.

```

=====
Global Parameters Page 1 of 1
=====

1. Element ID [00001]
2. Packet Cable Format Version [1]
3. Enable Daylight Saving [0]
4. UTC Offset [+000000]
5. Sending Mode [0]
* 6. Base EM File Path [/cbmdata/00/iaa/ftpout/]
7. EM File Path []

Note: * Fields are not Editable

[Slave [R]eturn [N]extPage [P]revPage [Q]uit

Select: █

```

3. From the Output Destinations screen Delivery Function or Record Keeping Server Destination configuration screens can be selected.

```
=====
Status: None
=====
 Output Destinations Page 1 of 1
=====

1. Delivery Function Destinations
2. Record Keeping Server Destinations

=====
[S]ave [R]eturn [N]extPage [P]revPage [Q]uit
Select: █
```

4. From the Record Keeping Server screen the user can list the existing RKS destinations, create a new destination, copy an existing destination to a new destination, edit, view or delete an existing destination.

```
=====
 Record Keeping Server Destinations Page 1 of 1
=====

1. List
2. New
3. Copy
4. Edit
5. View
6. Delete

=====
[S]ave [R]eturn [N]extPage [P]revPage [Q]uit
Select: █
```

5. From the new or edit selections items described in section 3.4.2.1 can be configured.

```

Status: None
=====
 RKS Destination Parameters Page 1 of 3
=====
1. Channel ID []
2. Description []
3. Primary IP Address []
4. Primary RADIUS Port []
5. Secondary IP Address []
6. Secondary RADIUS Port []
7. Retry Limit [3]
8. Retry Interval [3]
9. Shared Secret [0000000000000000]
10. Batch Interval [3]
11. Messages In Batch [5]
=====
[A]dd [R]eturn [N]extPage [P]revPage [Q]uit
Select: █

```

6. When the Delivery Function selection is made from the Output Destinations menu, the user is presented with the following screen. From the Delivery Function Server screen the user can list the existing DF destinations, create a new destination, copy an existing destination to a new destination, edit, view or delete an existing destination.

```

Status: None
=====
 Delivery Function Destinations Page 1 of 1
=====
1. List
2. New
3. Copy
4. Edit
5. View
6. Delete
=====
[S]ave [R]eturn [N]extPage [P]revPage [Q]uit
Select: █

```

7. From the new or edit selections items described in section 3.4.2.2 can be configured.

```

=====
 DF Destination Parameters Page 1 of 1
=====

1. Channel ID []
2. Description []
3. IP Address []
4. RADIUS Port []
5. Retry Limit [3]
6. Retry Interval [3]
7. Shared Secret [0000000000000000]

=====
[A]dd [R]eturn [N]extPage [P]revPage [Q]uit

Select: █

```

### 3.5.1.6 Qualifications and warnings

Incorrect configuration of the system could result in lost event messages.

### 3.5.1.7 Responses

The program prompts the user through a menu for information to configure the IAA modules.

Host: oak > Tools

Application Status | Viewers | View config files | SNMP Graphs | User Logins | System Administration | System Logs

Logout Help

Event Viewer -- Settings

BCID Subquery report View report

1 Query Start

Start Date: 9/8/2004 Start Time: 00:00:00

2 Query End

End Date: 9/9/2004 End Time: 23:59:59

3 Maximum Matches

Max Matches: 10

NOTE! For best performance, limit the number of matches to display.

4 Build Search Criteria

Channel ID: [ ]

Filename: [ ]

Originating Number: [ ]

Terminating Number: [ ]

Element ID: [ ]

BCID: [ ] This field not for use with BCID Subquery report.

View report



the LI messages will be discarded after the configured number of retry attempts have been exhausted, this will result in a GAP in the LI messages. LI messages will not be viewable in the web based event viewer nor will they be stored on disk while being process by the IAA.

Access to the web interface, which can be used to configure the IAA application as well as for viewing events that haven't been sent to the downstream RKS pair because of communications errors, is controlled via a login page. The user is prompted for their userid and password before access to the web interface is granted. The authentication method ties into the same one used for users to gain local access to the system. The web interface can be configured to use SSL if required.

### **3.6.1 Network configuration**

IPSec needs to be configured between the CBM and the downstream RKS pair or DF server. This is handled by the SSPSF, the IAA makes use of this feature.

#### **3.6.1.1 Key management**

Once configured, key management is handled at the SSPSF level, the IAA makes use of this feature.

### **3.6.2 Protocol**

IPSec is utilized by the IAA to send real-time events to the downstream RKS pair or DF server. sFTP can be used to send files to the RKS pair if the IAA is configured to do so.

### **3.6.3 Authentication**

Access to the Web the unix authentication method. When a user attempts to login to the Web interface, they must enter their userid and password which allows them access to the system. The user must also be in the maint group to gain access to the configuration and record viewing screens available via the web interface.

## **3.7 Configuration Walkthrough**

Once installed the users is required to configure the IAA Global System Parameters, the desired DF(s) to which LI event messages will be delivered and the desired RKS pair(s) to which Accounting event messages will be delivered.

### **3.7.1 Creating Logical Volumes for use by the IAA**

The following logical volumes are required before the installation of the IAA software.

1. makelv /cbmdata/00/iaa/config 512
2. makelv /cbmdata/00/iaa/data 5120

3. makelv /cbmdata/00/iaa/ftpout 8192

4. makelv /cbmdata/00/iaa/kdb 17408

### 3.7.2 Configure RKS Output Destination

1. On the Main User Interface, click on Configuration -> Output Destinations.
2. Click on Create a new RKS Destination
3. The RKS Output Destination Configuration user interface will appear, as below:

The screenshot shows the 'RKS Output Destination Configuration' page in the Nortel Networks Integrated Accounting Application. The page has a blue header with the Nortel logo and the title 'Nortel Networks Integrated Accounting Application'. Below the header, there is a navigation bar with 'Host: redwood > Configuration' and links for 'Global Parameters' and 'Output D'. The main content area is titled 'RKS Output Destination Configuration' and contains several sections for configuring RKS destinations.

**Channel ID:** [Text Field]  
**Description:** [Text Field]  
**Destination Type:** RKS

**FTP Direction:** ☐ Inbound ☒ Outbound

**Maximum File Length:** [2] MB  
**Maximum File Open Time:** [60] minutes

**File Priority:** [1]

**Schedule:** [null]

**FTP Mode:** ☒ FTP ☐ Secure FTP  
**Security Protocol:** ☒ None ☐ IPSec

**Primary RKS**

**IP Address:** [Text Field]  
**FTP Port:** [21]  
**Server username:** [Text Field]  
**Destination Directory:** [Text Field]  
**RADIUS Port:** [Text Field]  
**Server password:** [Text Field]

**Secondary RKS**

**IP Address:** [Text Field]  
**FTP Port:** [21]  
**Server username:** [Text Field]  
**Destination Directory:** [Text Field]  
**RADIUS Port:** [Text Field]  
**Server password:** [Text Field]

**Retry Limit:** [3]  
**Messages in Batch:** [5]  
**Shared Secret:** [0000000000000000]  
**Retry Interval:** [3]  
**Batch Interval:** [3]

**Buttons:** [Reset form] [Save changes]

4. Enter the requested information such as Channel ID, Description, FTP Direction, Primary IP Address and Primary RADIUS Port.



5. If values other than the defaults are desired, enter them for the Maximum File Length, Maximum File Open Time, File Priority, Retry Limit, Retry Interval, Messages in Batch, Batch Interval, Shared Secret
6. If selecting the FTP Direction as Outbound, select a Schedule, FTP Mode and the Security Protocol. Also, enter information for the Primary and Secondary FTP Port, Server username, Server password and Destination Directory if desired.
7. Click on Save Changes.

### 3.7.3 Configure DF Output Destination

1. On the Main User Interface, click on Configuration -> Output Destinations.
2. Click on Create a new DF Destination
3. The DF Output Destination Configuration user interface will appear, as below:

The screenshot displays the 'DF Output Destination Configuration' form within the Nortel Networks Integrated Accounting Application. The form is titled 'DF Output Destination Configuration' and includes the following fields and controls:

- Channel ID:** A text input field.
- Description:** A text input field.
- IP Address:** A text input field.
- RADIUS Port:** A text input field.
- Retry Limit:** A text input field with the value '3'.
- Retry Interval:** A text input field with the value '3'.
- Shared Secret:** A text input field with the value '0000000000000000'.
- Destination Type:** A label indicating 'DF'.
- Buttons:** 'Reset form' and 'Save changes' buttons are located at the bottom of the form.

The form is part of a larger application interface with a header bar containing the Nortel Networks logo and the text 'Integrated Accounting Application'. The header also includes navigation links for 'Reports', 'Tools', and 'Configuration'. The main content area has a sub-header 'DF Output Destination Configuration' and a list of links: 'Global Parameters', 'Output Destinations', and 'Schedules'.

4. Enter the requested information such as Channel ID, Description, IP Address and RADIUS Port.
5. If values other than the defaults are desired, enter them for the Retry Limit, Retry Interval and Shared Secret
6. Click on Save Changes.

### **3.7.4 Sending or Retrieving Files from the IAA**

Accounting messages that are stored in files due to communication failures are automatically ftped to the RKS when communications to the destination are restored. In the event there is a need to retrieve the files before communications are restored the following procedures can be used.

#### **3.7.4.1 Manually sending files from the IAA**

1. Log in into the IAA.
2. Go to the file staging directory. (cd /iaadata/ftpout/<channelID>) Where channelID is the channel ID of the destination, 1 to 255.
3. Transfer the file to the remote system. (ftp remote host)
4. Place the files on the remote host using the ftp put command.

#### **3.7.4.2 Manually retrieving a files from the IAA**

1. From the remote host ftp into the IAA.
2. Go to the file staging directory. (cd /iaadata/ftpout/<channelID>) Where channelID is the channel ID of the destination, 1 to 255.
3. Using the ftp get command retrieve the requested file.
4. After the file is retrieved copy the file to the secondary directory so that it is not sent downstream once the communication link is re-established. (cp <filename> ../secondary/<ChannelID>)

### **3.7.5 Steps to Configure IPSec between the IAA and a remote RKS or DF.**

The following steps define the procedures to configure the IAA to communicate with a RKS, DF or CWC over a IPSec connection. The remote system must be configured in a similar fashion to allow for successful communications. The configuration files which need to be modified are found in the following directories:

| Directory        | File                                                                                                         |
|------------------|--------------------------------------------------------------------------------------------------------------|
| /etc/inet        | ipsecinit.conf (If this file does not exist copy /etc/inet/ipsecinit.sample to /etc/inet/ipsecinit.conf)     |
| /etc/inet/ike    | config (If this file does not exist copy /etc/inet/ike/config.sample to /etc/inet/ike/config)                |
| /etc/inet/secret | ike.preshared                                                                                                |
| /etc/inet/secret | ipseckeys (If this file does not exist copy /etc/inet/secret/ipseckeys.sample to /etc/inet/secret/ipseckeys) |

1. Edit the /etc/inet/ipsecinit.conf to add an entry similar to the following:  
(note this is all on one line)

Sending host:

```
{ raddr 172.19.160.58 rport 1704 laddr 172.19.160.170 ulp udp dir both }
ipsec { encr_algs 3des encr_auth_algs sha1 auth_algs sha1 sa shared }
```

Receiving host:

```
{ raddr 172.19.160.170 laddr 172.19.160.58 lport 1704 ulp udp dir both } ipsec
{ encr_algs 3des encr_auth_algs sha1 auth_algs sha1 sa shared }
```

#### Where:

raddr is the ip address of the remote system

rport is the port number of the remote system

laddr is the ip address of the local system (if a cluster it is the cluster IP)

lport is the port number of the local system

2. Edit the /etc/inet/ike/config file so that the following values are set as described below. This only needs to be done for the first IPSec connection.

```
Global parameters
#
Phase 1 transform defaults
p1_lifetime_secs 604800
p1_nonce_len 40
#
Defaults that individual rules can override.
p1_xform
{ auth_method preshared oakley_group 1 auth_alg sha encr_alg 3des }
p2_pfs 0
```

3. Also edit the /etc/inet/ike/config file to add an entry for each remote host as required, similar to the one below:

**On the Sending Host:**

```
{ label "cluster1-sundev3"
 local_addr 172.19.160.170
 remote_addr 172.19.160.58
 p1_xform
 { auth_method preshared oakley_group 1 auth_alg sha1 encr_alg 3des
 p1_lifetime_secs 604800 }
 p2_pfs 2
}
```

**On the Receiving Host:**

```
{ label "cluster1-sundev3"
 local_addr 172.19.160.58
 remote_addr 172.19.160.170
 p1_xform
 { auth_method preshared oakley_group 1 auth_alg sha1 encr_alg 3des
 p1_lifetime_secs 604800 }
 p2_pfs 2
}
```

**Where:**

label is any unique name

remote\_addr is the ip address of the remote system.

local\_addr is the ip address of the local host.

4. Edit the /etc/inet/secret/ike.preshared file to add an entry for each remote host as required, similar to the one below:

**On the Sending Host:**

```
{ localidtype IP
 localid 172.19.160.170
 remoteidtype IP
 remoteid 172.19.160.58
 key f1d8ab6cf3bf5f1232e1cea8cf4657e09a63b5b6b575dc3a
}
```

**On the Receiving Host:**

```
{ localidtype IP
 localid 172.19.160.58
 remoteidtype IP
 remoteid 172.19.160.170
 key f1d8ab6cf3bf5f1232e1cea8cf4657e09a63b5b6b575dc3a
}
```

**Where:**

label is any unique name

remoteid is the ip address of the remote system.

localid is the ip address of the local host.

key is a hex string.

5. After the changes to the files are made execute the following to start IPSec with the desired configuration:

```
pkill in.iked
/usr/lib/inet/in.iked
ipseckey -f /etc/inet/secret/ipseckey
ipseccnf -a /etc/inet/ipsecinit.conf
```

6. To verify the data is encrypted:

**on the receiving host:**

```
snoop -v host 172.19.160.170
```

```
.
.
.
```

```
AH: ----- Authentication Header -----
```

```
AH:
```

```
AH: Next header = 50 (ESP)
```

```
AH: AH length = 4 (24 bytes)
```

```
AH: <Reserved field = 0x0>
```

```
AH: SPI = 0xad42fdc1
```

```
AH: Replay = 54745
```

```
AH: ICV = 98d75a36720c3398cf18e35b
```

```
AH:
```

```
ESP: ----- Encapsulating Security Payload -----
```

```
ESP:
```

```
ESP: SPI = 0x70498dd0
```

```
ESP: Replay = 54745
```

```
ESP: ENCRYPTED DATA....
```

OR

```
snoop -x 0 host 172.19.160.170
```

Using device /dev/eri (promiscuous mode)

cluster1 -> sundev3    ESP SPI=0x70498dd0 Replay=56870

```

0: 0003 ba5c 454b 0000 bb71 f34e 0800 4500 ...\\EK...q.N..E.
16: 0128 adcc 4000 ff33 33ca ac13 a0aa ac13 .(..@...33.....
32: a03a 3204 0000 ad42 fdc1 0000 de26 e34f .:2....B.....&.O
48: 1672 0a50 c928 93f8 8246 7049 8dd0 0000 .r.P.(.ø.FpI....
64: de26 40ab 17fa 4bcb 9704 55a2 2c85 1bfa .&@..úK...U...ú
80: 84f6 813e b7d2 75ec 5f0a 7894 0d40 0aae ...>..u.._x..@..
96: 7be6 8e93 629b 6f3b cfca 97cd b278 53bb {...b.o;.....xS.
112: daed 33f8 bae1 3768 a171 7ef4 fcb9 6255 ..3ø..7h.q~...bU
128: 3904 bb38 73e5 d5b4 e5e0 5d11 bfee 1bbb 9..8s.....].....
144: d339 4d44 8a5f ee79 2093 9bdf 690b bcb3 .9MD._.y ..i...
160: 19b2 321c 77dd 3d13 1dd3 64af 5bdc cbc5 ..2.w.=...d.[...
176: 4012 05ab a6e7 abe5 e508 9629 fedc 0876 @.....)p..v
192: 823e 1817 59eb 6109 8c41 4fa9 56b8 7a25 .>..Y.a..AO.V.z%
208: 9646 2e45 5a98 8521 3fe0 b914 a356 f074 .FEZ..!?...V.t
224: 1450 35dc 5742 ada2 5e87 ee43 0180 1f99 .P5.WB..^..C....
240: 85ba abe0 7153 bee8 98ae d90c 3055 e413 qS.....0U..
256: a0df 5b03 be9e 0e8a 05b9 6da0 8ad6 4f6d ..[.....m...Om
272: f670 eaf6 64b7 704a 567d 8e1a 89f3 87a3 .p..d.pJV}.....
288: f964 b542 7676 d089 89a0 a0b2 6d6f 7cac ùd.Bvv.....mol.
304: 0c4f c8e8 e675 .O...u

```

### 3.7.6 Changing File Aging Paramaters for the IAA

Processed and temporary files used by the IAA are removed from the system by programs run from the user maint's crontab file. This time a file resides on the system can be changed using the following procedures.

#### 3.7.6.1 Record Viewing

Events which haven't been delivered to the destination because of communication problems are made available for viewing for 1 day. On slower volume installations this can be set for a longer value by changing the following entry in the crontab file for the user maint.

```

30 0 * * * /usr/bin/ksh -c ". ./profile.iaa ; [-x
/opt/nortel/cbm/21/iaa/bin/remove_aged] &&
/opt/nortel/cbm/21/iaa/bin/remove_aged -d -a 1 -i
/cbmdata/00/iaa/data/etc/remove_dirs.include -x
/cbmdata/00/iaa/data/etc/remove_dirs.exclude"

```

1. As the user root edit the crontab file for the maint user. (crontab -e maint)
2. Change the "-a1" to "-a X".
3. Save the crontab file.

### 3.7.6.2 Temporary Files

Files that are used to process events are stored on the system for a period of 5 days. This can be set to a different value by changing the following entry in the crontab file for the user maint.

```
0 1 * * * /usr/bin/ksh -c ". ./profile.iaa ; [-x
/opt/nortel/cbm/21/iaa/bin/remove_aged] &&
/opt/nortel/cbm/21/iaa/bin/remove_aged -a 5 -i
/cbmdata/00/iaa/data/etc/remove_aged.include -x
/cbmdata/00/iaa/data/etc/remove_aged.exclude"
```

1. As the user root edit the crontab file for the maint user. (crontab -e maint)
2. Change the “-a5” to “-a X”.
3. Save the crontab file.

### 3.7.6.3 Temporary Files

Audit files are stored on the system for a period of 30 days. This can be set to a different value by changing the following entry in the crontab file for the user maint.

```
0 2 * * * /usr/bin/ksh -c ". ./profile.iaa ; [-x
/opt/nortel/cbm/21/iaa/bin/remove_aged] &&
/opt/nortel/cbm/21/iaa/bin/remove_aged -a 30 -i
/cbmdata/00/iaa/data/etc/remove_audits.include -x
/cbmdata/00/iaa/data/etc/remove_audits.exclude"
```

1. As the user root edit the crontab file for the maint user. (crontab -e maint)
2. Change the “-a30” to “-a X”.
3. Save the crontab file.

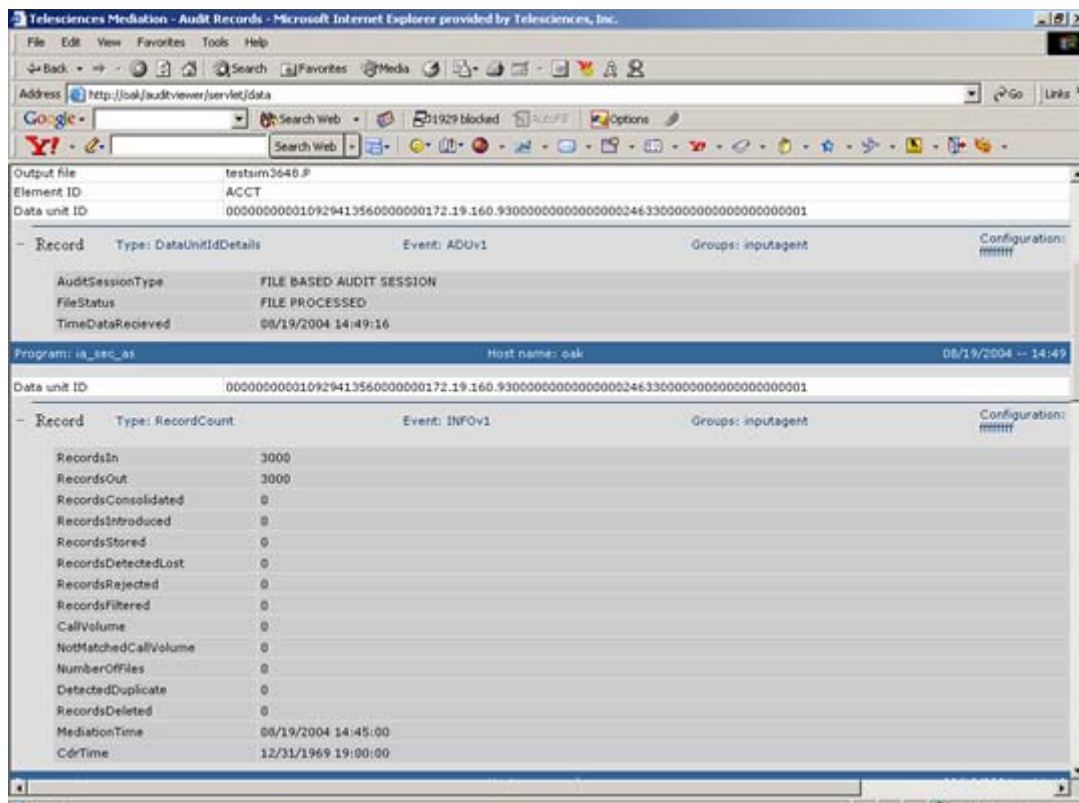
## 4: Performance for A00007465

### 4.1 Performance management strategy

Auditing information is available for each module delivered as part of the IAA which processes Accounting and Legal Intercept Event Messages. In the case of Legal Intercept Event Messages auditing can be disabled by changing the the LI Collector's configuration file. The purpose of the auditing is to provide the end user with a summary of the number of records received and the number of records sent downstream. This serves as a way for the end user to verify that no events were lost during processing. Audits are created in 15 minute intervals by each module, with the exception of the SBA Input agents which create audit entries per file processed.

## 4.2 Performance management tools and utilities

The audits created by the IAA modules are stored in XML files on the system and are viewable via the Web Interface provided. Each module will audit the number of records in and out of the process for each 15 minute interval, with the exception of the SBA Input agents which create audit entries per file processed. In addition to these two counts the EMDA will also provide audits for the number of records which retries were attempted and the number of records written to a file.



## 4.3 Performance Measurements (PM), Operational Measurements (OM), and stats

Each module will provide the following OMs:

- Records In
- Records Out
- Channel Type (EMDA Module Only)
- Channel ID (EMDA Module Only)
- Events Sent (EMDA Module Only)



- Acknowledgements Received (EMDA Module Only)
- Events Retransmitted (EMDA Module only)
- Events Written to File (EMDA Module only)
- Events Rejected (EMDA Module Only)
- Last Event Message Header Sequence Number (EMDA Module Only)

#### 4.3.1 PM, OM, and stats format

The OM stats (audits) are stored in an XML file, an example of which is shown below:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<!DOCTYPE applicationinfo SYSTEM "file:/telesci/application_home/./config/caching.dtd">
<applicationinfo applicationname="oak" hostname="oak" processid="24675"
programname="ia_pri_as" type="ST5000" version="1.0.0.0.0">

 <session datehex="1093034797" datestring="08/20/2004 16:46:37" id="Session4">
 <category name="AUDITS"/>
 <appdataunit appspecname="" create="FALSE" datasourcename=""
dataunitid="000000000010930347960000000172.19.160.930000000000000000
246750000000000000000000001">
 <tableinfo infoid="InfoId4">
 <tabletype name="RecordCount"/>
 <event name="INFOv1"/>
 <grouplist>
 <group name="inputagent"/>
 </grouplist>
 <configuration id="ffffff"/>
 <fieldlist>
 <field length="10" name="RecordsIn" show="TRUE" type="INTEGER" value="5"/>
 <field length="10" name="RecordsOut" show="TRUE" type="INTEGER" value="5"/>
 <field length="10" name="RecordsConsolidated" show="TRUE" type="INTEGER" value="0"/>
 <field length="10" name="RecordsIntroduced" show="TRUE" type="INTEGER" value="0"/>
 <field length="10" name="RecordsStored" show="TRUE" type="INTEGER" value="0"/>
 <field length="10" name="RecordsDetectedLost" show="TRUE" type="INTEGER" value="0"/>
 <field length="10" name="RecordsRejected" show="TRUE" type="INTEGER" value="0"/>
 <field length="10" name="RecordsFiltered" show="TRUE" type="INTEGER" value="0"/>
 <field length="10" name="CallVolume" show="TRUE" type="INTEGER" value="0"/>
 <field length="10" name="NotMatchedCallVolume" show="TRUE" type="INTEGER" value="0"/>
 <field length="10" name="NumberOfFiles" show="TRUE" type="INTEGER" value="0"/>
 <field length="10" name="CallDuration" show="FALSE" type="INTEGER" value="0"/>
 <field length="10" name="NotMatchedCallDuration" show="FALSE" type="INTEGER"
value="0"/>
 <field length="10" name="DetectedDuplicate" show="TRUE" type="INTEGER" value="0"/>
 <field length="10" name="RecordsDeleted" show="TRUE" type="INTEGER" value="0"/>
 <field length="20" name="MediationTime" show="TRUE" type="DATE-STANDARD"
value="08/20/2004 16:45:00"/>
 <field length="20" name="CdrTime" show="TRUE" type="DATE-STANDARD"
value="12/31/1969 19:00:00"/>
 </fieldlist>
 </tableinfo>
 </appdataunit>
 </session>
</applicationinfo>
```

## ***Product = CS 2000***

### **A00007483--GR740 Secure using SSH**

#### ***Functional Description***

#### **1.1 Applicable Solution(s)**

DMS

#### **1.2 Description**

The purpose of this feature is to provide a new scheme for securing the TCP/IP connections used for carrying GR-740<sup>6</sup> data between a CBM or SDM<sup>7</sup> and an OSS. This new scheme will ultimately replace the current DCE security scheme, but in the short term, both security schemes must co-exist. Hence, both the CBM and the OSS sides must support both schemes.

The connections shall be secured using the industry-standard SSH<sup>8</sup> security scheme, which provides transparent 128-bit encryption (and decryption), data integrity, and user and node authentication. On the CBM-side, the SSH product to be used shall be OpenSSH<sup>9</sup> version 3.8.

The connections between the CBM and the OSS will be established from the OSS-side using an SSH technique known as *local port forwarding*. Port forwarding allows forwarding of TCP/IP connections to a remote machine over an encrypted channel and allows those forwarded ports to be used securely by other TCP/IP-based applications. All data flowing through the forwarded port is automatically encrypted and authenticated. In this configuration, the OSS is the (local) client and the CBM is the (remote) server. Depending on the end office configuration, GR740 requires the setup of up to six connections from the OSS to the CBM, and for the purposes of this feature, each connection would have to be separately port-forwarded. The exact means of establishing the required port-forwarded connections is left to the discretion of each individual OSS vendor.

Local port forwarding can be accomplished using variants of the following basic command:

- `ssh -L loss_port:localhost:cbm_port cbm_ip_addr`

---

6. And GR-746 data, as applicable to the office configuration.

7. For the remainder of this document, CBM shall be used to refer to both CBM and SDM products, unless otherwise stated.

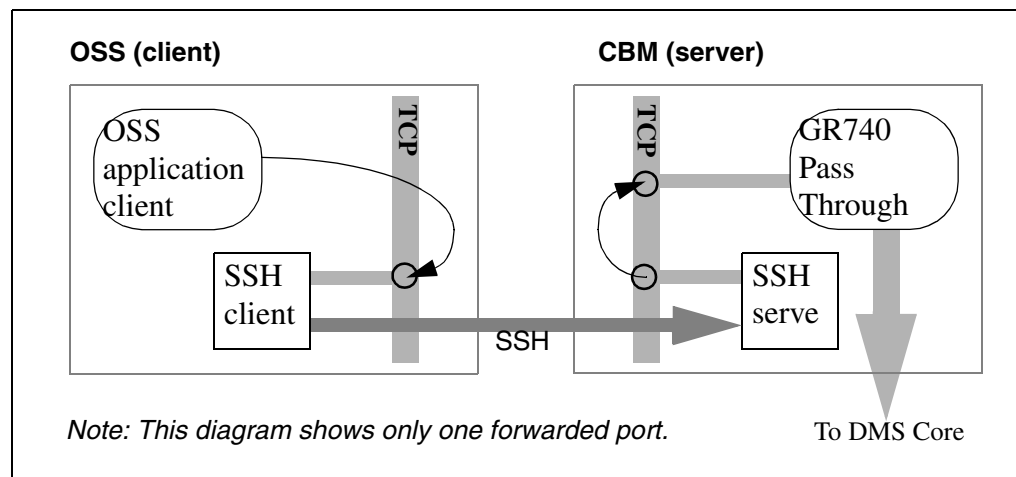
8. For more information on SSH, please refer to any applicable published text such as “SSH, The Secure Shell: The Definitive Guide” by Barrett & Silverman (O’Reilly).

9. For more information on OpenSSH, please visit <http://www.openssh.org>.

Where *cbm\_port* is one of the six standard GR740 ports, i.e. 9550 - 9555, *oss\_port* is any available port on the OSS node (as per vendor), and *cbm\_ip\_addr* is the IP or DNS address of the CBM node.

Connections to the remote server can be authenticated using user names and passwords or public/private key-pairs<sup>10</sup>, at the OSS vendor's or customer's discretion. Public/private key-pairs particularly simplify login with only minimal extra effort required to initially configure the keys.

**Figure 1 Local port forwarding in an OSS-CBM configuration**



Since the connections have to be established by the OSS, it must also handle the detection and re-establishment of dropped connections. If a connection is lost, the OSS will be responsible for detecting the drop and re-connecting.

To help facilitate dropped connection detection, the ssh server daemon (i.e. *sshd*) on the CBM side has been configured for KeepAlive functionality, and thus any and all SSH connections to the CBM will implicitly use the KeepAlive feature. With KeepAlive set to 'yes' (default), the CBM will periodically transmit keepalive messages to the OSS; if no response is received within the timeout period, the connection is considered to be in error and the CBM will shut the connection down. The *sshd* KeepAlive interval is the generic TCP KeepAlive interval<sup>11</sup>, which is already set to 2 minutes (120000ms) in the CBM and will not be changed. Please note that the CBM's TCP KeepAlive interval value of 2 minutes is significantly less than the default value of more than an hour for most Unix-based systems.

A similar KeepAlive feature is available for client-side SSH, and as such should be available on the OSS. As with the server (CBM) side KeepAlive, the

10. Following SSH upgrades on the OSS software, public/private key pairs will have to be regenerated.

11. Parameter name: *tcp\_keepalive\_interval*

OSS can send keepalive messages to the CBM; if no response is received within the timeout period, the connection is considered to be in error and the OSS will shut the connection down. However, it is important to note that the SSH client KeepAlive setting and the OSS TCP KeepAlive interval are set as per each vendor's discretion. The vendor may also decide to implement a separate keepalive mechanism at the OSS application level.

On the CBM side, changes are generally limited to GR740 Pass Through configuration procedures. When configuring the GR740 Pass Through feature, the options presented to the user will depend on system configuration. During GR740 Pass Through configuration on CBMs and on non-DCE-provisioned SDMs, users will be presented with a menu consisting of two choices: *Non-secure*; and *Local (SSH) security*. For GR740PT configuration on SDMs which have the DCE installed and activated, users will first be asked if they want to enable DCE security for GR740PT. If they respond positively, then they will be prompted for the DCE userid and password. If the userid and password are valid, or if they answered 'No' to the original DCE security question, they will be presented with a menu listing 3 choices: *Non-secure*; *Local (SSH) security*; and *DCE security*.

By selecting the *Local (SSH) security* scheme, only SSH-secured external connections will be permitted to the GR740PT processes (and unsecured connections will not be permitted). This point implies that in order to access the GR740PT processes from another node (e.g. OSS), a port-forwarded SSH tunnel must first be established between the remote node and the CBM or SDM for each GR740PT port to which access is required. In *Local (SSH) security* mode, connections from within the CBM or SDM to the GR740PT processes (i.e. by local users already logged into the node) do not require an inter-nodal SSH tunnel.

If *DCE security* is chosen as the security scheme, then DCE security is established (as per previous software releases). Note that even if the user answered 'No' to the DCE security question asked prior to the displaying of the security options menu, *DCE security* can still be selected; the user will simply be prompted for the DCE userid and password at that point.

If the *Non-secure* option is chosen, unsecured connections originating from any node to GR740PT will be permitted (as per previous software releases), but SSH-secured external connections are also possible.

**Note:** The "authorized GR740 users only" requirement described above for the SSH security mode has been deferred to SN09/CBM22. The deferral is being tracked via CR.Q00990244.

## 1.3 Hardware Requirements or Dependencies

None.

## 1.4 Software Requirements or Dependencies

This feature will depend on the SN08/SDM21 software load for the SDM and CBM products.

As this feature deals with the use of OpenSSH on the CBM and SDM products, there is also a dependency on OpenSSH 3.8. Any SSH-related functionality described as part of this feature must work with OpenSSH 3.8. The SSH product used by the individual OSS vendors must also function properly with OpenSSH 3.8.

The system for indicating authorized GR740 users will be the standard user authorization system for the CBM and SDM platforms. The standard authorization mechanism in SDM/CBM is based on user groups and is being modernized as part of activities A00007492SDM “User Group Administration -- 2324” and A00007489SDM “Integration Of SDM User Authentication With IEMS -- 2189” both delivered in this release (SN08). Conformance to the new authorization framework will allow GR740 user authentication and authorization to be centrally managed.

There are no explicit Core software dependencies; Core loads which support CBM08/SDM21 are the only pre-requisite.

## 1.5 Limitations and restrictions

If, when configuring GR740 on the CBM, the user chooses the non-secure or DCE options, then this feature will have no effect.

This feature is limited to providing a security option for GR740 connections TCP/IP only. No other types of connections or applications are supported/affected by feature A00007843, although SSH is available to all TCP connections and applications which use those connections.

## 1.6 Interactions

This feature will interact with the existing GR740 functionality on the CBM. The effects of the changes will be to provide a new means of securing GR740 TCP/IP connections between the OSS and the CBM. After initial configuration, any impacts of the changes should be transparent to the users.

## 1.7 Glossary

| Term | Description               |
|------|---------------------------|
| CBM  | Core & Billing Manager    |
| DCE  | Dispatcher Control Entry  |
| OSS  | Operations Support System |
| SDM  | SuperNode Data Manager    |

| Term | Description  |
|------|--------------|
| SSH  | Secure SHell |

***Product = CS 2000***

## **A00007489--Integration of SDM User Authentication with the IEMS**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

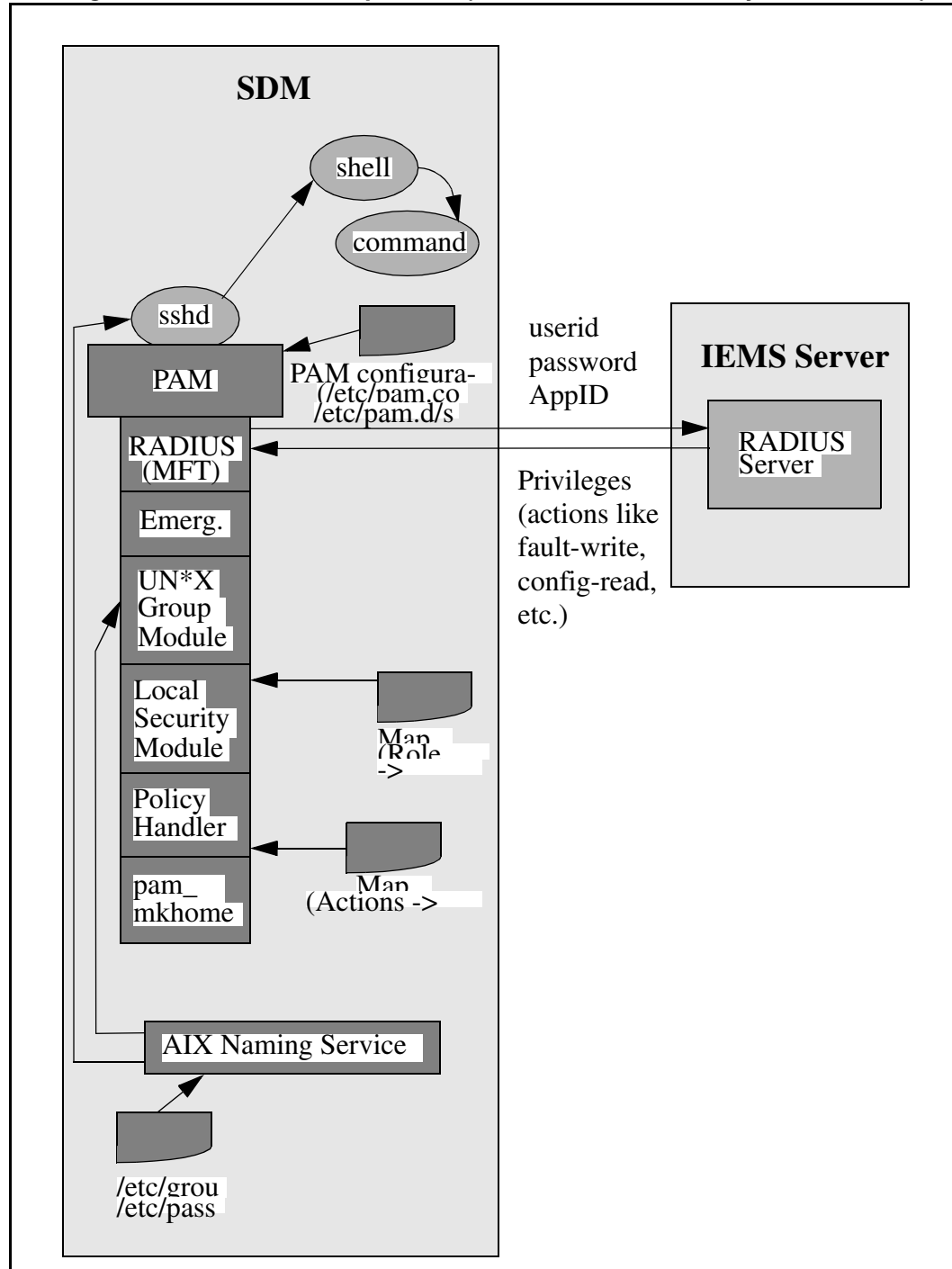
DMS

#### **1.2 Description**

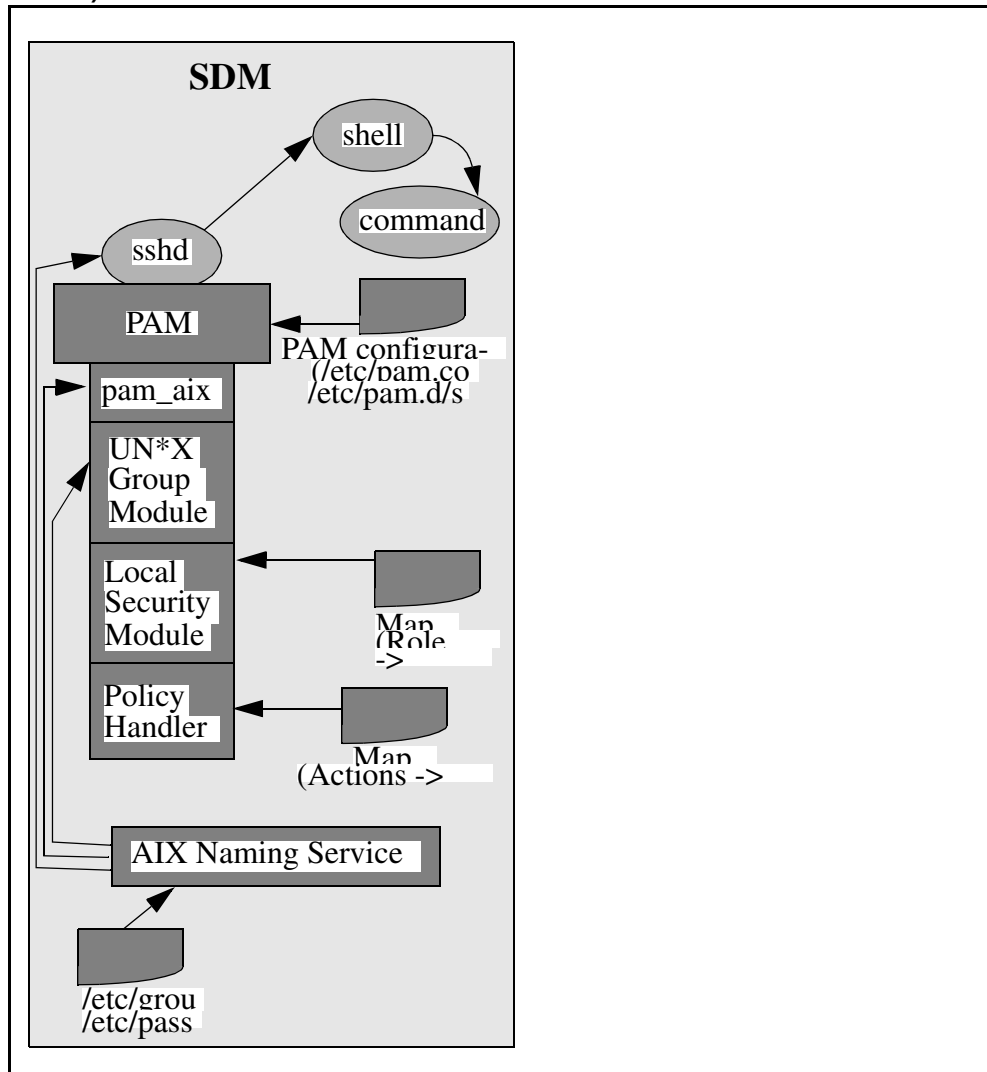
This feature is designed to support SDM integration with IEMS. It provides the following security functionality:

- Utilize the centralized security management of IEMS to provide Authentication, Authorization, Accounting functions.
- Support PAM on SDM to allow AAA via IEMS.
- Allow local emergency access when communication to IEMS is down.
- Support AAA through local security management when IEMS is not part of the SDM deployment.
- Enable access control based on user authorization.

The following two figures show the two deployment scenarios for user authentication/authorization.

**Figure 1 Functional Components (with Centralized Security Server - IEMS)**

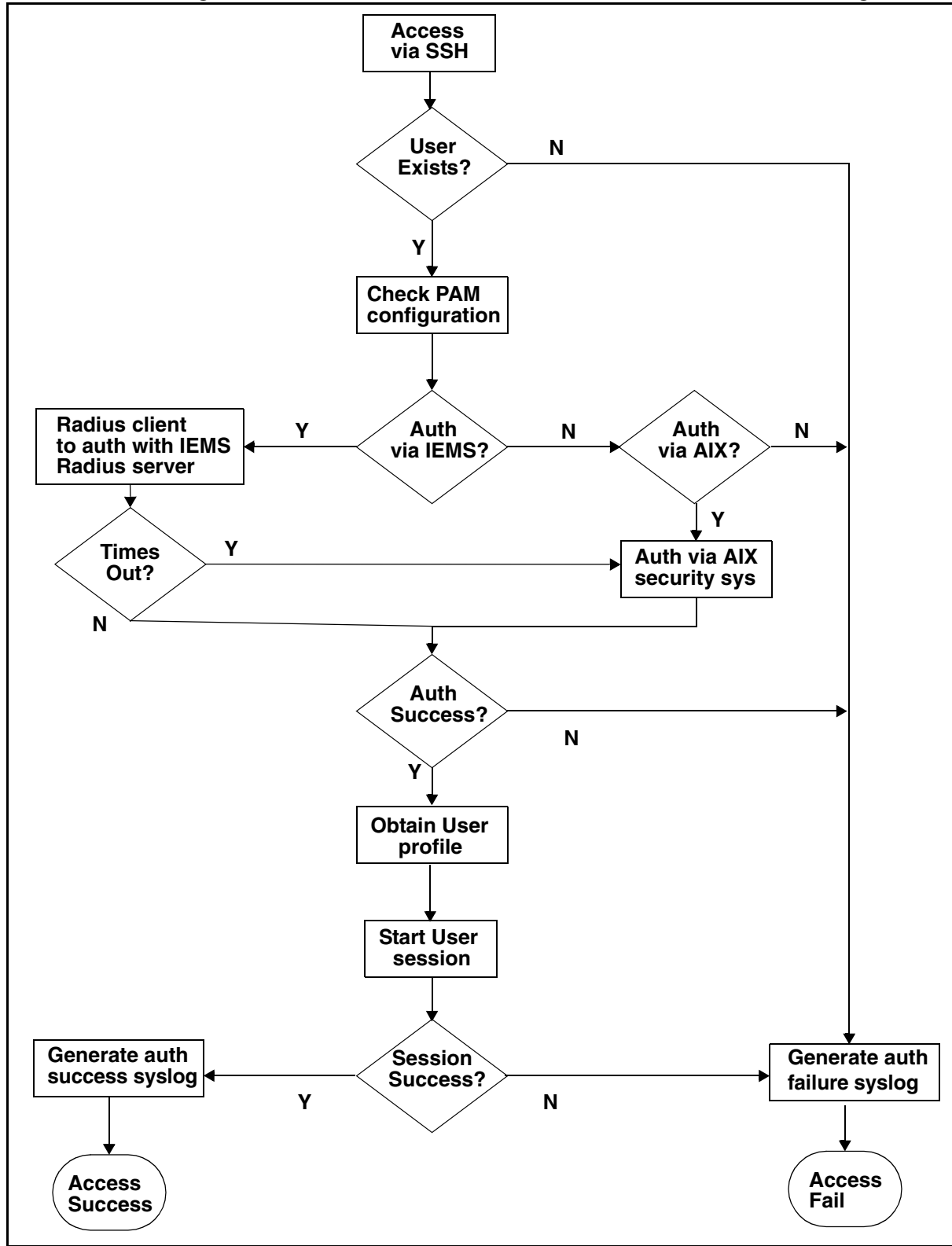
The above figure shows the users are authenticated remotely by a central security server (Centralized Authentication): SDM users are authenticated by a RADIUS server running on an IEMS server.

**Figure 2 Functional Components (Standalone SDM without External Security Server)**

The above figure shows users are authenticated locally on an SDM (Standalone SDM): There is no central security server. Users and their authentication/authorization information is stored locally in this case.

The following is a flow chart for user authentication and authorization through SSH.



**Figure 3 Flow chart for user authentication and authorization through SSH**

Emergency access is needed to address any system issue which impacts user authentication. Based on the different needs for emergency access, it is recommended you use local root user accounts for emergency access for both SDM deployment with IEMS and without IEMS.

The following is an example of emergency access:

- SSH demon is not available. No user will be able to access the system through SSH. The only way for a user to access the system in such a case is through console access with a local root account.

### 1.3 Hardware Requirements or Dependencies

No new hardware dependency is introduced in this feature for Standalone SDM deployment without a centralized security server.

For SDM deployment with the IEMS centralized security server, IEMS and its hardware dependencies are needed by this feature.

### 1.4 Software Requirements or Dependencies

No new software dependency is introduced in this feature for Standalone SDM deployment without a centralized security server.

For SDM deployment with the IEMS centralized security server, IEMS and its software dependencies are needed by this feature.

### 1.5 Limitations and restrictions

- When a SDM user account is created on IEMS, the user account also needs to be added on each SDM via an AIX script/command (e.g. mkuser).
- User password expiry warning is only available on IEMS.
- When a SDM is changed from a standalone configuration to a centralized IEMS security server configuration, all the exiting local user accounts on the standalone SDM need to be created on the IEMS server.
- Console/telnet login is only available for authorized user accounts that exist locally on a SDM. In addition, a user login through console/telnet will not get her/his role groups translated to command groups.
- A user can only su (change user) on a local user account. In addition, a user login through su will not get her/his role groups translated to command groups.
- SSH/SFTP login through a public key will not go through PAM authentication, as a result, an SSH/SFTP user login using a key will not get their command groups set based on the role groups she/he has, and the home directory will not be created automatically upon login. The administrator will have to set the command groups and create the home directory on every SDM for every user using key authentication.

## 1.6 Interactions

### Changes to Network Connectivity Applications

The following table shows the impact of this feature on network connectivity applications.

**Table 1 Network Connectivity Applications**

| Application          | Current Release | SN08    | Configurable - i.e. Turn On/Off (Y/N) | Support IEMS central security server (Y/N) |
|----------------------|-----------------|---------|---------------------------------------|--------------------------------------------|
| SSH (with password)  | Enable          | Enable  | N                                     | Y                                          |
| SFTP (with password) | Enable          | Enable  | N                                     | Y                                          |
| SSH (with key)       | Enable          | Enable  | N                                     | N                                          |
| SFTP (with key)      | Enable          | Enable  | N                                     | N                                          |
| Telnet               | Enable          | Disable | Y                                     | N                                          |
| FTP                  | Enable          | Disable | Y                                     | N                                          |
| Login                | Enable          | Disable | Y                                     | N                                          |
| Console access       | Enable          | Enable  | N                                     | N                                          |
| su                   | Enable          | Enable  | N                                     | N                                          |

**Note:** It is recommended that Telnet and FTP applications should not be used since SSH and SFTP are more secure tools.

By default, Telnet, FTP and Login services will be disabled after an SDM is freshly installed with SN08 software. However, these services will be kept as they were, after an SDM is upgraded to SN08 software from a previous release. It is strongly recommended that the administrators on customer sites change the configuration to turn these services OFF through sdmmtc.

When a network connectivity service is not integrated to work with a central security server, the service can only permit access to users who have accounts locally on an SDM.

## 1.7 Glossary

| Term | Description                               |
|------|-------------------------------------------|
| AAA  | Authentication, Authorization, Accounting |
| CBM  | Core and Billing Manager                  |
| IEMS | Integrated Element Manager System         |
| LDAP | Light-weight Directory Access Protocol    |
| MFT  | Management Framework Technology           |
| NE   | Network Element                           |
| OSS  | Operations Support System                 |
| PAM  | Pluggable Authentication Module           |
| SAML | Security Assertion Markup Language        |
| SDM  | SuperNode Data Manager                    |
| SSL  | Secure Sockets Layer                      |
| SSO  | Single Sign-On                            |
| VSA  | Vendor Specific Attributes                |

## 2: Fault Management for A00007489

### 2.1 Fault management strategy

The feature will log security events related to authentication and authorization. Syslog will be used for this feature to deliver the logs.

SDM Audit and Security Logs are generated and stored under /var/security/logs/ in auditlog and securitylog file. This feature only uses securitylog file to store its logs.

### 2.2 Fault management tools and utilities

#### 2.2.1 Faults, Alarms and Logs

SDM Audit and Security Logs utilities will be used by this feature.

### 2.3 Logs

Authentication succeeded

Log Title/Log ID: SN08 Authentication and Authorization Security Syslog

## 2.3.1 Formats

*Note:* SDM Audit and Security Logs will be used for this feature.

### 2.3.1.1 NTSTD

Not applicable to this feature.

### 2.3.1.2 SCC2

Not applicable to this feature.

### 2.3.1.3 Syslog

The following is the format for the Authentication and Authorization Security log. It is based on Nortel OA&M Security IPT's Security Audit Logs Format Specification issue 1.1.

```
"date time" "host" "program[pid]:" class_security.ver02
"Message_tag"="Message_value"...
```

The following is an example for the Authentication and Authorization Security log for a user login event.

```
Dec 10 09:04:29 wcary2p7 sshd[19464]: class_security.ver02
EVENT.TYPE="USER_ACT_Security_Login" DOC="PAM"
STAT="Success" DST="wcary2p7" DST.USR="jjsecu1"
SRC.OFFEND="47.129.112.162" HOST.TYPE="application"
SRC.USR="unknown" MESSAGE="pam_open_session: pam retval = 0
[Success]" MID="SDM_MID_defn.security.0010"
```

### 2.3.1.4 SNMP

Not applicable to this feature.

### 2.3.1.5 Integrated Element Manager GUI Fields

Not applicable to this feature.

## 2.3.2 Explanation

Description: The Authentication and Authorization Security Syslog is generated when a security event is occurred on a SDM. They are created for information purpose.

## 2.3.3 Field descriptions

**Table 8: Field descriptions**

| Field     | Value                | Description              |
|-----------|----------------------|--------------------------|
| Date time | e.g. Sep 17 15:42:40 | Month, day and timestamp |
| host      | e.g. wcary2p7        | SDM system identifier    |

**Table 8: Field descriptions**

| Field                | Value                                                                        | Description                                                      |
|----------------------|------------------------------------------------------------------------------|------------------------------------------------------------------|
| Program              | sshd<br>sdmmtc                                                               | The name of the SDM process which generated the log              |
| PID                  | e.g. 19464                                                                   | The process ID of the SDM process which generated the log        |
| class_security.ver02 | constant value                                                               | Message category                                                 |
| EVNT.TYP             | USER_ACT_Security_Login<br>USER_ACT_Security_Logout<br>USER_ACT_Security_PAM | The type of the event                                            |
| DOC                  | PAM<br>RMI                                                                   | Document field of the accessed resource                          |
| STAT                 | Success<br>Failure                                                           | Status of the designed process                                   |
| DST                  | e.g. wcary2p7                                                                | The address of the destination                                   |
| DST.USR              | e.g. jjsecu1                                                                 | User name or user id                                             |
| SRC.OFFEND           | e.g. 47.129.112.162                                                          | Address of the originating packet                                |
| HOST.TYPE            | application                                                                  | Devie type                                                       |
| SRC.USR              | e.g. unknown or jjsecu1                                                      | Login user name or user id (not effective user name or user id). |

**Table 8: Field descriptions**

| Field   | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Description                                                                                                                                                                                                                                                                                                                                                           |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MESSAGE | <p>pam_open_session: pam retval = 0<br/>[Success]</p> <p>pam_close_session: pam retval = 25<br/>[Please ignore underlying account module]</p> <p>Naming Service was changed -<br/>Current: LOCAL New: LOCAL</p> <p>PAM Authentication stack was<br/>changed - Current: LOCAL New:<br/>IEMS</p> <p>Radius Server IP was set to:<br/>47.135.214.67</p> <p>Radius Port was set to: Default[1812]</p> <p>Radius Secret was changed</p> <p>User is not authorized for shell access</p> | <p>Log message</p> <p>Note: The following is the log<br/>message's mapping to MID</p> <p>SDM_MID_defn.security.0010</p> <p>SDM_MID_defn.security.0011</p> <p>SDM_MID_defn.security.0012</p> <p>SDM_MID_defn.security.0013</p> <p>SDM_MID_defn.security.0014</p> <p>SDM_MID_defn.security.0015</p> <p>SDM_MID_defn.security.0016</p> <p>SDM_MID_defn.security.0017</p> |
| MID     | <p>SDM_MID_defn.security.0010</p> <p>SDM_MID_defn.security.0011</p> <p>SDM_MID_defn.security.0012</p> <p>SDM_MID_defn.security.0013</p> <p>SDM_MID_defn.security.0014</p> <p>SDM_MID_defn.security.0015</p> <p>SDM_MID_defn.security.0016</p> <p>SDM_MID_defn.security.0017</p>                                                                                                                                                                                                   | <p>Message Identifier is a unique<br/>string to allow message text to<br/>change without affecting<br/>analysis tools</p>                                                                                                                                                                                                                                             |

**2.3.4 Action**

The Authentication and Authorization Security log for this feature is displayed for information purpose only. No further action is needed for handling these logs.

### **2.3.5 Associated Operational Measurements or Performance Measurements**

Not applicable to this feature.

### **2.3.6 Additional information**

Not applicable to this feature.

## **2.4 Alarms**

Not applicable to this feature.

## **2.5 Related documentation**

# **3: Configuration for A00007489**

## **3.1 Hardware and Software Requirements**

SN08 SDM standard hardware and software are required.

No new hardware is needed for this feature. However, the software for this feature needs to be installed on the SDM before feature configuration can take place.

For SDM deployment with the IEMS centralized security server, IEMS and its hardware and software dependencies need to be available and configured.

## **3.2 Initial Configuration**

- No hardware initial configuration for this feature.
- The initial software configuration for this feature is using local security server (i.e. native AIX security system) for authentication and authorization. No user input is needed for initialization.

## **3.3 Office/Subnet parameters (OP/SP) (CM & SESM)**

Not applicable to this feature.

## **3.4 Upgrade Considerations**

### **3.4.1 Dump and Restore (CM)**

Not applicable to this feature.

### **3.4.2 Element Management Upgrade**

No impact to Element Management Upgrade when a SDM is deployed without external security server.

When a SDM is deployed with IEMS centralized security server in SN08, the SDM is changed from using Pre-SN08 local security system to external



security server. In order to migrate to central authentication and authorization, some of the existing local user accounts need to be created on the external security server - IEMS.

The following is the steps for migrating SDM local user accounts to IEMS.

- Login to a SDM and determine which SDM user accounts need to be exported to IEMS. e.g. Local SDM root account should not be exported to IEMS.
- Obtain the list of the user accounts which need to be migrated to central server for every SDM.
- For each account which needs to be migrated to central server:
  1. Create the account on IEMS security server manually
  2. On each SDM as a user allowed to perform “security” action:
    - a. Remove the user account using sdmmtc
    - b. Run the command enableIEMSUser<sup>12</sup> for this user account

### **3.4.3 Downgrade impact**

No impact to downgrade if the SDM feature installation is aborted.

## **3.5 Data schema (DS) (CM, MIBS, RDB)**

Not applicable to this feature.

## **3.6 Service Orders (SO) (CM & SESM)**

Not applicable to this feature.

## **3.7 Software optionality control (SOC)**

Not applicable to this feature.

## **3.8 Element Management**

Not applicable to this feature.

## **3.9 User interface changes**

### **3.9.1 Directory: sdmmtc;SDMConfig or sdmmtc;Admin;SecuConf**

SDM Config level menu will not be changed by this feature. It will be used to commission the feature software.

A new SecuConf level is created under Admin level for SDM security services configuration.

---

12. See “New command: enableIEMSUser” on page 948.

### 3.9.2 Command: Step in SDMConfig or Change in SecuConf

Step command from the SDM Config level menu will not be changed by this feature. It will be used to commission the feature.

Change command is provided under SecuConf level for changing SDM security configuration.

#### 3.9.2.1 Security Services Configuration

A new configuration screen will be presented for selecting security servers for this feature.

**Table 2 Security Services Configuration prompts and options**

| Configuration prompts                                                                                                                                                                                            | Options                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Change Authentication Naming Service<br><br>Please choose one of the following available option(s) on the system. More option(s) will be available if the corresponding files(s) is(are) applied. (1) LOCAL:     | LOCAL<br><br>Note: Options that may available in the future - SAML, LDAP.          |
| Change Authentication PAM Stack<br><br>Please choose one of the following available option(s) on the system. More option(s) will be available if the corresponding files(s) is(are) applied. (1) IEMS (2) LOCAL: | LOCAL, IEMS<br><br>Note: Options that may available in the future - LDAP.          |
| Enter the IP Address of the External Radius Server: <sup>a</sup>                                                                                                                                                 | User Response<br><br>Enter the IP address of the external Radius server.           |
| Do you want to enter the port number instead of using default?<br><br>Please confirm ("YES", "Y", "NO", or "N"). <sup>b</sup>                                                                                    | User Response                                                                      |
| Enter the Port Number of the External Radius Server: <sup>c</sup>                                                                                                                                                | User Response<br><br>Enter the shared port number of the external Radius server.   |
| Enter the Radius Shared Secret: <sup>d</sup>                                                                                                                                                                     | User Response<br><br>Enter the Radius shared secret of the external Radius server. |

**Table 2 Security Services Configuration prompts and options**

| Configuration prompts                                                                                                                                                                | Options       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| The Radius Server to be configured:<br><br>IP address: 1.2.3.4<br><br>Port number: 1234<br><br>Do you wish to proceed?<br><br>Please confirm ("YES", "Y", "NO", or "N") <sup>e</sup> | User Response |

a. Available only when IEMS is selected for Auth PAM Stack.

b. Available only when IEMS is selected for Auth PAM Stack.

c. Available only when IEMS is selected for Auth PAM Stack.

d. Available only when IEMS is selected for Auth PAM Stack.

e. Available only when IEMS is selected for Auth PAM Stack.

### 3.9.2.2 Example

The following are the example screens for configuring local authentication naming service with local authentication PAM module. Please note this is the default security services setting. Therefore, the customers do not need to invoke SDM Config level for the default setup.

```

SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant

SDMConfig
0 Quit
2 Add # Commissioning Step Status / Value
3 Change 7 Network Security Commissioned
4 Delete 8 Ethernet Connectivity Commissioned
5 9 DS512 Connectivity Uncommissioned
6 Next 10 X25 Connectivity Uncommissioned
7 Prev 11 Gateway IP Address 47.135.213.1
8 12 Core Communication Path Commissioned
9 List 13 Network Nodes Commissioned
10 Step 14 Edge Node Monitoring Uncommissioned
11 15 Network Time Protocol Commissioned
12 Up 16 DCE Uncommissioned
13 Down 17 PassThru Users Commissioned
14 18 Security Services Commissioned
15 Commissioning Steps: 7 to 18 of 18
16
17 Help
18 Refresh
root
Time 15:13 > Step 18

```

```

SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7

```

```

M M Fault Tolerant
SDMConfig
0 Quit
2 Add 1 Authentication Naming Service: LOCAL
3 Change
4 Delete 2 Authentication PAM Stack: LOCAL
5
6 Next 3 Remote Security Log Destination: -
7 Prev
8 4 Remote Audit Log Destination: -
9 List
10 Step
11
12 Up
13 Down Security Services
14 Use the Change command to change the existing security service
15 configuration.
16
17 Help Type Next to continue with the next commissioning step, Prev to go
18 Refresh back, or List to display a list of available commissioning steps.
root
Time 15:16 > Change 1

```

```

SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant
SDMConfig
0 Quit
2 Add 1 Authentication Naming Service: LOCAL
3 Change
4 Delete 2 Authentication PAM Stack: LOCAL
5
6 Next 3 Remote Security Log Destination: -
7 Prev
8 4 Remote Audit Log Destination: -
9 List
10 Step
11
12 Up
13 Down
14
15 Change Authentication Naming Service
16 Please choose one of the following available option(s) on the
17 Help system. More option(s) will be available if the corresponding
18 Refresh fileset(s) is(are) applied. (1) LOCAL :
root
Time 15:18 >1

```

```

SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant
SDMConfig
0 Quit
2 Add 1 Authentication Naming Service: LOCAL
3 Change
4 Delete 2 Authentication PAM Stack: LOCAL
5
6 Next 3 Remote Security Log Destination: -
7 Prev
8 4 Remote Audit Log Destination: -
9 List
10 Step
11
12 Up

```

```
13 Down
14
15 Change Authentication Naming Service
16 You have chosen the same option as the existing configuration. Do
17 Help you really want to continue?
18 Refresh Please confirm ("YES", "Y", "NO", or "N"):
root
Time 15:19 >y
```

```
SDM CON NET APPL SYS HW CLLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant
SDMConfig
0 Quit
2 Add 1 Authentication Naming Service: LOCAL
3 Change
4 Delete 2 Authentication PAM Stack: LOCAL
5
6 Next 3 Remote Security Log Destination: -
7 Prev
8 4 Remote Audit Log Destination: -
9 List
10 Step
11
12 Up
13 Down
14
15
16
17 Help
18 Refresh Change 1 - Command complete.
root
Time 15:22 >
```

The following are the example screens from Admin SecuConf level for configuring authentication PAM stack with IEMS Radius authentication PAM module. The IEMS Radius PAM module option will only be shown if the IEMS Radius client software for this feature is installed on the SDM. Radius server address, port number and secret need to be entered by the users for this configuration.

```
SDM CON NET APPL SYS HW CLLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant
SecuConf
0 Quit
2 1 Authentication Naming Service: LOCAL
3
4 2 Authentication PAM Stack: LOCAL
5
6 3 Remote Security Log Destination: -
7
8 4 Remote Audit Log Destination: -
9
10
11
12
13
14
15
16
17 Help
```

18 Refresh  
 jjsecu1  
 Time 15:30 >

```

SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant

```

SecuConf

0 Quit

2       **1 Authentication Naming Service: LOCAL**

3

4       **2 Authentication PAM Stack: LOCAL**

5

6       3 Remote Security Log Destination: -

7

8       4 Remote Audit Log Destination: -

9

10

11

12

13

14

15

16

17 Help

18 Refresh

jjsecu1

Time 15:31 >**change 2**

```

SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant

```

SecuConf

0 Quit

2       **1 Authentication Naming Service: LOCAL**

3

4       **2 Authentication PAM Stack: LOCAL**

5

6       3 Remote Security Log Destination: -

7

8       4 Remote Audit Log Destination: -

9

10

11

12

13

14

15       Change Authentication PAM Stack

16       Please choose one of the following available option(s) on the  
 17 Help   system. More option(s) will be available if the corresponding  
 18 Refresh fileset(s) is(are) applied. **(1) IEMS (2) LOCAL :**

jjsecu1

Time 15:38 >**1**

```

SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant

```

SecuConf

0 Quit

2       **1 Authentication Naming Service: LOCAL**

3

4       **2 Authentication PAM Stack: LOCAL**

5

```
6 3 Remote Security Log Destination: -
7
8 4 Remote Audit Log Destination: -
9
10
11
12
13
14
15
16 Change Authentication PAM Stack - IEMS
17 Help
18 Refresh Enter the IP Address of the External Radius Server:
jjsecu1
Time 15:40 >47.1.2.3
```

```
SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant
SecuConf
0 Quit
2 1 Authentication Naming Service: LOCAL
3
4 2 Authentication PAM Stack: LOCAL
5
6 3 Remote Security Log Destination: -
7
8 4 Remote Audit Log Destination: -
9
10
11
12
13
14
15
16 Change Authentication PAM Stack - IEMS
17 Help Do you want to enter the port number instead of using default?
18 Refresh Please confirm ("YES", "Y", "NO", or "N"):
jjsecu1
Time 15:41 >y
```

```
SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant
SecuConf
0 Quit
2 1 Authentication Naming Service: LOCAL
3
4 2 Authentication PAM Stack: LOCAL
5
6 3 Remote Security Log Destination: -
7
8 4 Remote Audit Log Destination: -
9
10
11
12
13
14
15
16 Change Authentication PAM Stack - IEMS
17 Help
18 Refresh Enter the Port Number of the External Radius Server:
jjsecu1
Time 15:43 >1234
```

```

SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant
SecuConf
0 Quit
2 1 Authentication Naming Service: LOCAL
3
4 2 Authentication PAM Stack: LOCAL
5
6 3 Remote Security Log Destination: -
7
8 4 Remote Audit Log Destination: -
9
10
11
12
13
14
15
16 Change Authentication PAM Stack - IEMS
17 Help
18 Refresh Enter the Radius Shared Secret:
jjsecu1
Time 15:45 >****13

```

```

SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant
SecuConf
0 Quit
2
3
4
5
6
7
8
9
10
11 Change Authentication PAM Stack - IEMS
12
13 The Radius Server to be configured:
14 IP address: 47.1.2.3
15 Port number: 1234
16
17 Help Do you wish to proceed?
18 Refresh Please confirm ("YES", "Y", "NO", or "N")
jjsecu1
Time 15:47 >y

```

```

SDM CON NET APPL SYS HW CLI: NONE
ISTb . SysB . ISTb . Host: wcary2p7
M M Fault Tolerant
SecuConf
0 Quit
2 1 Authentication Naming Service: LOCAL
3
4 2 Authentication PAM Stack: IEMS
5

```

---

13. Stars will be shown in SN08 but will not be shown in future releases.



```
6 3 Remote Security Log Destination: -
7
8 4 Remote Audit Log Destination: -
9
10
11
12
13
14
15
16
17 Help
18 Refresh Change 2 - Command complete.
 jjsecu1
Time 15:48 >
```

### 3.9.3 New command: enableIEMSUser

A new command, enableIEMSUser, is added so the administrator can allow an IEMS user to logon to an SDM.

The synopsis of the command is:

```
enableIEMSUser <username> <uid> <gid> <shell>
```

Where:

<username> is the IEMS user name (login)

<uid> is the UID of the IEMS user

<gid> is the integer ID or character-string name of the primary group of the IEMS User

<shell> is the login shell for this IEMS user. It could be either rash or fash

#### 3.9.3.1 Example

The following is the example command line to allow IEMS user “john” to logon to SDM:

```
enableIEMSUser john 10001 usr fash
```

### 3.9.4 New command: disableIEMSUser

A new command, disableIEMSUser, is added so the administrator can disallow an IEMS user to logon to an SDM.

The synopsis of the command is:

```
disableIEMSUser <username>
```

Where:

<username> is the IEMS user name (login)

#### 3.9.4.1 Example

The following is the example command line to disallow IEMS user “john” to logon to SDM:

```
disableIEMSUser john
```

### 3.10 OSSGate Interface Changes

Not applicable to this feature.

### 3.11 Security

The feature will change user authentication and authorization for SDM.

#### 3.11.1 Network configuration

n/a

#### 3.11.2 Key management

n/a

#### 3.11.3 Protocol

n/a

#### 3.11.4 Authentication

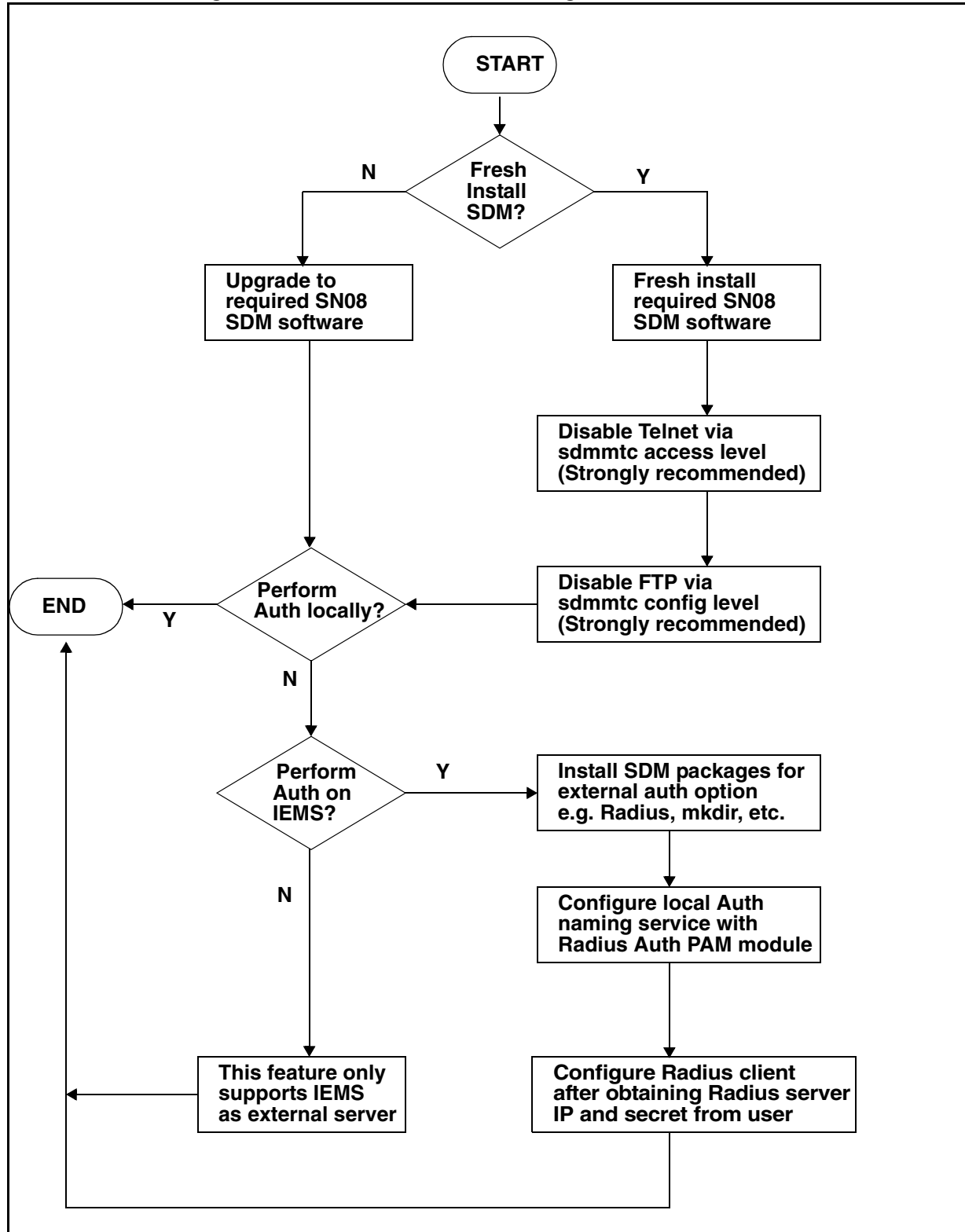
When a SDM is deployed without an external security server, user authentication and authorization will be performed locally on the SDM.

When a SDM is deployed with an external security server like IEMS, user authentication and authorization will be performed through IEMS via Radius protocol.

### 3.12 Configuration Walkthrough

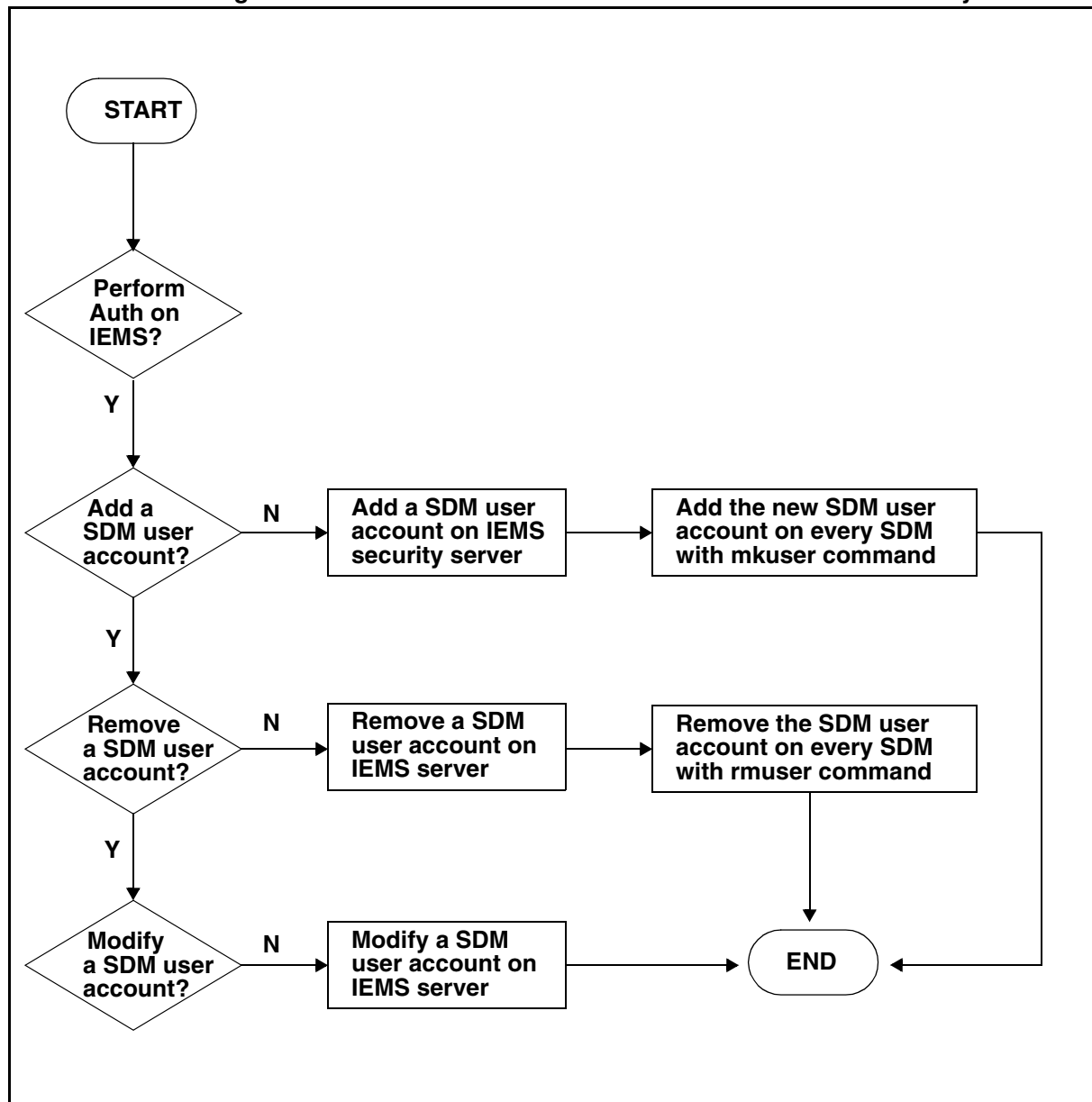
The following figure shows the configuration steps for this feature.

Figure 4 Flow chart for feature configuration

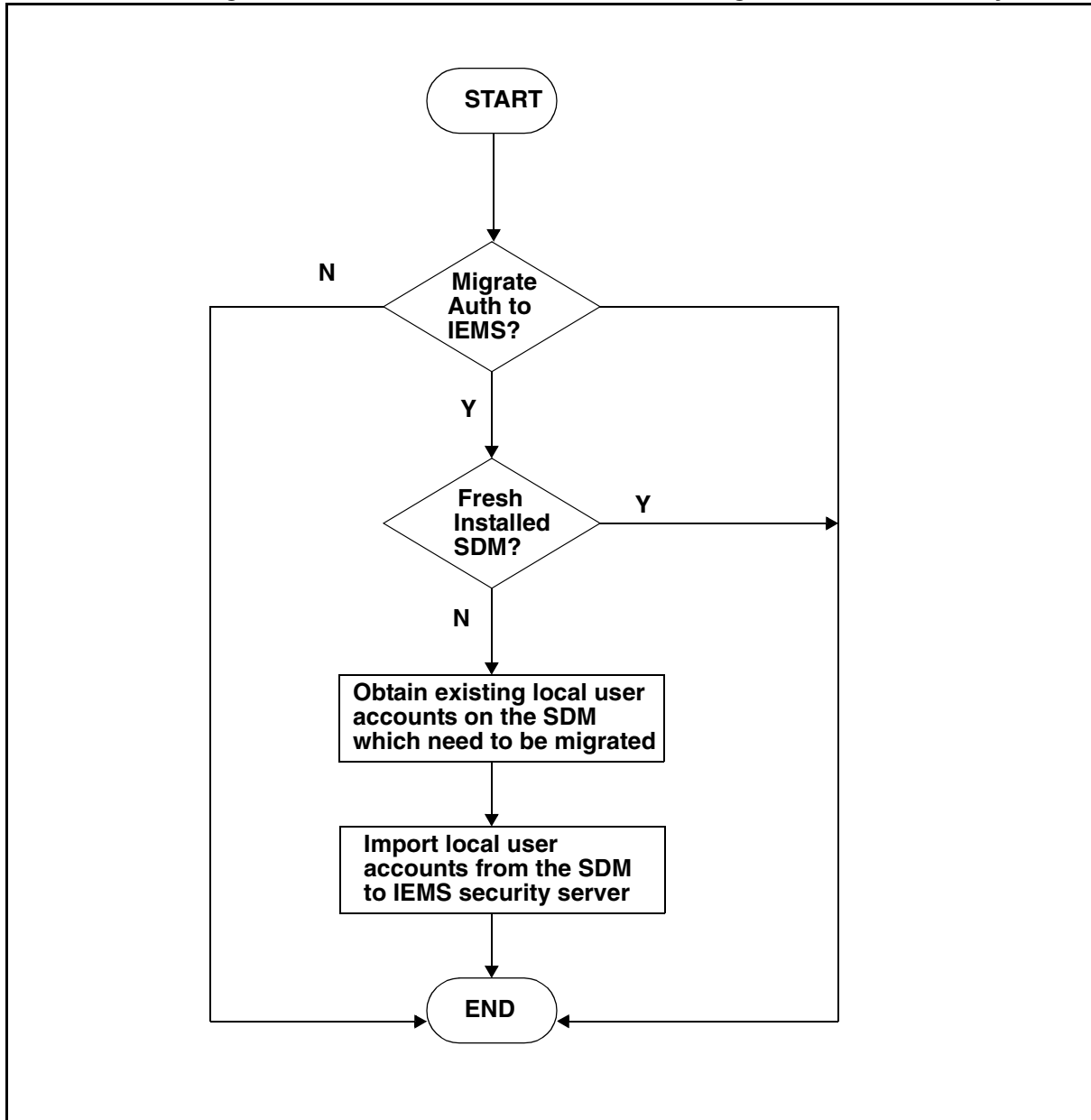


The following figure shows the user account administration steps for this feature when deployed with IEMS as external security server.

**Figure 5 Flow chart for user account admin with IEMS as security server**



The following figure shows the steps for migrating SDM local user accounts on an existing system to IEMS security server. These steps are needed to support central authentication and authorization.

**Figure 6 Flow chart for local user account migration to IEMS security server**

***Product = CS 2000***

## **A00007491--SDM File Integrity Audit**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

DMS

#### **1.2 Description**

This feature monitors the files on the SDM and records file change events to log files. File change events will be logged to one of two log files, auditlog, and securitylog. File changes resulting from regular configuration changes will be recorded in the auditlog file. File changes which are abnormal will be recorded in the securitylog file.

Examples of abnormal file changes would include:

- changes to executable files, not as a result of software delivery
- changes to configuration files, not done by the appropriate SDM configuration tools/commands.
- file changes by the root user.

Changes to files resulting from the application of an authenticated software delivery (patch or fileset) will not result in an audit or security log per file. One audit log will be created indicating the name of authenticated patch or package which was applied.

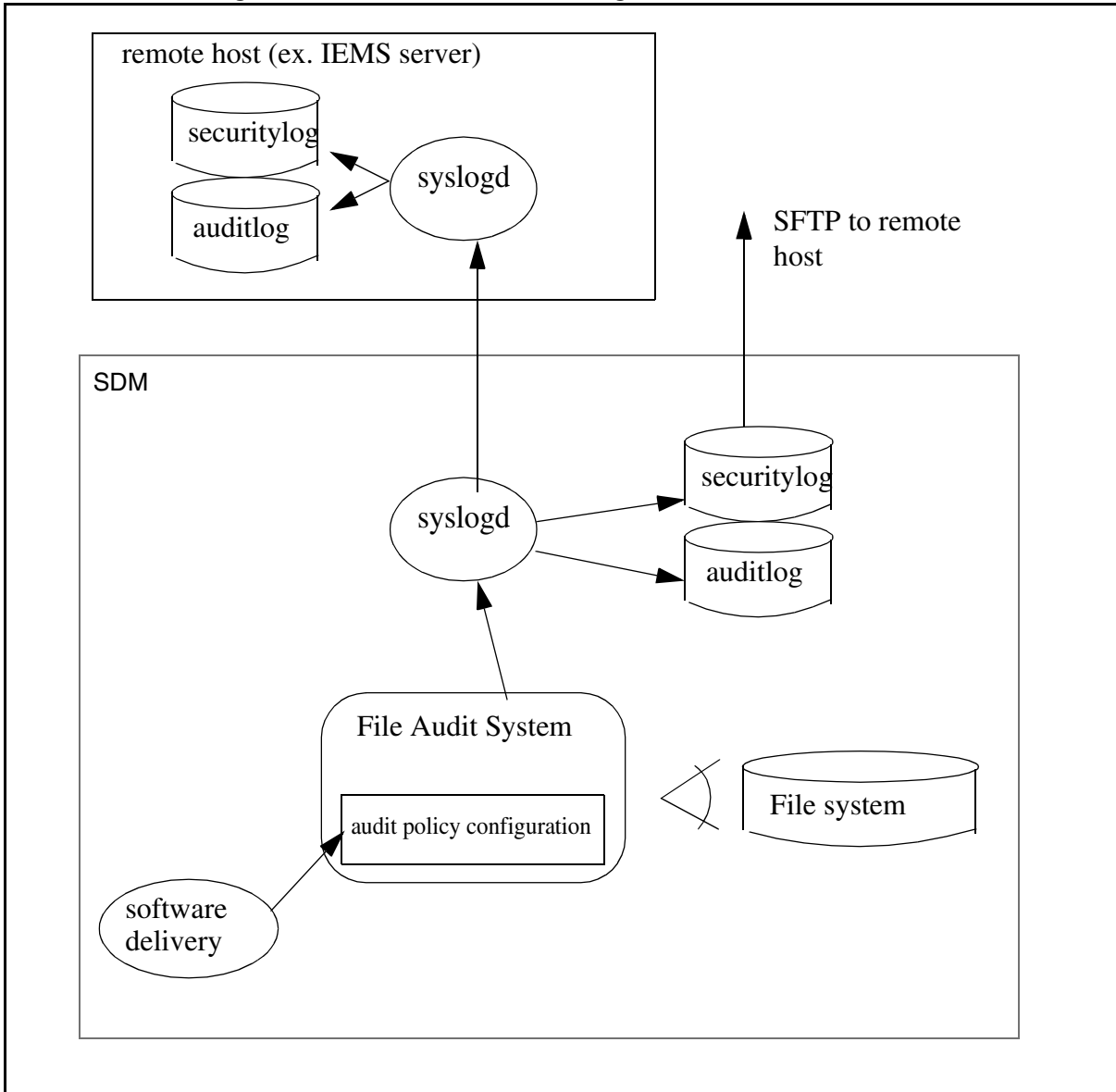
Each audit or security log will contain the following information:

- time of event
- event name (file change)
- login username of the person who changed the file
- complete file name, included the full path

The SDM file audit system utilizes the native AIX audit system, which is a part of the operating system. File change events are detected in real time, not as a result of a periodic comparison.

The audit and security log files will be rotated daily, and kept for one week. The disk storage space for the audit and security logs is monitored, and is alarmed if it exceeds a 70% full threshold. If desired, the files can be securely transferred to a remote host using SFTP (secure file transfer protocol).

In addition to the auditlog and security log files, the logs can also be forwarded in real time to a remote host which supports the UNIX syslog system.

**Figure 1 Functional Behavior Diagram**

### 1.3 Hardware Requirements or Dependencies

None.

### 1.4 Software Requirements or Dependencies

This feature will be distributed in the SN08 release.

## 1.5 Limitations and restrictions

The set files which are monitored are specified in the SDM software load. While this list will be updated as part of software delivery (patch etc.), there is no tool provided to manually update the list of monitored files. It is not expected that the customer will add files to the SDM outside the application of authenticated Nortel software updates. Although it would be possible for a user with security administration privileges to change the audit system configuration by editing a configuration file with “vi”, the practice should not be encouraged.

The mechanism to send audit and security logs to a remote host in real-time (syslogd) does not encrypt the log stream, therefore it cannot be considered secure.

## 1.6 Interactions

This feature does not impact other SDM features.

## 1.7 Applicable customer facing sections

### Fault Management

Logs ☒ X

Alarms ☐ N/A

### Configuration

Data Schema ☐ N/A

User Interface ☒ X

Element Management ☐ N/A

Security ☒ X

Service Order ☐ N/A

Office Parameters ☐ N/A

Accounting (includes AMA billing) ☐ N/A

Performance (includes operational measurements) ☐ N/A

## 1.8 Glossary

| Term   | Description                              |
|--------|------------------------------------------|
| syslog | logging system present on UNIX platforms |



## ***Product = CS 2000***

### **A00007492--SDM User Group Improvements**

#### ***Functional Description***

#### **1.1 Applicable Solution(s)**

DMS

#### **1.2 Description**

A number of SDM maintenance commands require *root* (superuser) privileges. This is a security concern because it results in the wide distribution of the *root* password. This feature will eliminate the requirement to be the *root* user in order to do SDM maintenance procedures<sup>14</sup>, except for procedures which require console access<sup>15</sup>.

Currently there are only two authorization levels on the SDM: 1) the *root* user and 2) users belonging to the *maint* group. In SN08 two new user groups will be created to eliminate the requirement for the *root* user and enable increased authorization granularity. The new groups are **emsadm** for system administration and **secadm** for security administration. While just these two groups will be added in SN08, it will be possible to extend this feature in future releases and add additional groups.

The following table has a general summary of the SDM maintenance functions and the required authorization level.

**Table: 1 Summary of Authorization Levels**

| Function                     | Root | emsadm | secadmin | maint |
|------------------------------|------|--------|----------|-------|
| Initial system installation  | *    |        |          |       |
| Application software install | *    | *      |          |       |
| Application software upgrade | *    | *      | *        | *     |
| System upgrade               | *    |        |          |       |

14. Initial installation of an SDM will still require the use of the root account

15. This restriction is documented in the companion feature A00007489. The new user groups are available via ssh access only and are not supported via the console or telnet.

**Table: 1 Summary of Authorization Levels**

| Function                                                            | Root | emsadm | secadmin | maint |
|---------------------------------------------------------------------|------|--------|----------|-------|
| User Administration<br>(create users, add users to groups,<br>etc.) | *    |        | *        |       |
| Application Configuration<br>(effect out of service)                | *    | *      |          |       |
| Application Configuration<br>(no service effect)                    | *    | *      | *        | *     |
| Application State Change                                            | *    | *      | *        | *     |
| Data Access                                                         | *    | *      | *        | *     |
| view security logs                                                  | *    |        | *        |       |
| Backup                                                              | *    | *      | *        | *     |

This feature will extend the SDM maintenance MAP screens for user administration, including additional screens to:

- display list of groups and the users in a group
- display list of users and the groups they belong too
- create / remove users
- add/delete user to group.

**Figure 2 Example Screen: SDM user administration**

```
*** CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: wcary2p3
 .. Fault Tolerant

User
0 Quit
2
3 PassThru Role Groups Users
4 maint joe, bradly,...
5 secadm Joe, patrick
6 emsadm bradly, mark, brenda,...
7
8
9
10
11 Role Groups: 1 to 3 of 3
12 Up
13 Down
14
15
16
17 Help
18 Refresh .
 root
Time 16:28 >
```

**Figure 3 Example Screen: SDM user display**

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2
3 PassThru Users Groups
4 Bob secadmin
5 Brad secadmin, emsadm, maint
6 Brenda emsadm, maint
7 joe maint
8 mark maint
9 patrick maint
10
11 Users: 1 to 6 of 6
12 Up
13 Down
14
15
16
17 Help
18 Refresh .
 root
Time 16:28 >

```

**Table 2: SDM Command Authorization Summary**

| SDM Tool | Level         | Commands | Description                               | Old auth. level | New auth. level |
|----------|---------------|----------|-------------------------------------------|-----------------|-----------------|
| sdmmtc   |               |          |                                           | maint           | maint           |
|          | Mtc           |          | Enter the maintenance level               | maint           | maint           |
|          | Mtc>Con       |          | Enter the SDM connectivity status levels. | maint           | maint           |
|          | Mtc>Con>DS512 |          | Go to the DS512 connectivity level.       | maint           | maint           |
|          | Mtc>Con>DS512 | Logs     | Display the last DS512 event reported.    | maint           | maint           |
|          | Mtc>Con>DS512 | Tst      | Test the service DS512 link(s)            | maint           | maint           |
|          | Mtc>Con>DS512 | Change   | Change DS512 connectivity options         | root            | emsadm          |
|          | Mtc>Con>X25   |          | Go to the X25 connectivity level.         | main            | maint           |

**Table 2: SDM Command Authorization Summary**

| SDM Tool | Level         | Commands | Description                                                                                   | Old auth. level | New auth. level |
|----------|---------------|----------|-----------------------------------------------------------------------------------------------|-----------------|-----------------|
|          | Mtc>Con>X25   | Logs     | Display the last X.25 event reported                                                          | main            | maint           |
|          | Mtc>Con>X25   | Daemon   | Control X.25 daemon.                                                                          | root            | emsadm          |
|          | Mtc>Con>Eth   |          | Go to the Ethernet connectivity level.                                                        | maint           | maint           |
|          | Mtc>Con>Eth   | Logs     | Display the last event reported on each of the Ethernet connection status indicators.         | maint           | maint           |
|          | Mtc>Con>Eth   | Change   | Change an ethernet interface.                                                                 | root            | emsadm          |
|          | Mtc>Con>Eth   | Add      | Add a new ethernet interface or monitored node.                                               | root            | emsadm          |
|          | Mtc>Con>Eth   | Delete   | Delete an ethernet interface or monitored node.                                               | root            | emsadm          |
|          | Mtc>Con>Eth   | Period   | Display or change the default ping period.                                                    | root            | emsadm          |
|          | Mtc>Con>Eth   | Failures | Display or change the max number of ping failures before the ethernet switches active domain. | root            | emsadm          |
|          | Mtc>Con>Eth   | Timeout  | Display or change the max timeout before ping failure.                                        | root            | emsadm          |
|          | Mtc>Net       |          | Enter the Network connectivity status level.                                                  | maint           | maint           |
|          | Mtc>Net>Core  |          | Go to the Core level.                                                                         | maint           | maint           |
|          | Mtc>Net>Core  | Add      | Add a communication path to the Core.                                                         | root            | emsadm          |
|          | Mtc>Net>Core  | Change   | Change the values for the given communication path to the Core.                               | root            | emsadm          |
|          | Mtc>Net>Core  | Delete   | Delete the given communication path to the Core.                                              | root            | emsadm          |
|          | Mtc>Net>Nodes |          | Go to the Nodes level.                                                                        | maint           | maint           |
|          | Mtc>Net>Nodes | Add      | Add a node.                                                                                   | root            | emsadm          |
|          | Mtc>Net>Nodes | Change   | Change a node.                                                                                | root            | emsadm          |
|          | Mtc>Net>Nodes | Delete   | Delete a node.                                                                                | root            | emsadm          |
|          | Mtc>Net>Nodes | Primary  | Configure the primary node.                                                                   | root            | emsadm          |
|          | Mtc>Net>Nodes | Monitor  | Toggle monitoring of a node.                                                                  | root            | emsadm          |

**Table 2: SDM Command Authorization Summary**

| SDM Tool | Level           | Commands | Description                                                                            | Old auth. level | New auth. level |
|----------|-----------------|----------|----------------------------------------------------------------------------------------|-----------------|-----------------|
|          | Mtc>Net>DCE     |          | Go to the DCE level.                                                                   | maint           | maint           |
|          | Mtc>Net>DCE     | Add      | Add DCE component(s)                                                                   | root            | emsadm          |
|          | Mtc>Net>DCE     | Delete   | Delete DCE components(s)                                                               | root            | emsadm          |
|          | Mtc>Net>DCE     | Logs     | Display the last DCE event reported (if any).                                          | root            | emsadm          |
|          | Mtc>Net>NTP     |          | Go to the NTP level.                                                                   | maint           | maint           |
|          | Mtc>Net>NTP     | Query    | Display the details of an NTP server.                                                  | maint           | maint           |
|          | Mtc>Net>NTP     | Logs     | Display the last NTP event reported (if any).                                          | maint           | maint           |
|          | Mtc>Net>NTP     | Add      | Add NTP server(s) and peer(s)                                                          | root            | emsadm          |
|          | Mtc>Net>NTP     | Change   | Change NTP server/peer.                                                                | root            | emsadm          |
|          | Mtc>Net>NTP     | Delete   | Delete NTP server(s) and peer(s)                                                       | root            | emsadm          |
|          | Mtc>Appl        |          | Enter the software applications status level.                                          | maint           | maint           |
|          | Mtc>Appl        | logs     | Display the last event reported (if any) on each of the application status indicators. | maint           | maint           |
|          | Mtc>Appl        | Bsy      | Busy an application.                                                                   | maint           | maint           |
|          | Mtc>Appl        | RTS      | Return an application to service.                                                      | maint           | maint           |
|          | Mtc>Appl        | OffL     | Offline an application.                                                                | maint           | maint           |
|          | Mtc>Sys         |          | Enter the operating system software status level.                                      | maint           | maint           |
|          | Mtc>Sys>Storage |          | Enter the STORAGE system status level.                                                 | maint           | maint           |
|          | Mtc>Sys>Storage | ESDAdd   | Add the /swd/sdm/esd logical volume for upgrades from disk.                            | root            | emsadm          |
|          | Mtc>Sys>Storage | ESDDel   | Remove the /swd/sdm/esd logical volume and all discontents.                            | root            | emsadm          |
|          | Mtc>Sys>Storage | Add      | Add new disks to the datavg volume group, OR add a new logical volume.                 | root            | emsadm          |

**Table 2: SDM Command Authorization Summary**

| SDM Tool | Level                | Commands | Description                                                                                                          | Old auth. level | New auth. level |
|----------|----------------------|----------|----------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|
|          | Mtc>Sys>Storage      | Change   | Change the alarm threshold for a system software status indicator, OR expand the size of an existing logical volume. | maint           | maint           |
|          | Mtc>Sys>Backup Clear |          | Clears the Backup Status and alarm.                                                                                  | maint           | maint           |
|          | Mtc>Sys>Audit Clear  |          | Clears the System Audit Status and alarm.                                                                            | maint           | maint           |
|          | Mtc>Hw               |          | Enter the hardware status level.                                                                                     | maint           | maint           |
|          | Mtc>Hw               | logs     | Display the last event reported (if any) on each of the hardware status indicators.                                  | maint           | maint           |
|          | Mtc>Hw               | Bsy      | Busy a hardware device.                                                                                              | maint           | maint           |
|          | Mtc>Hw               | RTS      | Return a hardware device to service.                                                                                 | maint           | maint           |
|          | Mtc>Hw               | Add      | Add a new hardware module to the system.                                                                             | root            | emsadm          |
|          | Mtc>Hw               | Delete   | Delete a hardware module from the system.                                                                            | root            | emsadm          |
|          | Mtc>Hw               | Upgrade  | Upgrade an MFIO.                                                                                                     | root            | emsadm          |
|          | Mtc                  | Quit     | Quit the current level or exit the SDM maintenance interface.                                                        | maint           | maint           |
|          | Mtc                  | Bsy      | Busy the SDM.                                                                                                        | maint           | maint           |
|          | Mtc                  | RTS      | Return the SDM to service.                                                                                           | maint           | maint           |
|          | Mtc                  | OffL     | Offline the SDM.                                                                                                     | maint           | maint           |
|          | Mtc                  | QuerySDM | Query information about the SDM.                                                                                     | maint           | maint           |
|          | Mtc                  | Locate   | Determine location of SDM modules and devices                                                                        | maint           | maint           |
|          | Mtc                  | Help     | Displays help for a single command or all valid                                                                      | maint           | maint           |
|          | Mtc                  | Refresh  | Refresh the current screen.                                                                                          | maint           | maint           |
|          | Admin                |          | Enter the system administration level.                                                                               | maint           | maint           |
|          | Admin>User           |          | Enter the user administration level.                                                                                 | maint           | maint           |

**Table 2: SDM Command Authorization Summary**

| SDM Tool | Level               | Commands  | Description                                                          | Old auth. level | New auth. level |
|----------|---------------------|-----------|----------------------------------------------------------------------|-----------------|-----------------|
|          | Admin>User>PassThru |           | Go to PassThru level.                                                | maint           | maint           |
|          | Admin>User>PassThru | Change    | Change a PassThru user.                                              | root            | secadm          |
|          | Admin>User>PassThru | Add       | Add a new PassThru user.                                             | root            | secadm          |
|          | Admin>User>PassThru | Delete    | Delete a PassThru user.                                              | root            | secadm          |
|          | Admin>User          | Add       | Add a new maintenance class user id.                                 | root            | secadm          |
|          | Admin>User          | Delete    | Delete a maintenance class user id.                                  | root            | secadm          |
|          | Admin>User          | Change    | Change the password for the user specified.                          | root            | secadm          |
|          | Admin>Backup        |           | Enter the tape backup and restore level.                             | root            | maint           |
|          | Admin>Restore       |           | Begin a full system restore.                                         | root            | root            |
|          | Admin>SWIM          |           | Enter the software inventory management level.                       | maint           | maint           |
|          | Admin>SWIM>Apply    |           | Enter the apply SDM software updates level.                          | root            | emsadm          |
|          | Admin>SWIM>Apply    | Reload    | Reload the list of filesets from the current source.                 | root            | emsadm          |
|          | Admin>SWIM>Apply    | Source    | Choose a source tape drive or directory from which to load filesets. | root            | emsadm          |
|          | Admin>SWIM>Apply    | Eject     | Ejects the tape in the current tape drive or the given tape drive.   | root            | emsadm          |
|          | Admin>SWIM>Apply    | Select    | Selects a fileset.                                                   | root            | emsadm          |
|          | Admin>SWIM>Apply    | Apply     | Apply filesets on this SDM.                                          | root            | emsadm          |
|          | Admin>SWIM>Apply    | Upgrade   | Upgrade all filesets to the latest versions available on the source. | root            | emsadm          |
|          | Admin>SWIM>Apply    | QueryTape | Query the SDM release information from the tape.                     | root            | emsadm          |
|          | Admin>SWIM>Apply    | Search    | Search the list for the given text                                   | root            | emsadm          |



**Table 2: SDM Command Authorization Summary**

| SDM Tool | Level              | Commands | Description                                                                    | Old auth. level | New auth. level |
|----------|--------------------|----------|--------------------------------------------------------------------------------|-----------------|-----------------|
|          | Admin>SWIM>Apply   | Filter   | Toggle between showing the software description and the software fileset name. | root            | emsadm          |
|          | Admin>SWIM>Apply   | CD:      | Change to the given directory.                                                 | root            | emsadm          |
|          | Admin>SWIM>Apply   | View     | Toggle between showing the software description and the software fileset name. | root            | emsadm          |
|          | Admin>SWIM>Details |          | Enter the software details level.                                              | maint           | maint           |
|          | Admin>SWIM>Details | Select   | Selects a fileset.                                                             | maint           | maint           |
|          | Admin>SWIM>Details | Remove   | Remove software.                                                               | root            | emsadm          |
|          | Admin>SWIM>Details | Search   | Search the list for the given text                                             | maint           | maint           |
|          | Admin>SWIM>Details | Filter   | Filter the list of software.                                                   | maint           | maint           |
|          | Admin>SWIM>Details | View     | Toggle between showing the software description and the software fileset name. | maint           | maint           |
|          | Admin>SWIM>Fixes   |          | Enter the software fixes level.                                                | root            | emsadm          |
|          | Admin>SWIM>Fixes   | Reload   | Reload the list of filesets from the current source.                           | root            | emsadm          |
|          | Admin>SWIM>Fixes   | Source   | Choose a directory from which to load filesets.                                | root            | emsadm          |
|          | Admin>SWIM>Fixes   | Sched    | Set up a scheduled time in which the Fix Auto Apply would execute.             | root            | emsadm          |
|          | Admin>SWIM>Fixes   | Apply    | Apply filesets on this SDM.                                                    | root            | emsadm          |
|          | Admin>SWIM>Fixes   | Filter   | Filter the list of software.                                                   | root            | emsadm          |
|          | Admin>SWIM>Fixes   | View     | Toggle between showing the software description and the software fileset name. | root            | emsadm          |

**Table 2: SDM Command Authorization Summary**

| SDM Tool  | Level                 | Commands | Description                                                                    | Old auth. level | New auth. level |
|-----------|-----------------------|----------|--------------------------------------------------------------------------------|-----------------|-----------------|
|           | Admin>SWIM>Config     |          | Enter the software configuration level.                                        | maint           | maint           |
|           | Admin>SWIM>Config     | Select   | Selects a fileset.                                                             | maint           | maint           |
|           | Admin>SWIM>Config     | Config   | Configure filesets.                                                            | root            | emsadm          |
|           | Admin>SWIM>Config     | Filter   | Filter the list of software.                                                   | maint           | maint           |
|           | Admin>SWIM>Config     | View     | Toggle between showing the software description and the software fileset name. | maint           | maint           |
|           | Admin>SWIM>Options    |          | Enter the options level.                                                       | maint           | maint           |
|           | Admin>SWIM>Options    | Change   | Change default values for SWIM.                                                | root            | emsadm          |
|           | Admin>SWIM>History    |          | Enter the software history level.                                              | maint           | maint           |
|           | Admin>SWIM>History    | ViewLog  | View the log for the given history entry.                                      | maint           | maint           |
|           | Admin>SWIM>Query Tape |          | Select the tape drive you wish to query                                        | maint           | maint           |
|           | Admin>Access          |          | Enter the Telnet access control level.                                         | maint           | maint           |
|           | Admin>Access          | Change   | Change SDM access settings                                                     | root            | emsadm          |
|           | Admin>Time            |          | Display & modify the date and time.                                            | maint/root      | maint           |
|           | Admin>TimeZone        |          | Adjust Daylight Savings Time values.                                           | maint           | maint           |
|           | Admin>TimeZone        | Change   | Change the Time Zone.                                                          | root            | emsadm          |
| sdmconfig | sdmconfig             |          | Enter the system commissioning level.                                          | maint           | maint           |
|           | sdmconfig             | Add      | Add an entry for this commissioning step.                                      | root            | emsadm          |
|           | sdmconfig             | Change   | Change an entry or the commissioned values for the current commissioning step. | root            | emsadm          |

**Table 2: SDM Command Authorization Summary**

| SDM Tool | Level               | Commands | Description                                    | Old auth. level | New auth. level |
|----------|---------------------|----------|------------------------------------------------|-----------------|-----------------|
|          | sdmconfig           | Delete   | Delete an entry for this commissioning step.   | root            | emsadm          |
|          | sdmconfig           | Step     | Jump to the given commissioning step number.   | maint           | maint           |
|          | sdmconfig           | List     | List all of the available commissioning steps. | maint           | maint           |
|          | sdmconfig           | Next     | Go to the next commissioning step.             | maint           | maint           |
|          | sdmconfig           | Prev     | Go to the previous commissioning step.         | maint           | maint           |
|          | sdmconfig           | Up       | Scroll up through the list.                    | maint           | maint           |
|          | sdmconfig           | Down     | Scroll down through the list.                  | maint           | maint           |
|          | sdmconfig           | LogQuery | Invoke the logquery tool to browse DMS logs.   | maint           | maint           |
| billmtc  |                     |          | Enter billing maintenance level.               | maint           | maint           |
|          | CONFSTRM            |          | Enters CONFSTRM level                          | maint           | maint           |
|          | CONFSTRM            | Add      | Configures a new stream                        | maint           | maint           |
|          | CONFSTRM            | Change   | Changes an existing stream configuration       | maint           | maint           |
|          | CONFSTRM            | Delete   | Deletes a stream                               | maint           | maint           |
|          | CONFSTRM            | List     | Lists configuration of a (or all) stream(s)    | maint           | maint           |
|          | CONFSTRM            | Act      | Activates a filtered stream                    | maint           | maint           |
|          | CONFSTRM            | Deact    | Deactivates a filtered stream                  | maint           | maint           |
|          | CONFSTRM            | Update   | Updates a filtered stream's criteria.          | maint           | maint           |
|          | CONFSTRM            | Start    | Resume receiving records on a filtered stream. | maint           | maint           |
|          | CONFSTRM            | Stop     | Stop receiving records on a filtered stream.   | maint           | maint           |
|          | APPL                |          | Enters the APPL level                          | maint           | maint           |
|          | APPL>AFT            |          | Enters AFT level                               | maint           | maint           |
|          | APPL>AFT>AFT-CONFIG |          | Enters AFT Session configuration level         | maint           | maint           |

**Table 2: SDM Command Authorization Summary**

| SDM Tool | Level               | Commands | Description                                        | Old auth. level | New auth. level |
|----------|---------------------|----------|----------------------------------------------------|-----------------|-----------------|
|          | APPL>AFT>AFT-CONFIG | Add      | Add AFT tuples to the MIB.                         | maint           | maint           |
|          | APPL>AFT>AFT-CONFIG | Delete   | Delete AFT tuples from the MIB.                    | maint           | maint           |
|          | APPL>AFT>AFT-CONFIG | Change   | Change number of retry attempts for a session.     | maint           | maint           |
|          | APPL>AFT>AFT-CONFIG | List     | List AFT tuples in the MIB.                        | maint           | maint           |
|          | APPL>AFT>           | Query    | Query info on file transfer lists for sessions.    | maint           | maint           |
|          | APPL>AFT>           | Setfile  | Set an override file, delete a file from the list. | maint           | maint           |
|          | APPL>AFT>           | Rsetfile | Reset a file from partial to pending.              | maint           | maint           |
|          | APPL>AFT>           | AFTRESND | Enters AFT resend level                            | maint           | maint           |
|          | APPL>AFT>           | Start    | Start an AFT session that was stopped.             | maint           | maint           |
|          | APPL>AFT>           | Stop     | Stop an AFT session file transfer.                 | maint           | maint           |
|          | APPL>AFT>           | Alarm    | Query or cancel AFT session alarms.                | maint           | maint           |
|          | APPL>AFT>SFP        |          | Enters SFP level                                   | maint           | maint           |
|          | APPL>AFT>SFP        | Query    | Queries the SFP status                             | maint           | maint           |
|          | APPL>AFT>SFP        | Act      | Activates SFP                                      | maint           | maint           |
|          | APPL>AFT>SFP        | Deact    | De-activates SFP                                   | maint           | maint           |
|          | FILESYS             |          | Enters FILESYS level                               | maint           | maint           |
|          | FILESYS             | Sendfile | Sends billing file(s) per stream to downstream     | maint           | maint           |
|          | FILESYS             | Listfile | Lists stored billing file(s) per stream            | maint           | maint           |
|          | FILESYS             | Closec   | Closes currently open billing file(s) per stream   | maint           | maint           |
|          | SCHEDULE            |          | Enters SCHEDULE level                              | maint           | maint           |
|          | SCHEDULE            | Add      | Adds a tuple to the schedule                       | maint           | maint           |
|          | SCHEDULE            | Change   | Changes a tuple in the schedule                    | maint           | maint           |

**Table 2: SDM Command Authorization Summary**

| SDM Tool | Level        | Commands | Description                                    | Old auth. level | New auth. level |
|----------|--------------|----------|------------------------------------------------|-----------------|-----------------|
|          | SCHEDULE     | Delete   | Deletes tuple(s) from the schedule             | maint           | maint           |
|          | SCHEDULE     | List     | Lists tuple(s) in the schedule                 | maint           | maint           |
|          | SCHEDULE>RTB |          | Enters RTB level                               | maint           | maint           |
|          | SCHEDULE>RTB | Rts      | Returns RTB to service for a stream.           | maint           | maint           |
|          | SCHEDULE>RTB | Bsy      | Busies RTB for a stream.                       | maint           | maint           |
|          | SCHEDULE>RTB | Offl     | Offlines RTB for a stream.                     | maint           | maint           |
|          | SCHEDULE>RTB | Query    | Queries the state of RTB for a stream.         | maint           | maint           |
|          | SCHEDULE>RTB | IPTest   | Tests the IP address used by RTB for a stream. | maint           | maint           |
|          | SCHEDULE>RTB | CONFRTB  | Enters the RTB configuration level.            | maint           | maint           |
|          | TOOLS        |          | Enters TOOLS level                             | maint           | maint           |
|          | TOOLS        | Amadump  | Displays record information                    | maint           | maint           |
|          | TAPE         |          | Enters TAPE level                              | maint           | maint           |
|          | TAPE         | Write    | Write billing files to DAT tape                | maint           | maint           |
|          | TAPE         | List     | List billings files on a DAT tape              | maint           | maint           |
|          | TAPE         | Send     | FTP billings files from a DAT tape             | maint           | maint           |
|          | billmtc      | Set      | Sets context                                   | maint           | maint           |
|          | billmtc      | Query    | Displays current state of streams              | maint           | maint           |
|          | billmtc      | Clli     | Displays core CLLI                             | maint           | maint           |
|          | billmtc      | Mib      | Sets and gets MIB objects                      | maint           | maint           |
|          | billmtc      | Dispal   | Displays all current SDM alarms                | maint           | maint           |
|          | billmtc      | Displots | Displays logs not yet sent to CM               | maint           | maint           |

### 1.3 Hardware Requirements or Dependencies

There are no hardware requirements for this feature.

### 1.4 Software Requirements or Dependencies

This feature is dependent on feature A00007489 (IEMS Integration).

## 1.5 Limitations and restrictions

No user interface is provided to create additional authorization levels.

## 1.6 Interactions

This feature will change the RMI for user creation.

## 1.7 Glossary

| Term  | Description                       |
|-------|-----------------------------------|
| CBM   | Core and Billing Manage           |
| IEMS  | Integrated Element Manager System |
| MS    | Management System                 |
| NE    | Network Element                   |
| NE/MS | NE or MS                          |
| RMI   | Resource Manager Interface        |
| SDM   | Super Node Data Manager           |

## 2.1 Configuration for A00007492

## 2.2 Hardware and Software Requirements

## 2.3 Initial Configurative

## 2.4 Office/Subnet parameters (OP/SP) (CM & SESM)

## 2.5 Upgrade Considerations

## 2.6 Data schema (DS) (CM, MIBS, RDB)

## 2.7 Service Orders (SO) (CM & SESM)

## 2.8 Software optionality control (SOC)

## 2.9 Element Management

## 2.10 User interface changes

### 2.10.1 Directory: <SDM user level>

#### 2.10.1.1 Directory description

The user level of the SDM user interface has been changed. New commands have been added. “Dispusr” enables the operator to display all the users on the system or information about a specific user. “Dispgrp” allows the operator to display all the role groups, the user in a specific role group and the actions that a specific role group can do. The add and change commands of the user interface have also been changed. These commands now prompt the user for each piece of information needed to create a user. The information asked for include primary groups, groups, shell and password.

#### 2.10.1.2 Accessing directory: <sdmmtc; user>

Access to directory or MAP level and return to CI

The user level of the SDMMTC is accessed the same as before.

```
>sdmmtc
```

```
>user
```

### 2.10.2 Command: <Dispgrp>

#### 2.10.2.1 Command type: < Listed MENU>

#### 2.10.2.2 Command target: <SDM>

#### 2.10.2.3 Command availability: <ALL>

#### 2.10.2.4 Command description

Enables the operator to display all the role groups on the system or the users in a specific user or the activities that a specific role group can perform.

#### 2.10.2.5 Command syntax

**Table 1** <CommandName> command parameters and variables

| Command                  | Parameters and variables                                                                                                     |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------|
| dispusr                  | all                                                                                                                          |
|                          | group                                                                                                                        |
|                          | group act                                                                                                                    |
| Parameters and variables | Description                                                                                                                  |
| All                      | Displays all role groups defined on the system. The role group name is displayed along with what users belong to that group. |
| Group                    | Displays the users that belong to the specified group.                                                                       |
| Group Act                | Displays the actions the specified group is allowed to perform.                                                              |

### 2.10.2.6 Qualifications and warnings

Only role groups can be displayed.

### 2.10.2.7 Responses

#### 2.10.2.7.1 <errors>

**Table 2** MAP outputs with associated meanings and actions

| Command                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| dispgrp junk                                                                                                                                                  |
| Cannot execute command. Only Role groups can be displayed.                                                                                                    |
| <b>Meaning:</b> This happens when the group specified is not a role group.                                                                                    |
| <b>System or user actions:</b> User should type a group that is a role group. This command with no parameters or with “all” will display all the role groups. |
| dispusr maint junk                                                                                                                                            |
| Command failed. The third parameter can only be ACT.                                                                                                          |
| <b>Meaning:</b> The third parameter must be the reserved word “ACT”.                                                                                          |
| <b>System or user actions:</b> User should type “act” as the third parameter.                                                                                 |
| dispusr junk junk junk                                                                                                                                        |
| DispUsr junk junk - EITHER incorrect optional parameter(s) OR too many parameters.                                                                            |
| <b>Meaning:</b> This happens when too many parameters are given.                                                                                              |
| <b>System or user actions:</b> User should type a group that is a role group. This command with no parameters or with “all” will display all the role groups. |

### 2.10.2.8 Examples



Figure 1 Example Screen: SDM user dispgrp all

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2
3 PassThru 1 emsadm dvsE,bn_ems,dvsE2,dvsE3,bnemsadm,jean
4 2 maint dvsS3,maint,ftp,anonymou,limaint,dvsM,dvs...
5 3 secuadm dvsS2,dvsS3,dvsS,bn_sec,jean
6
6 Role Groups: 1 to 3 of 3
7
8
9
10 Dispgrp
11 DispUsr
12 Up
13 Down
14
15
16
17 Help
18 Refresh .
root
Time 16:28 >

```

Figure 2 Example Screen: SDM user display

```
SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2 maint Users
3 PassThru 1 bob
4 2 fred
5 3 maint
6 4 dvsM
7 5 dvsM2
8
9
10 Dispgrp
11 Dispusr
12 Up
13 Down
14
15
16
17 Help
18 Refresh .
 root
Time 16:28 >

Lines: 1 to 5 of 5
```

**Figure 3 Example Screen: SDM user display**

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2
3 PassThru Allowed actions for role group secuadm:.
4 security-admin
5 security-manage
6 security-view
7
8
9
10 Dispgrp
11 Dispusr
12 Up
13 Down
14
15
16
17 Help
18 Refresh .
 root
Time 16:28 >

```

Lines: 1 to 3 of 3

**Table 3 Usage examples for DispUsr command**

|                      |                                                                       |
|----------------------|-----------------------------------------------------------------------|
| Description of task: |                                                                       |
| Description of task  | Display all role group                                                |
| Command:             | dispgrp all                                                           |
| MAP response:        | display of all role groups (see figure 3)                             |
| Description of task  | Display a specific role group                                         |
| Command:             | dispgrp maint                                                         |
| MAP response:        | display all the users in the specified group (see figure 4)           |
| Description of task  | Display a specific role group's actions                               |
| Command:             | dispusr secuadm act                                                   |
| MAP response:        | display of the actions the specified group can perform (see figure 5) |

### 2.10.3 Command: <Dispusr>

#### 2.10.3.1 Command type: <NON-MENU, Listed MENU, Unlisted MENU>

#### 2.10.3.2 Command target: <SDM>

#### 2.10.3.3 Command availability: <ALL>

#### 2.10.3.4 Command description

Enables the operator to display all the users on the system or information about a specific user.

#### 2.10.3.5 Command syntax

**Table 4** <CommandName> command parameters and variables

| Command                  | Parameters and variables                                                                                                                           |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| dispusr                  | All<br>User                                                                                                                                        |
| Parameters and variables | Description                                                                                                                                        |
| All                      | Displays all users defined on the system that belong to one of the role groups. The user name is displayed along with what groups it is a part of. |
| User                     | Displays the primary groups, groups, home directory and shell for the user specified.                                                              |

#### 2.10.3.6 Qualifications and warnings

Only users that are a members or a role group may be displayed.

#### 2.10.3.7 Responses

##### 2.10.3.7.1 <errors>

**Table 5** MAP outputs with associated meanings and actions

| Command                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| dispusr junk                                                                                                                                                         |
| Command failed. User junk does not exist.                                                                                                                            |
| <b>Meaning:</b> This happens when a user name does not exist                                                                                                         |
| <b>System or user actions:</b> User should type a user that is in a role group. This command with no parameters or with “all” will display all users in role groups. |

**Table 5 MAP outputs with associated meanings and actions**

| Command                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| dispusr root                                                                                                                                                         |
| Command failed. User root is not a role group user.                                                                                                                  |
| <b>Meaning:</b> This happens when the user is not in a role group.                                                                                                   |
| <b>System or user actions:</b> User should type a user that is in a role group. This command with no parameters or with “all” will display all users in role groups. |
| dispusr junk junk                                                                                                                                                    |
| DispUsr junk junk - EITHER incorrect optional parameter(s) OR too many parameters.                                                                                   |
| <b>Meaning:</b> This happens when too many parameters are given.                                                                                                     |
| <b>System or user actions:</b> User should type a user that is in a role group. This command with no parameters or with “all” will display all users in role groups. |

### 2.10.3.8 Examples

**Figure 4 Example Screen: SDM user display**

|            |         |              |     |                         |                    |      |                |
|------------|---------|--------------|-----|-------------------------|--------------------|------|----------------|
| SDM        | CON     | 512          | NET | APPL                    | SYS                | HW   | CLLI: SNM0     |
| ISTb       | .       | ..           | .   | ISTb                    | ISTb               | ISTb | Host: hostname |
|            | ..      |              |     |                         |                    |      | Fault Tolerant |
| User       |         |              |     |                         |                    |      |                |
| 0 Quit     |         |              |     |                         |                    |      |                |
| 2          |         | <u>Users</u> |     | <u>Groups</u>           |                    |      |                |
| 3 PassThru | Bob     |              |     | secadmin                |                    |      |                |
| 4          | Brad    |              |     | secadmin, sysadm, maint |                    |      |                |
| 5          | Brenda  |              |     | sysadm, maint           |                    |      |                |
| 6          | joe     |              |     | maint                   |                    |      |                |
| 7          | mark    |              |     | maint                   |                    |      |                |
| 8          | patrick |              |     | maint                   |                    |      |                |
| 9          |         |              |     |                         |                    |      |                |
| 10 Dispgrp |         |              |     |                         |                    |      |                |
| 11 DispUsr |         |              |     |                         | Users: 1 to 6 of 6 |      |                |
| 12 Up      |         |              |     |                         |                    |      |                |
| 13 Down    |         |              |     |                         |                    |      |                |
| 14         |         |              |     |                         |                    |      |                |
| 15         |         |              |     |                         |                    |      |                |
| 16         |         |              |     |                         |                    |      |                |
| 17 Help    |         |              |     |                         |                    |      |                |
| 18 Refresh | .       |              |     |                         |                    |      |                |
| root       |         |              |     |                         |                    |      |                |
| Time 16:28 |         |              |     |                         |                    |      |                |
| >          |         |              |     |                         |                    |      |                |

**Figure 5 Example Screen: SDM user display**

|            |               |              |     |             |      |      |                    |
|------------|---------------|--------------|-----|-------------|------|------|--------------------|
| SDM        | CON           | 512          | NET | APPL        | SYS  | HW   | CLLI: SNM0         |
| ISTb       | .             | ..           | .   | ISTb        | ISTb | ISTb | Host: hostname     |
|            | ..            |              |     |             |      |      | Fault Tolerant     |
| User       |               |              |     |             |      |      |                    |
| 0 Quit     |               |              |     |             |      |      |                    |
| 2          |               | <u>maint</u> |     |             |      |      |                    |
| 3 PassThru | <b>pgrp</b>   |              |     | maint       |      |      |                    |
| 4          | <b>groups</b> |              |     |             |      |      |                    |
| 5          |               |              |     | maint       |      |      |                    |
| 6          | <b>home</b>   |              |     | /home/maint |      |      |                    |
| 7          | <b>shell</b>  |              |     | /bin/rash   |      |      |                    |
| 8          |               |              |     |             |      |      | Lines: 1 to 5 of 5 |
| 9          |               |              |     |             |      |      |                    |
| 10 Dispgrp |               |              |     |             |      |      |                    |
| 11 Dispusr |               |              |     |             |      |      |                    |
| 12 Up      |               |              |     |             |      |      |                    |
| 13 Down    |               |              |     |             |      |      |                    |
| 14         |               |              |     |             |      |      |                    |
| 15         |               |              |     |             |      |      |                    |
| 16         |               |              |     |             |      |      |                    |
| 17 Help    |               |              |     |             |      |      |                    |
| 18 Refresh | .             |              |     |             |      |      |                    |
| root       |               |              |     |             |      |      |                    |
| Time 16:28 |               |              |     |             |      |      | >                  |

**Table 6 Usage examples for DispUsr command**

|                      |                                                  |
|----------------------|--------------------------------------------------|
| Description of task: |                                                  |
| Description of task  | Display all role group users                     |
| Command:             | dispusr all                                      |
| MAP response:        | display of all users (see figure 6)              |
| Description of task  | Display a specific role group user               |
| Command:             | dispusr maint                                    |
| MAP response:        | display of the user's information (see figure 7) |

**2.10.4 Command: <Add>****2.10.5 Command type: < Unlisted MENU>****2.10.6 Command target: <SDM>****2.10.7 Command availability: <Secuadm users>****2.10.8 Command description**

Enables the operator to create a new user.

**2.10.8.1 Command syntax****Table 7 <CommandName> command parameters and variables**

| Command                  | Parameters and variables                                                                                                                                 |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| add                      | User                                                                                                                                                     |
| Parameters and variables | Description                                                                                                                                              |
| User                     | Add a user with the name that was specified.                                                                                                             |
| Pgrp                     | Set the primary group to the value specified. Allowed values are maint, emsadm or secuadm.                                                               |
| Groups                   | Add the group list for this user. Allowed values are maint, emsadm and secuadm. One or more groups may be added. List them separated by blanks or commas |
| Shell                    | Set the shell of the user. Allowed values are rash for a restricted shell, fash for a full shell and nash for no shell.                                  |
| password                 | Set the password for the user.                                                                                                                           |

**2.10.8.2 Qualifications and warnings**

None.

### 2.10.8.3 Responses

#### 2.10.8.3.1 <errors>

**Table 8** MAP outputs with associated meanings and actions

| Command                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| add maint<br><br>Command failed. User 'maint' already exists.<br><br><b>Meaning:</b> This happens when a user name is already in use<br><br><b>System or user actions:</b> User should type a different name                                                                                                                                              |
| add toobigname<br><br>Cannot execute command. USERID cannot exceed 8 characters.<br><br><b>Meaning:</b> This happens when the user name is greater than 8 characters.<br><br><b>System or user actions:</b> User should type a user name less than or equal to 8 characters long.                                                                         |
| add<br><br>or<br><br>add junk junk<br><br>EITHER incorrect optional parameter(s) OR too many parameters.<br><br><b>Meaning:</b> This happens when too many or not enough parameters are given.<br><br><b>System or user actions:</b> User should type a user name.                                                                                        |
| add User - Primary Group<br><br>Enter the new Primary Group for user bn_ems: [maint]<br><br>>junk<br><br>Group 'junk' is not a Role Group.<br><br><b>Meaning:</b> This happens when a non role group is entered<br><br><b>System or user actions:</b> User should type a valid role group (maint, emsadm or secuadm) or type enter to accept the default. |



**Table 8 MAP outputs with associated meanings and actions**

| Command                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>add User - Groups</p> <p>Enter the new Group List for user bn_ems: [maint]</p> <p>&gt;junk</p> <p>Group 'junk' is not a Role Group.</p> <p>Type list of role groups separated by commas.</p> <p><b>Meaning:</b> This happens when a non role group is entered</p> <p><b>System or user actions:</b> User should type a valid role group (maint, emsadm or secuadm) or type enter to accept the default.</p> <p>add User - Shell</p> <p>Enter the new Shell for user bn_ems: [rash]</p> <p>&gt;junk</p> <p>'junk' is not a valid shell.</p> <p>Allowed values are 'rash', 'fash' or 'nash'.</p> <p><b>Meaning:</b> This happens when a non-valid shell is typed.</p> <p><b>System or user actions:</b> User should type a valid shell (rash, fash or nash) or type enter to accept the default.</p> <p>add User - Change Password?</p> <p>Do you wish to change the password for user bn_ems?</p> <p>Please confirm ("YES", "Y", "NO", or "N"):</p> <p>&gt;jmaybe</p> <p>Invalid input: Please try again.</p> <p><b>Meaning:</b> Allowed answers are yes or no.</p> <p><b>System or user actions:</b> User must reply yes or no.</p> |

### 2.10.8.4 Examples

Figure 6 Example Screen: SDM user display

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2 Role Group Users
3 PassThru 1 emsadm bn_ems
4 2 maint maint,ftp,anonymou,limaint
5 3 secuadm No users defined in this group
6 Role Groups: 1 to 3 of 3
7
8
9
10 Dispgrp
11 DispUsr
12 Up
13 Down
14
15
16
17 Help Add User - Primary Group
18 Refresh Enter the new Primary Group for user bn_sec: [maint]
root
Time 16:28 >

```

Figure 7 Example Screen: SDM user display

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2
3 PassThru Role Group Users
 1 emsadm bn_ems
4 2 maint maint,ftp,anonymou,limaint
5 3 secuadm No users defined in this group
6 Role Groups: 1 to 3 of 3
7
8
9
10 Dispgrp
11 DispUsr
12 Up
13 Down
14
15
16
17 Help Add User - Groups
18 Refresh Enter the new Group List for user bn_sec: [maint]
root
Time 16:28 >

```

Figure 8 Example Screen: SDM user display

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2
3 PassThru Role Group Users
4 1 emsadm bn_ems
5 2 maint maint,ftp,anonymou,limaint
6 3 secuadm No users defined in this group
7 Role Groups: 1 to 3 of 3
8
9
10 Dispgrp
11 DispUsr
12 Up
13 Down
14
15
16
17 Help Add User - Shell
18 Refresh Enter the new Shell for user bn_sec: [rash]
 root
Time 16:28 >

```

**Figure 9 Example Screen: SDM user display**

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2
3 PassThru Role Group Users
4 1 emsadm bn_ems
5 2 maint maint,ftp,anonymou,limaint
6 3 secuadm No users defined in this group
7 Role Groups: 1 to 3 of 3
8
9
10 Dispgrp
11 DispUsr
12 Up
13 Down
14
15
16 Add User - Change Password?
17 Help Do you wish to change the password for user bn_sec?
18 Refresh Please confirm ("YES", "Y", "NO", or "N"):
root
Time 16:28 >

```

**2.10.9 Command: <Change>****2.10.9.1 Command type: < Unlisted MENU>****2.10.9.2 Command target: <SDM>****2.10.9.3 Command availability: <Secuadm users>****2.10.9.4 Command description**

Enables the operator to change an existing user.

**2.10.9.5 Command syntax****Table 9 <CommandName> command parameters and variables**

| Command                  | Parameters and variables |
|--------------------------|--------------------------|
| Change                   | User                     |
| Parameters and variables | Description              |

**Table 9** <CommandName> command parameters and variables

| Command  | Parameters and variables                                                                                                                                    |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User     | change a user with the name that was specified.                                                                                                             |
| Pgrp     | change the primary group to the value specified. Allowed values are maint, emsadm or secuadm.                                                               |
| Groups   | change the group list for this user. Allowed values are maint, emsadm and secuadm. One or more groups may be added. List them separated by blanks or commas |
| Shell    | change the shell of the user. Allowed values are rash for a restricted shell, fash for a full shell and nash for no shell.                                  |
| password | Change the password for the user.                                                                                                                           |

**2.10.9.6 Qualifications and warnings**

None.

**2.10.9.7 Responses****2.10.9.7.1 <errors>****Table 10** MAP outputs with associated meanings and actions

| Command                                                                                              |
|------------------------------------------------------------------------------------------------------|
| change junk                                                                                          |
| Command failed. 3004-687 User “junk” does not exist.                                                 |
| <b>Meaning:</b> This happens when a user name does not exist.                                        |
| <b>System or user actions:</b> User should type a user that already has been created.                |
| change toobigname                                                                                    |
| Cannot execute command. USERID cannot exceed 8 characters.                                           |
| <b>Meaning:</b> This happens when the user name is greater than 8 characters.                        |
| <b>System or user actions:</b> User should type a user name less than or equal to 8 characters long. |
| change junk junk                                                                                     |
| EITHER incorrect optional parameter(s) OR too many parameters.                                       |
| <b>Meaning:</b> This happens when too many or not enough parameters are given.                       |
| <b>System or user actions:</b> User should type a user name.                                         |

**Table 10** MAP outputs with associated meanings and actions

| Command                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>change User - Primary Group</p> <p>Enter the new Primary Group for user bn_ems: [maint]</p> <p>&gt;junk</p> <p>Group 'junk' is not a Role Group.</p> <p><b>Meaning:</b> This happens when a non role group is entered</p> <p><b>System or user actions:</b> User should type a valid role group (maint, emsadm or secuadm) or type enter to accept the default.</p> <p>change User - Groups</p> <p>Enter the new Group List for user bn_ems: [maint]</p> <p>&gt;junk</p> <p>Group 'junk' is not a Role Group.</p> <p>Type list of role groups separated by commas.</p> <p><b>Meaning:</b> This happens when a non role group is entered</p> <p><b>System or user actions:</b> User should type a valid role group (maint, emsadm or secuadm) or type enter to accept the default.</p> <p>change User - Shell</p> <p>Enter the new Shell for user bn_ems: [rash]</p> <p>&gt;junk</p> <p>'junk' is not a valid shell.</p> <p>Allowed values are 'rash', 'fash' or 'nash'.</p> <p><b>Meaning:</b> This happens when a non-valid shell is typed.</p> <p><b>System or user actions:</b> User should type a valid shell (rash, fash or nash) or type enter to accept the default.</p> |

**Table 10** MAP outputs with associated meanings and actions

| Command                                                   |
|-----------------------------------------------------------|
| change User - Change Password?                            |
| Do you wish to change the password for user bn_ems?       |
| Please confirm ("YES", "Y", "NO", or "N"):                |
| >jmaybe                                                   |
| Invalid input: Please try again.                          |
| <b>Meaning:</b> Allowed answers are yes or no.            |
| <b>System or user actions:</b> User must reply yes or no. |

### 2.10.9.8 Examples

**Figure 10** Example Screen: SDM user display

|            |     |     |     |      |      |      |                |
|------------|-----|-----|-----|------|------|------|----------------|
| SDM        | CON | 512 | NET | APPL | SYS  | HW   | CLLI: SNM0     |
| ISTb       | .   | ..  | .   | ISTb | ISTb | ISTb | Host: hostname |
|            | ..  |     |     |      |      |      | Fault Tolerant |
| User       |     |     |     |      |      |      |                |
| 0 Quit     |     |     |     |      |      |      |                |
| 2          |     |     |     |      |      |      |                |
| 3 PassThru |     |     |     |      |      |      |                |
| 4          |     |     |     |      |      |      |                |
| 5          |     |     |     |      |      |      |                |
| 6          |     |     |     |      |      |      |                |
| 7          |     |     |     |      |      |      |                |
| 8          |     |     |     |      |      |      |                |
| 9          |     |     |     |      |      |      |                |
| 10 Dispgrp |     |     |     |      |      |      |                |
| 11 DispUsr |     |     |     |      |      |      |                |
| 12 Up      |     |     |     |      |      |      |                |
| 13 Down    |     |     |     |      |      |      |                |
| 14         |     |     |     |      |      |      |                |
| 15         |     |     |     |      |      |      |                |
| 16         |     |     |     |      |      |      |                |
| 17 Help    |     |     |     |      |      |      |                |
| 18 Refresh |     |     |     |      |      |      |                |
| root       |     |     |     |      |      |      |                |
| Time 16:28 |     |     |     |      |      |      |                |
| >          |     |     |     |      |      |      |                |



Figure 11 Example Screen: SDM user display

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2
3 PassThru Role Group Users
 1 emsadm bn_ems
4 2 maint maint,ftp,anonymou,limaint
5 3 secuadm No users defined in this group
6 Role Groups: 1 to 3 of 3
7
8
9
10 Dispgrp
11 DispUsr
12 Up
13 Down
14
15
16
17 Help Change User - Groups
18 Refresh Enter the new Group List for user bn_sec: [maint]
root
Time 16:28 >

```

Figure 12 Example Screen: SDM user display

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2
3 PassThru Role Group Users
 1 emsadm bn_ems
 2 maint maint,ftp,anonymou,limaint
 3 secuadm No users defined in this group
 Role Groups: 1 to 3 of 3
4
5
6
7
8
9
10 Dispgrp
11 DispUsr
12 Up
13 Down
14
15
16
17 Help Change User - Shell
18 Refresh Enter the new Shell for user bn_sec: [rash]
 root
Time 16:28 >

```

Figure 13 Example Screen: SDM user display

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb ISTb ISTb Host: hostname
 Fault Tolerant
User
0 Quit
2
3 PassThru Role Group Users
 1 emsadm bn_ems
4 2 maint maint,ftp,anonymou,limaint
5 3 secuadm No users defined in this group
6 Role Groups: 1 to 3 of 3
7
8
9
10 Dispgrp
11 DispUsr
12 Up
13 Down
14
15
16 Add User - Change Password?
17 Help Do you wish to change the password for user bn_sec?
18 Refresh Please confirm ("YES", "Y", "NO", or "N"):
root
Time 16:28 >

```

Change can also be typed with no parameters. In this case the command can be run by any user and the user is only allowed to change their own password.

## 2.11 OSSGate Interface Changes

## 2.12 Security

## 2.13 Configuration Walkthrough

***Product = CS 2000***

## **A00007602--SDM Software Authenticity** ***Functional Description***

### **1.1 Applicable Solution(s)**

## DMS

## 1.2 Description

The intent of this feature is to add more security to the SDM software delivery (patches and ESD loads), and guarantee that the SDM deliverable sent to the field is authenticated by Nortel.

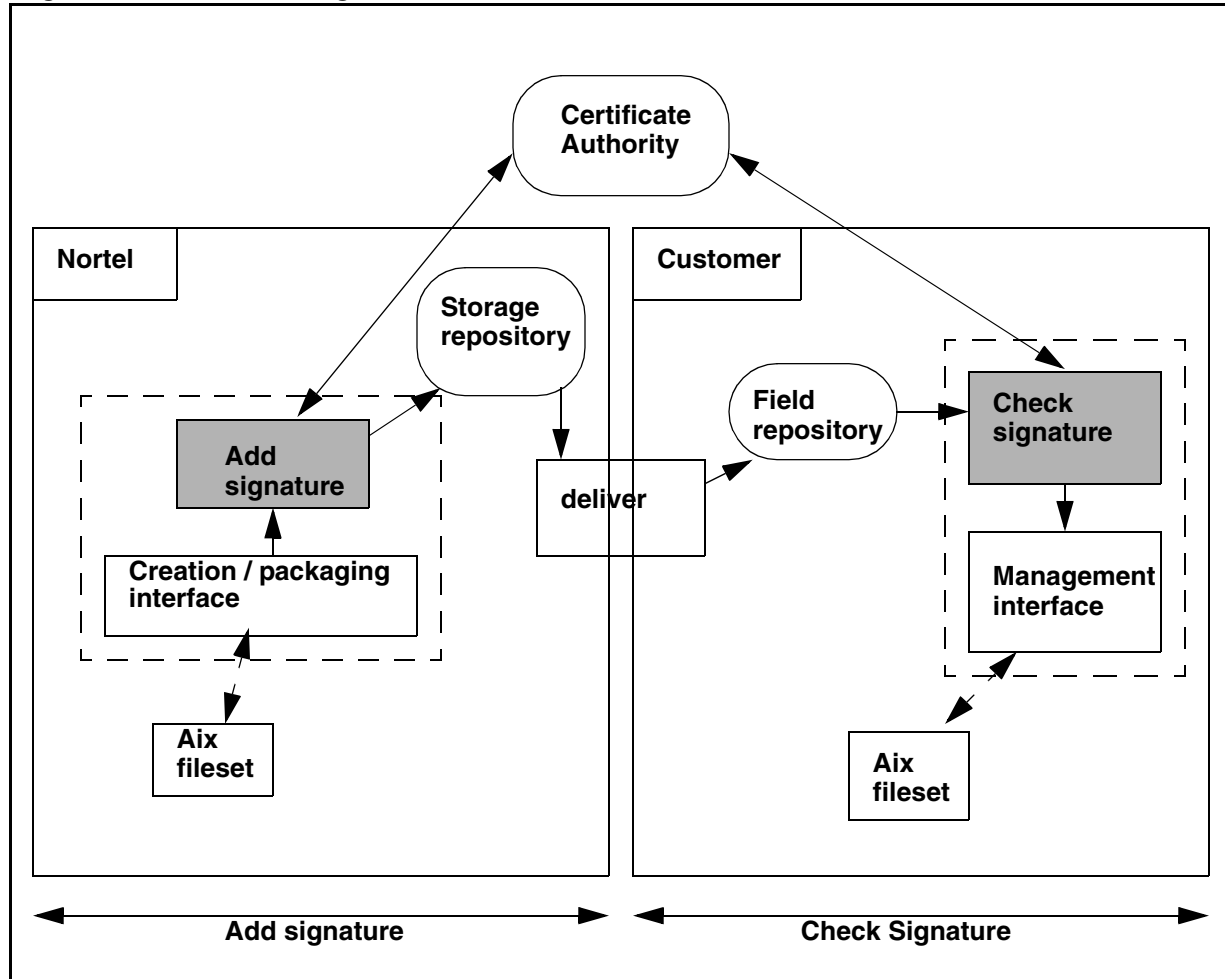
Without this authentication a third party could deliver rogue software to a customer and there would be no way of detecting it. This feature will implement a method of digitally signing any software created by the SDM development team. The SDM deliverable would then be signature checked prior to being applied on the customer system.

This FN document describes the new procedures for the following software delivery applications, using software authentication:

- Patch Apply: New alarms and security logs are created to reflect patch signature check failures. An alarm clearing mechanism is also available to manually clear alarms after detecting bad software. Please refer to section 1.6.1 “Patch Apply” on page 993 for the full details.
- ESD Load Upgrade: A signature check for the ESD load is done manually prior to the load upgrade. Descriptive messages are displayed to reflect software signature check failures. Please refer to section 1.6.2 “ESD load Upgrade” on page 1000 for the full details.

In SN08, this feature is primarily concerned with Electronic Software Delivery (ESD) and does not provide a solution to authenticate physical media (i.e. tapes).

Figure 1 “Software Management Architecture” on page 992, provides a high level overview of the SDM software management architecture in SN08.

**Figure 1 Software Management Architecture**

### 1.3 Hardware Requirements or Dependencies

SDM system equipped with the SN08 hardware base line configuration.

### 1.4 Software Requirements or Dependencies

SDM system installed with the SN08 software.

### 1.5 Limitations and restrictions

- This feature supports software authentication only on the SDM platform in SN08, and does not support the CBM platform.
- The software authentication feature is not enabled on the SDM by default. In order to enable this functionality, the user needs to manually install the “SDM software Authentication services” package which will be part of the SDM SN08 load. Please refer to the SN08 SDM SW upgrade customer documentation (Upgrading the SDM - NN10059-461) for full details on how to install a SDM package.

- The software authentication functionality is only supported on patches and ESD loads, and does not support physical media (i.e. tapes). Applying software from physical media will succeed, but will not be authenticated.
- Customer documentation and release notes are not authenticated in SN08.
- Software loads that are serviced by the SDM's bootp server, packaged through RPM (Redhat Package Manager), will not be authenticated in SN08. These packages are:
  - MG9K0070 (MG9K)
  - GWCC0070 (NA-GWC)
  - GWCW0070 (INTL-GWC)
  - SAM20070 (SAM21)
  - 3PC00070 (3PC)

## 1.6 Interactions

### 1.6.1 Patch Apply

The patch apply procedure (customer documentation) in SN08 is exactly the same as in SN07. In SN08, all patches are digitally signed during packaging, and a signature check is applied on each patch prior to patch apply. This signature check procedure is completely transparent to the user.

Signature check failures are reported as follows:

- A new “SDM Patch Check Status” indicator is introduced under the “sdmmtc sys” level. This state will reflect “Failed”, once a single patch fails signature checking. Please refer to 1.6.1.1 “Minor alarm to reflect patch signature check failure” on page 994 for more details.
- A new minor alarm is generated under the “sdmmtc sys” level. Please refer to 1.6.1.1 “Minor alarm to reflect patch signature check failure” on page 994 for more details.
- New security logs are generated to report patch signature check failures and manual alarm clearing. Please refer to 1.6.1.3 “Security logs to reflect Patch signature check failure” on page 1000 for more details.

All patches that fail signature checking will be moved to the following directory on the SDM:

```
/swd/sdm/fixes/rejected
```

A manual alarm clearing mechanism is provided to clear the alarm after detecting bad patches. Please refer to 1.6.1.2 “Manual alarm clearing” on page 996 for more details.

### 1.6.1.1 Minor alarm to reflect patch signature check failure

A new “SDM Patch Check Status” indicator is introduced under the “sdmmtc sys” level, to reflect the state of patch signature checking. By default this status indicator is set to “.” (in-service), to indicate that no patch failed through signature checking prior to patch apply. Figure 2 “SDM Patch Check Status indicator” on page 995 reflects the new patch check status indicator.

The user will receive no indication of successful patch checking/apply. Once a single patch fails signature checking, the “SDM Patch Check Status” indicator will reflect a “Failed” indication, and a minor alarm will be generated under the “sdmmtc sys” level. Figure 3 “Patch signature check failure indication” on page 996 reflects a failure with the patch signature checking.

A security log is generated to reflect the signature check failure (associated with the minor alarm). Please refer to 1.6.1.3 “Security logs to reflect Patch signature check failure” on page 1000.

**Note:** Patches that fail signature checking will not be listed under “sdmmtc swim apply” level once the source command is invoked. The failed patches will be moved to the /swd/sdm/fixes/rejected directory. It is expected that the user detects the minor alarm, reads the security log, and checks the rejected directory for the failed patches.

**Figure 2 SDM Patch Check Status indicator**

|             |     |     |     |      |     |    |                                       |
|-------------|-----|-----|-----|------|-----|----|---------------------------------------|
| SDM         | CON | 512 | NET | APPL | SYS | HW | CLLI: SNM0                            |
| .           | .   | ..  | .   | .    | .   | .  | Host: wcary2p3                        |
|             |     | ..  |     |      |     |    | Fault Tolerant                        |
| Sys         |     |     |     |      |     |    |                                       |
| 0 Quit      |     |     |     |      |     |    | SDM Storage State: .                  |
| 2           |     |     |     |      |     |    | SDM Backup Status: .                  |
| 3           |     |     |     |      |     |    | SDM Configuration State: .            |
| 4 Logs      |     |     |     |      |     |    | SDM System Audit Status: .            |
| 5 Storage   |     |     |     |      |     |    | <b>SDM Patch Check Status: .</b>      |
| 6           |     |     |     |      |     |    | # Description                         |
|             |     |     |     |      |     |    | Current / Threshold                   |
| 7           |     |     |     |      |     |    | 1 CPU (run queue entries): 0 / 5      |
| 8           |     |     |     |      |     |    | 2 Number of Processes: 81 / 250       |
| 9           |     |     |     |      |     |    | 3 Number of Zombies: 0 / 3            |
| 10          |     |     |     |      |     |    | 4 Number of Swap Queue Entries: 0 / 2 |
| 11          |     |     |     |      |     |    |                                       |
| 12          |     |     |     |      |     |    |                                       |
| 13          |     |     |     |      |     |    |                                       |
| 14 QuerySDM |     |     |     |      |     |    |                                       |
| 15 Locate   |     |     |     |      |     |    |                                       |
| 16          |     |     |     |      |     |    |                                       |
| 17 Help     |     |     |     |      |     |    |                                       |
| 18 Refresh  |     |     |     |      |     |    |                                       |
| root        |     |     |     |      |     |    |                                       |
| Time 12:42  |     |     |     |      |     |    | >                                     |



**Figure 3 Patch signature check failure indication**

|             |     |     |     |      |      |    |                                       |
|-------------|-----|-----|-----|------|------|----|---------------------------------------|
| SDM         | CON | 512 | NET | APPL | SYS  | HW | CLLI: SNM0                            |
| ISTb        | .   | ..  | .   | .    | ISTb | .  | Host: wcary2p3                        |
|             |     | ..  |     |      |      |    | Fault Tolerant                        |
| Sys         |     |     |     |      |      |    |                                       |
| 0 Quit      |     |     |     |      |      |    | SDM Storage State: .                  |
| 2           |     |     |     |      |      |    | SDM Backup Status: .                  |
| 3           |     |     |     |      |      |    | SDM Configuration State: .            |
| 4 Logs      |     |     |     |      |      |    | SDM System Audit Status: .            |
| 5 Storage   |     |     |     |      |      |    | <b>SDM Patch Check Status: Failed</b> |
| 6           |     |     |     |      |      |    | # Description                         |
|             |     |     |     |      |      |    | Current / Threshold                   |
| 7           |     |     |     |      |      |    | 1 CPU (run queue entries): 0 / 5      |
| 8           |     |     |     |      |      |    | 2 Number of Processes: 81 / 250       |
| 9           |     |     |     |      |      |    | 3 Number of Zombies: 0 / 3            |
| 10          |     |     |     |      |      |    | 4 Number of Swap Queue Entries: 0 / 2 |
| 11          |     |     |     |      |      |    |                                       |
| 12          |     |     |     |      |      |    |                                       |
| 13          |     |     |     |      |      |    |                                       |
| 14 QuerySDM |     |     |     |      |      |    |                                       |
| 15 Locate   |     |     |     |      |      |    |                                       |
| 16          |     |     |     |      |      |    |                                       |
| 17 Help     |     |     |     |      |      |    |                                       |
| 18 Refresh  |     |     |     |      |      |    |                                       |
| root        |     |     |     |      |      |    |                                       |
| Time 12:42  |     |     |     |      |      |    | >                                     |

### 1.6.1.2 Manual alarm clearing

A manual alarm clearing mechanism is provided to clear the minor alarm generated by the patch signature check failure. Once the failure is detected, the user can clear the minor alarm manually by executing the “patch clear” command from the “sdmmtc sys” level. Please refer to Figure 4 “Manual alarm clearing” on page 998 for the actual command invocation and system responses.

Once the alarm is manually cleared, the “SDM Patch Check Status” indicator is set to “.” as shown in Figure 2 “SDM Patch Check Status indicator” on page 995.

A security log is generated to reflect alarm clearing. Please refer to 1.6.1.3 “Security logs to reflect Patch signature check failure” on page 1000 for the actual log generated.

**Figure 4 Manual alarm clearing**

```

SDM CON 512 NET APPL SYS HW CLI: SNM0
ISTb ISTb . Host: weary2p3
 . . Fault Tolerant

```

Sys

```

0 Quit SDM Storage State: .
2 SDM Backup Status: .
3 SDM Configuration State: .
4 Logs SDM System Audit Status: .
5 Storage SDM Patch Check Status: Failed

```

| 6  | # Description                   | Current / Threshold |
|----|---------------------------------|---------------------|
| 7  | 1 CPU (run queue entries):      | 0 / 5               |
| 8  | 2 Number of Processes:          | 81 / 250            |
| 9  | 3 Number of Zombies:            | 0 / 3               |
| 10 | 4 Number of Swap Queue Entries: | 0 / 2               |

11

12

13

14 QuerySDM

15 Locate

16

17 Help

18 Refresh

root

Time 12:42 > **patch clear**

=====

14 QuerySDM

15 Locate            This will clear the Patch Check status and alarm. Please insure  
16                    that the failed patch is removed from the system.

17 Help             Do you wish to proceed?

18 Refresh          Please confirm ("YES", "Y", "NO", or "N")

root

Time 14:35 > y

=====

14 QuerySDM

15 Locate

16

17 Help

18 Refresh          Patch clear - Command complete.

root

Time 14:36 >

### 1.6.1.3 Security logs to reflect Patch signature check failure

Security logs are generated to reflect patch signature check failure and alarm clearing. Examples of the security logs are shown in Figure 5 “Security logs” on page 1000.

**Figure 5 Security logs**

#### **Signature check failure:**

Aug 24 14:58:02 wcary2p4 syslog: SDM337 MINOR TBL SDM Base Maintenance  
Patch NT\_SIM.tools-21.35.6.2.patch failed signature checking.

#### **Alarm clearing:**

Aug 24 15:05:32 wcary2p4 syslog: SDM637 NONE INFO SDM Base Maintenance  
Patch check status is cleared by user.

## 1.6.2 ESD load Upgrade

An extra step is required to the ESD load upgrade procedure in SN08. A signature check is applied on all of the filesets included in the ESD load. A successful signature check is required on all of the filesets, for the ESD load to pass signature checking. If at least one fileset fails signature checking, the whole load must be rejected.

In summary, the following steps are required for an ESD load upgrade:

- Create a filesystem on the SDM (ex: /load), to hold the ESD load.
- Download the ESD load into the SDM (under the created filesystem).
- Extract the load (unzip/untar the load).
- Invoke signature checking (new step introduced in SN08). Please refer to 1.6.2.1 “ESD Load signature checking” on page 1000 for full details.
- Upgrade the SDM to the new load, provided that a successful signature check is achieved.

Please refer to the SN08 SDM SW upgrade customer documentation (Upgrading the SDM - NN10059-461) for full details of the ESD load upgrade. This section will only address the new introduced ESD load signature checking step.

### 1.6.2.1 ESD Load signature checking

A new command “verifyload” is introduced in SN08 to perform a signature check on the ESD load. This command is packaged within the ESD load. Once the load is extracted on the SDM, the user is expected to invoke the

“verifyload” command manually from the command line before starting the upgrade.

No alarms and security logs are generated in case the ESD load fails signature checking. Instead, a message is displayed on the screen indicating the result of the signature check. It is the responsibility of the user to reject the load and contact “Nortel next level of support” in case of a signature check failure.

Figure 6 “ESD load signature check” on page 1001 show the actual command to perform the signature check on ESD load, and the different expected return messages (success and failure). The “verifyload” command is located under the same directory as the ESD load (the filesystem that holds the load).

**Figure 6 ESD load signature check**

```
./verifyload
```

Checking the integrity of the load, please wait....

**Successful return message:**

Integrity and signature check completed successfully.  
Please continue with the upgrade.

**Failure return messages (could be either one of the following messages):**

This load include missing packages.  
Please contact your next level of support.

This load include zero size packages.  
Please contact your next level of support.

This load failed signature checking.  
Please contact your next level of support.

Signature check cannot not be completed.  
Please contact your next level of support.

Integrity check failed, unknown failure.  
Please contact your next level of support.

## 1.7 Glossary

| Term     | Description                       |
|----------|-----------------------------------|
| ESD load | Electronic Software Delivery load |

| Term | Description            |
|------|------------------------|
| SDM  | SuperNode Data Manager |
| CBM  | Core Billing Manager   |
| ISTb | In Service Trouble     |
| SW   | Software               |

## 1.8 References

[1] Upgrading the SDM - NN10059-461

## *Product = CS 2000*

## **A00007635--CBM Upgrades**

### *Functional Description*

#### **1.1 Applicable Solution(s)**

DMS

#### **1.2 Description**

The purpose of this feature is to provide a mechanism to upgrade the CBM 850 product from release CBM07 to release CBM08. The CBM 800 product is not being released for CBM08 and will not be discussed within this document.

The CBM upgrade procedure will involve the upgrade of the SSPFS platform and the upgrade of the CBM applications. The upgrade of the SSPFS platform will not be discussed within this document as it will be discussed within the “SSPFS Upgrades For SN08, A0000817” feature FN. It is important to note that the CBM upgrade procedure will be automatically initiated by the SSPFS platform upgrade.

Another important note is that the CBM07 applications will still reside on the CBM after a successfully completed upgrade. These applications will be dormant however. A separate procedure outside of the upgrade will allow the customer to remove “older” versions of software that are dormant on the system and will not be discussed within this document.

The CBM 850 product is a High Availability cluster made up of an active node and an inactive node. To ensure that the CBM will remain within an HA configuration, a separate boot environment (BE) on the inactive node is

created in which the application upgrade will actually take place. This means that inactive node is still running the CBM07 release in standby mode. This process is actually performed using the Sun Solaris LiveUpgrade suite. The creation of this separate BE will be performed within the SSPFS platform upgrade procedure.

For CBMs in wireless market, the CBM Upgrade will automatically initiate the Wireless upgrade procedure after the required packages, value added packages and patches are applied to the system.

A successful CBM upgrade procedure is as follows:

**Note:** The creation of the separate boot environment and the upgrade of the operating system and other platform software within this separate environment would have been completed by the SSPFS platform upgrade. The CBM procedure starts when the platform upgrade initiates the CBM upgrade.

**Note:** Once the “clone” has been initiated at the end of a successful upgrade, NO fallback to CBM07 will be possible. In order to return the CBM to the CBM07 release, a restore or a fresh install would be required.

- Load the CBM08 software media (CDROM or ESD image file)
- Perform pre-upgrade checks
- Upgrade all CBM08 850 required packages
- Upgrade all value added CBM08 packages
- Apply patches, if any, for the CBM08 load
- Initiate Wireless Upgrade (if necessary)
- Perform post-upgrade checks
- Activate CBM08 load and reboot the CBM08 Inactive node (automatically done by SSPFS upgrade script)
- Perform SWACT from CBM07 node to the CBM08 node (manually initiated by the user)
- Clone the CBM08 node onto the CBM07 node (manually initiated by the user)

### 1.2.1 Logs

Upgrade logs for the CBM will be located within the /var/adm/ directory of the CBM07 environment in a file called cbm\_upgrade\_<from>\_to\_<to>.log where “from” and “to” are the release numbers involved. This log will be transferred to the CBM08 environment before the SWACT.



A customer log will be generated for any CBM upgrade failure. The log will identify the upgrade stage at which failure occurred, the upgrade log.

## 1.2.2 Failures

If a failure occurs during the upgrade, a message will be displayed to the user describing the failure and informing the user to contact next level support. The user will be provided a prompt to 1) Enter a maintenance shell where command could be executed in an attempt to correct the error. Exiting the maintenance shell will re-execute the step that failed. 2) Perform a fallback. This will send a signal back to the SSPFS upgrade for SSPFS to initiate a fallback. Both the Maintenance Shell and the Fallback have a yes/no user confirmation, answering no will re-execute the failed step.

### 1.2.2.1 Fallbacks

Fallbacks during the CBM upgrade would depend on which CBM load, 07 or 08, has been Activated on the inactive node at the time. A fallback will mean that the CBM inactive node will be put back into its original configuration of CBM07 inactive.

If a failure occurs before the “Activate CBM08 load and reboot the Inactive” step then,

- The user would have requested a fallback at a fallback prompt
- The CBM08 separate environment will be deleted

If a failure occurs after the “Activate CBM08 load and reboot the Inactive” upgrade step, but before the SWACT, then,

- The user would execute the SSPFS fallback command
- The CBM07 load will be “Activated” on the inactive node
- The Inactive node will be rebooted
- The CBM08 separate environment will be deleted

If a failure occurs after the SWACT from the CBM07 active node to the CBM08 inactive node then,

- The user would execute the SSPFS fallback command
- A SWACT is performed back to the CBM07 node
- The CBM07 load will be “Activated” on the inactive node
- The Inactive node will be rebooted
- The CBM08 separate environment will be deleted

## 1.3 Hardware Requirements or Dependencies

- CBM850 HA dual node Cluster hardware baseline
- HA Cluster must be fully in-service
- HA cluster must have no alarms

## 1.4 Software Requirements or Dependencies

- CBM must have a patch current CBM07 release.
- All CBM applications must not be in the Fail or Sysb state

## 1.5 Limitations and restrictions

- The CBM08 upgrades will not include the CBM800 product. Only the CBM850 HA configuration will be supported.
- The CBM08 media (CD or ESD) must have been delivered to the customer site prior to the commencement of the upgrade
- The ESD image must be located within the /swd/sdm directory.
- There is no upgrade support for single server CBM 850. A single server 850 must be converted into a dual node HA cluster configuration running CBM07 before being upgraded to CBM08.

## 1.6 Interactions

The CBM upgrade process involves the initial execution of the SSPFS platform upgrade procedure from which the CBM upgrade procedure will be automatically initiated.

### 1.6.1 Load the CBM08 software media (CDROM or ESD image file)

The CBM load is available on CDROM and via an ESD image (Electronic Software Delivery).

The user will be asked which media type they will be using (CDROM or ESD)

For CDROM, the user will be asked to place the CBM CD disk into the CDROM drive on the Inactive Node. The user will be prompted to “Start” the upgrade once the CDROM has been placed into the drive.

For ESD, the ESD image will be prepared for use and the CBM upgrade will be started automatically. The user will be notified if the ESD image has not been found in the proper location or if there is a problem extracting and preparing the ESD image for use.

In the event of any failure, the user will be prompted to

- 1) Enter a maintenance shell to suspend the upgrade and correct the failure,
- 2) perform a fallback to cancel the upgrade.

### **1.6.2 Perform Pre-upgrade checks**

The prechecks for the CBM upgrade will be performed before any software is upgraded.

#### **1.6.2.1 Examine CBM alarm and Node states**

The CBM should have no major alarms before attempting to perform the CBM upgrade. If an alarm does exist, the user will be notified to contact next level support and is provided a prompt to 1) Suspend the upgrade and enter a maintenance shell to investigate the alarms, 2) perform a fallback to cancel the upgrade and 3) Continue with the upgrade, ignore the alarms.

#### **1.6.2.2 Verify separate upgrade environment**

If the separate boot environment does not exist the user will be notified that the separate boot environment does not exist and that the CBM upgrade cannot be executed.

The only way for a user to obtain this message would be if the `cbm_setup` upgrade script was being executed manually for an upgrade and the `ssps` platform had not been performed.

#### **1.6.2.3 Verify the CBM base directory**

All CBM packages have what is called a BASE Directory or BASEDIR. The directory must exist before attempting to apply the CBM packages.

The platform upgrade will create this directory because there is a CBM package that gets applied during their upgrade procedure. In the event that the directory does not exist, it will be created automatically.

If the directory does not exist, the user will be notified that the CBM Base directory does not exist and that it will be created.

#### **1.6.2.4 Examine installed software**

In order to apply the common packages, a list of the applications that are currently installed within the separate boot environment is generated. This list is required for future steps of the upgrade.

In the event that the software list cannot be created, the user will be notified that there appears to be a problem with the separate boot environment and that the CBM upgrade cannot continue.

### **1.6.3 Upgrade all CBM08 850 required packages**

Required packages are the core applications on the CBM that provide base and service level support.

In the event of a failure to apply any one of the packages the user will be notified of the failure, where the log can be obtained and that they should contact next level support and is provided a prompt to 1) Suspend the upgrade and enter a maintenance shell to correct the failure, 2) perform a fallback to cancel the upgrade.

#### **1.6.4 Upgrade all value added CBM08 packages**

Value added packages are applications that do not make up the required list of applications. The separate boot environment is examined for CBM07 applications. All CBM07 applications that exist within the separate environment and have not yet been upgraded to the CBM08 load are automatically “selected” and applied. A list of the “selected” packages is displayed and then the status of applying each package is displayed.

In the event the CBM does not have any “value added” packages, this step will not be executed.

The actual apply of the value added packages is performed using the command line version of the well known SDM/CBM SWIM application. The output of the swim command line is the same as the output of the SWIM applications within the sdmmtc/cbmmtc interface.

Value added packages may have a “configuration” script that needs to be executed after installation. The scripts will prompt the user for information that will be used later on when the application is turned on or RTS'd.

In the event that there are configuration scripts to apply, the user will be notified that the scripts will be executed in which the user will be requested to press ‘return’ to start the execution of the scripts.

In the event of a failure to apply any one of the packages the user will be notified of the failure, where the log can be obtained and that they should contact next level support and is provided a prompt to  
1) Suspend the upgrade and enter a maintenance shell to correct the failure,  
2) perform a fallback to cancel the upgrade.

#### **1.6.5 Apply patches, if any, for the CBM08 load**

Once all the CBM08 packages have been applied into the separate boot environment, any patches that have been delivered with the CBM media are automatically applied, making the CBM08 load patch current.

The output of the patch apply is the same output as the current CBM patchctrl command.

In the event of a failure to apply any one of the patches the user will be notified of the failure, where the log can be obtained and that they should contact next level support and is provided a prompt to

- 1) Suspend the upgrade and enter a maintenance shell to correct the failure,
- 2) perform a fallback to cancel the upgrade.

### 1.6.6 Initiate Wireless Upgrade

For CBMs within the wireless market, there are additional packages that need to be upgrade. These packages reside on a different media that the CBM product.

If the CBM is a wireless CBM, the wireless upgrade start script will automatically be executed.

### 1.6.7 Perform post-upgrade checks

To ensure that the CBM is still in a healthy state before we perform the reboot and swact upgrade stages, the following checks will be performed.

The CBM should have no major alarms before attempting to perform reboot and swact portion of the upgrade. If an alarm does exists, the user will be notified to contact next level support to investigate the alarm and is provided a prompt to 1) Enter a maintenance shell to investigate the alarms, 2) perform a fallback to cancel the upgrade and 3) Continue with the upgrade, ignore the alarms.

### 1.6.8 Activate CBM08 load and reboot the Inactive node

The separate boot environment is automatically “activated” which prepares the system to have the CBM08 load upon a reboot. The activation and reboot of the inactive node is done by the SSPFS upgrade script once the CBM portion of the upgrade is successfully completed.

*Note:* Only the inactive node will be rebooted. The Active node running the CBM07 release will still be providing service.

### 1.6.9 Perform SWACT from CBM07 node to the CBM08 node

Since the CBM upgrade script is no longer running, this step will be a documented procedure. Within documentation, the user will be requested to log into the CBM07 active node as the root user once the CBM08 inactive node has successfully rebooted. For the command line on the CBM07 active node, the user will be documented to execute the “init 0” command to force a swact and prepare the CBM07 active node for the clone operation if the upgrade is successful.

Executing the “init 0” will make the CBM08 inactive node the CBM08 active node, meaning that the new CBM08 software is now running. The CBM07 node is now the inactive node.

This process would be described in more detail within the “SSPFS Upgrades For SN08, A0000817” feature FN.

### 1.6.10 Clone the CBM08 node onto the CBM07 node

If the CBM08 active node applications are all INSV and operational, the documentation will inform the user to initiate the “clone” sequence to change the CBM07 inactive node into a CBM08 inactive node.

This process would be described in more detail within the “SSPFS Upgrades For SN08, A0000817” feature FN.

Fallbacks are no longer possible once this stage of the upgrade is initiated. A restore from backup or a fresh install would be required to go back to the CBM HA cluster running the CBM07 load.

## 1.7 Glossary

| Term        | Description                                    |
|-------------|------------------------------------------------|
| BE          | Boot Environment                               |
| SSPFS       | Succession Server Platform Foundation Software |
| LiveUpgrade | Sun Solaris LiveUpgrade tool suite             |

***Product = CS 2000***

## **A00007709--MCS CD Phase 2 Support**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

DMS

#### **1.2 Description**

MCS Converged Desktop Phase 2 is a MCS feature that has a dependency on switch-based functionality in order to provide the presence-indication and call logging services for non-MCS (i.e., switch-based) subscribers.

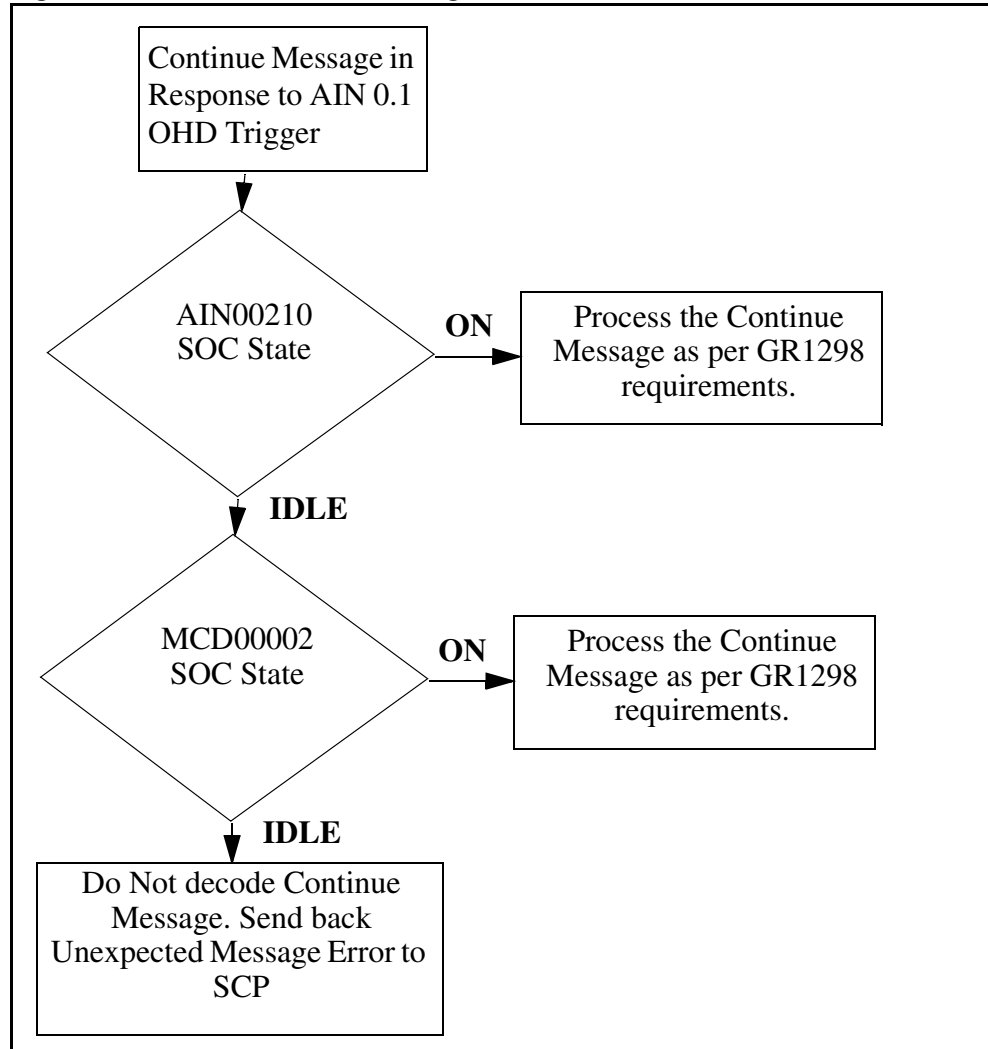
This switch-based functionality is controlled by a new Software Order Code (SOC) MCD00002 in SN08. This new order code implemented by this activity replaces ACT patches SBB44 for SN04/SN06/SN07 releases and TWH36 for SN06/SN07 releases.

This feature, when enabled via the SOC MCD00002 along with AIN 0.1 (AIN Essentials) software, will enable the MCS Converged Desktop Phase 2 feature to operate correctly. It does so by adding incremental AIN support for CONTINUE response to the AIN 0.1 Off Hook Delay (OHD) trigger query message.

The SOC option MCD00002 is dependent on AIN Essentials software; order code AIN00006. It may only be enabled and used in conjunction with MCS Converged Desktop and is not supported for any other application.

When a MCS CD office with patch TWH36/SBB44 activated on SN06/SN07 upgrades to SN08 or higher release, the SOC option MCD00002 will be automatically turned ON during ONP.

Please refer to figure 1 “Functional Behavior Diagram” on page 1011 for an overview of how SOC MCD00002 and AIN00210 control the AIN Continue message functionality for OHD trigger.

**Figure 1 Functional Behavior Diagram**

### 1.3 Hardware Requirements or Dependencies

None.

### 1.4 Software Requirements or Dependencies

AIN Essentials.

### 1.5 Limitations and restrictions

None.

### 1.6 Interactions

No new AIN feature interactions are introduced by this feature.



## 1.7 Glossary

| Term | Description                  |
|------|------------------------------|
| AIN  | Advanced Intelligent Network |
| CONT | Continue                     |
| SCP  | Service Control Point        |
| SOC  | Software Optionality Control |
| SSP  | Service Switching Point      |

***Product = CS 2000***

## **A00007752--Universal Billing Correlation ID**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

DMS

#### **1.2 Description**

This activity will start the ground work for creating, storing and formatting a universal billing correlation id (UBCID). Currently the MCS generates its own BCID. The CS2K and GWC generate their own BCID for AMA/QOS correlation. With the various agents creating their own correlation id's, it is impossible to correlate the various records which can be produced during a call. Future activity work will provide correlation of these records from end to end.

PacketCable event messaging defines a billing correlation id which is currently used for the cable solution, since this correlation id is an accepted standard we will use the format defined by PCEM for our UBCID. The UBCID will be formatted for the following billing types: Bellcore AMA format (BAF), UCS Flex CDR and AT&T CDR2BAF format. There are currently other activities which are creating billing correlation id's for MCS and NGSS, future activity work will attempt to merge all of these billing correlation id into one format.

#### **1.3 Required Datafill Changes to activate this feature:**

The following sections describe the datafill changes required to activate this feature for both the BC AMA format and CDR billing formats.

### 1.3.1 BC AMA: Table AMAOPTS

To allow the recording of the UBCID for BC format AMA a new option “**CORRID**” is introduced into table AMAOPTS. This is an ON/OFF option. When “**CORRID**” is set to “**ON**”, a module code 613 will be appended to the base billing record which requires the collection of the UBCID.

| Table   | Desc                                                                                           |
|---------|------------------------------------------------------------------------------------------------|
| AMAOPTS | New option <b>CORRID</b> is added to the AMAOPTS table to capture the UBCID for BC AMA format. |

Sample datafill for table **AMAOPTS** (new field in bold).

| OPTION | SCHEDULE |
|--------|----------|
|--------|----------|

-----

|               |           |
|---------------|-----------|
| CMCORIG       | ON        |
| CMCTERM       | ON        |
| COIN          | ON        |
| <b>CORRID</b> | <b>ON</b> |
| CRSEQNUM      | OFF       |
| CRT_BILLING   | OFF       |

### 1.3.2 CDR: Table CDRTMPLT

To allow the capture and recording of the UBCID for CDR, new parameter “**CORRID**” is added to the list of parameters which can be datafilled in table CDRTMPLT.

| Table    | Desc                                                                                                         |
|----------|--------------------------------------------------------------------------------------------------------------|
| CDRTMPLT | A new parameter for the FIELDS and REORIGCP subfields of table CDRTMPLT is added to record the UBCID for CDR |

Sample datafill for table **CDRTMPLT** (new fields in bold):

## NAME ACTIVE PRIMARY FIELDS REORIGCP

-----  
 CORRID\_TMPLT Y N (SEQNUM) (CIC) (ORIGTIME) (ORIGDATE)  
 (ANSTYPE) (TIMECHNG) (ORIGAMPM) (INCINTL) (DISCTIME)  
 (DISCDATE) (ANISUFF) (DISCAMPM) (INCBILL) (FILL1) (CALLDUR)  
 (PINDIGS) (ANISP) (INFODIG) (BILLNUM) (ACCTCD) (CLGPTYNO)  
 (RLTCDR) (ACCTV) (UNIVACC) (DIALEDNO) (CALLEDNO)  
 (OUTPULNO) (FILL4) (ORIGOPRT) (PREDIG) (CNPREDIG) (OPART)  
 (TPART) (QUEUED) (FILL3) (FILL3) (FILL4) (RTENO) (NETSEC)  
 (OPCHOICE) (COLLTIME) (ADIN) (LNPCHECK) (NUMWBCKT)  
 (WBCKTS) (FINSID) (BILLTYPE) (ORIGGRP) (DISCTYPE) (ORIGMEM)  
 (PASSTHRU) (TERMGRP) (PRESIND) (TERMMEM) (OSRASSOC)  
 (DIGDATA) (FINTKGRP) (TRAP) (COSOVE) (FINTKMEM) (SCPBILL)  
 (FILL3) (FILL3) (FILL3) (FILL2) (FILL3) (FILL2) (TRTMTCD)  
 (COMPCODE) (CRID) (DNIS) (ORIGPVN) (TERMPVN) (ORIGLRN)  
 (PORTEDNO) (CAINCT) (ACG) (DNISNOA) (FILL1) (MLTCOSID)  
 (FILL4) (FILL1) (COSINDEX) (FILL2) (CARRSEL) (**CORRID**) (FILL8) \$  
 \$

## 1.4 Billing record layout and logs

### 1.4.1 BC format AMA - Module code 613

The option CORRID in table AMAOPTS triggers the additional module code 613 with context id 800xx for calls requiring the capture of the UBCID. The format of the module code 613 with the context id of 800xx is as follows:

- The context id 800xx is a 45 digit register.
- The first 8digits are the NTP timestamp.
- The next 5 digits is the Element\_id.
- The next 8 digits is the Time Zone.
- The next 10 digits is the Event counter
- These 35 digits combine to make up the UBCID
- The remaining 12 digits are padded with zeroes and a 'C' delimiter.

Below is a sample of the module code 613 which will be appended to the base billing record.

**Figure 2 Example of module code 613 With Context ID 800xx**

|                             |                  |                                |
|-----------------------------|------------------|--------------------------------|
| MODULE CODE:                | 613C             | GENERIC MOD: THREE DGT STR FMT |
| GENERIC CONTEXT ID:         |                  |                                |
| PARSE RULES                 | 800xx            | Universal Billing Corr ID      |
| SIGNIFICANT DIGITS          | 31C              |                                |
| GENERIC DIGIT STRING ONE:   | 132431017712391C |                                |
| GENERIC DIGIT STRING TWO:   | 345678123456781C |                                |
| GENERIC DIGIT STRING THREE: | 100000000000000C |                                |

**1.4.2 CDR: New Field Description**

The new data captured by this activity will be formatted into the CDR record using the following layout:

| Field Name | Chars | CDR Field Description                          |
|------------|-------|------------------------------------------------|
| CORRID     | 27    | Contains the Universal billing correlation id. |
|            |       |                                                |

**Sample CDR Log (new fields in bold):**

```

RTPE_B115BH CDR273 FEB04 21:44:14 4200 INFO CDR_CALL_ENTRY
250X15AY CDR273 FEB09 13:44:20 0800 INFO CDR_CALL_ENTRY

RECCD F0 TEMPLID 016
ACTIDX 6 TOOLGEN Y
USEEDIT N VARLNGTH N
SEQNUM 00001 CIC 5676
ORIGTIME 34992 ORIGDATE 035
ANSTYPE 03 TIMECHNG N
ORIGAMPM 1 INCINTL N
DISCTIME 35052 DISCDATE 035
ANISUFF 1 DISCAMPM 1
INCBILL 1 CALLDUR 00013107
PINDIGS 6987 ANISP 5124599628
INFODIG 1 BILLNUM 50854321499779000001234
ACCTCD 802000012345 CLGPTYNO 214684552900000
RLTCDR Y ACCTV 3
UNIVACC 8007654321 DIALEDNO 508345214997799
CALLEDNO 508543214997790 OUTPULNO 508345129479970
ORIGOPRT 501 PREDIG 1
CNPREDIG 1 OPART 511
TPART 31 QUEUED Y
OPCHOICE 232 COLLTIME 060
ADIN 12 LNPCHECK 7
NUMWBCKT 16 WBCKTS 10000000 10000000 00000000
FINSID 111 BILLTYPE 35
ORIGGRP 0353 DISCTYPE 1
ORIGMEM 0101 PASSTHRU 2
TERMGRP 0355 PRESIND 1
TERMMEM 0101 OSRASSOC N
DIGDATA Y FINTKGRP 09999
TRAP N COSOVE Y

```

|          |                                 |          |                 |
|----------|---------------------------------|----------|-----------------|
| FINTKMEM | 62843                           | SCPBILL  | FE17700B        |
| TRMTCD   | 010                             | COMPCODE | 3               |
| CRID     | 684149400                       | DNIS     | 214684149400000 |
| ORIGPVN  | 214684149400000                 | TERMPVN  | 214684466200000 |
| ORIGLRN  | 2146841494                      | PORTEDNO | 2146844662      |
| CAINCT   | 1                               | ACG      | Y               |
| DNISNOA  | 103                             | MLTCOSID | 0001            |
| COSINDEX | 0001                            | CARRSEL  | 02              |
| CORRID   | 1324310177123913456781234567811 |          |                 |

## 1.5 Hardware Requirements or Dependencies

No special H/W requirements or dependencies.

## 1.6 Software Requirements or Dependencies

No special S/W requirements or dependencies.

## 1.7 Limitations and restrictions

This feature will not apply to MWC (MCI) or SSR (Sprint) loads.

## 1.8 Interactions

N/A

## 1.9 Applicable customer facing sections

Fault Management

Logs ☐ N/A

Alarms ☐ N/A

Configuration

Data Schema ☐ N/A

User Interface ☐ N/A

Element Management ☐ N/A

Security ☐ N/A

Service Order ☐ N/A

Office Parameters ☐ N/A

Accounting (includes AMA billing) ☐ X

Performance (includes operational measurements) ☐ N/A

## 1.10 Glossary

| Term   | Description                          |
|--------|--------------------------------------|
| BC AMA | Belcore Automatic Message Accounting |

| Term  | Description                      |
|-------|----------------------------------|
| CDR   | Call Detail Recording            |
| MCS   | Multimedia Communications Server |
| NGSS  | Next Generation Session Server   |
| SBA   | SuperNode Billing Application    |
| SDM   | SuperNode Data Manager           |
| UBCID | Universal Billing Correlation ID |
| PCEM  | Packet Cable Event Messaging     |

***Product = CS 2000***

## **A00007790--P-phone expansion for CICM lines**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

PT-AAL1, DMS

#### **1.2 Description**

This feature will increase the number of Meridian Business Sets (such as M5216) which can be provisioned in Succession offices from the current limit of 31,743 to a new limit of 150,000. The same increase will apply to the number of add-on modules (such as M518 and M536) which can be assigned to these sets.

This activity will only impact the number of tuples which can be provisioned in table KSETINV. Other than that there are no customer visible changes to any of the Key-set provisioning tables nor is there any impact on Servord. There are also no customer visible changes to any of the functionality currently provided by Meridian Business Sets.

#### **1.3 Hardware Requirements or Dependencies**

Not applicable.

#### **1.4 Software Requirements or Dependencies**

None.

## 1.5 Limitations and restrictions

Although this feature is being done mainly to support Centrex IP clients which are provisioned as M5216 sets, the new limit will apply across all types of business sets which can be provisioned in table KSETINV.

It should also be noted that this feature does not increase the number of equivalent DN appearances (or virtual lines<sup>16</sup>) which can be supported on these Business Sets. Please see Section 1.6, “Interactions”, on page 1018 for further details.

## 1.6 Interactions

Every P-phone provisioned in table KSETINV takes up one line card slot on the line peripheral (or node). In the case of IP Clients, the line peripheral is represented by a Logical Group that is provisioned in table LGRPINV.

Each peripheral or Logical Group maps to a single node which can support up to 1024 lines. In addition, virtual nodes are required to support the DN appearances provisioned on Business Sets in table KSETLINE as well as certain features provisioned in table KSETFEAT. These virtual nodes can support up to 2050 equivalent DN appearances (or virtual lines). The number of virtual nodes required therefore depends on the configuration of the business sets.

As an example, 150 thousand IP Clients provisioned in table KSETINV would require at least 150 Logical Group nodes. Assuming an average of 4 equivalent DN appearances per Business Set, then an additional 300 virtual nodes would be required ( $150K \times 4 = 300 \times 2K$ ).

Strictly from a node perspective these numbers can be supported without any additional development in the Core. Up to 1024 line peripherals (or Logical Groups) can be defined in an office of which up to 944 can be virtual. The 150 thousand IP Clients would therefore require 150 Logical Groups, leaving 874 nodes available for virtual lines.

## 1.7 Glossary

| Term    | Description               |
|---------|---------------------------|
| CICM    | Centrex IP Client Manager |
| KSETINV | Key-set Inventory         |

## 2: Configuration

---

16. One virtual lines is required for each DN appearance as well as services such as Call Waiting, Ring Again and certain programming features.

## 2.1 Hardware and Software Requirements

Not applicable.

## 2.2 Initial Configuration

Not applicable.

## 2.3 Office/Subnet parameters (OP/SP) (CM & SESM)

Not applicable.

## 2.4 Upgrade Considerations

Not applicable.

## 2.5 Data schema (DS) (CM, MIBS, RDB)

### 2.5.1 New/modified tables, MIBs, or Database Schema

Table 1 New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|----------------|--------------------------|-----------------------------------|
| KSETINV        | changed                  | new                               |

### 2.5.2 Table/MIB/Remote Database Schema information

#### 2.5.2.1 Name: KSETINV

Business Set and Data Unit Inventory Table

##### 2.5.2.1.1 Functional description

No change.

##### 2.5.2.1.2 Usage sequence and implications (CM Only)

No change.

##### 2.5.2.1.3 Size

Table 2 Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory                             |
|------------------------|----------------|----------------|---------------------------------------------------|
| KSETINV                | 0              | 150,000        | Memory is automatically allocated for this table. |



**2.5.2.1.4 Fields/OIDs****2.5.2.1.5 Datafill example****2.5.2.1.6 Table release history update**

The maximum table size is increased from 31,743 to 150,000.

**2.5.2.1.7 Supplementary information****2.5.2.1.8 Translation verification and other tools****2.6 Service Orders (SO) (CM & SESM)**

Not applicable.

**2.7 Software optionality control (SOC)**

Not applicable.

**2.8 Element Management**

Not applicable.

**2.9 User interface changes**

Not applicable.

**2.10 OSSGate Interface Changes**

Not applicable.

**2.11 Security**

Not applicable.

**2.12 Configuration Walkthrough**



# SN08 Feature Deltas

***Product = CS 2000***

## **A00007927--SAM21 EM Enhancements**

### **1.1 Applicable Solution(s)**

UA-AAL1

### **1.2 Functional Description**

In SN07 and earlier, there is “Administrative State” in both SAM21 EM and GWC EM GUI. In SAM21 EM the “Administrative State” indicates the H/W state of a card, while in GWC EM it indicates the state of the application running on the card. However, if a user doesn’t understand what it means, he/she may feel confused.

In SN07 and earlier, when a NSS card (no matter it’s Unlocked/Enabled or Locked/Disabled) is pulled out and then inserted, it will come back in a Locked/Disabled state. User needs to manually unlock it to bring it into service.

This document outlines the design scope and requirements of this feature that:

- Changes the label of “Administrative” to “Card Status” in every card view on SAM21 EM GUI (refer to figure 1 and figure 2).
- Changes the behavior of EM on pulling/inserting NSS card. If a Locked/Disabled NSS card is pulled, when it is re-inserted, the card will come back in Locked/Disabled status. However, if an Unlocked/Enabled NSS card is pulled, when it is re-inserted, SAM21 EM will automatically unlock this card.

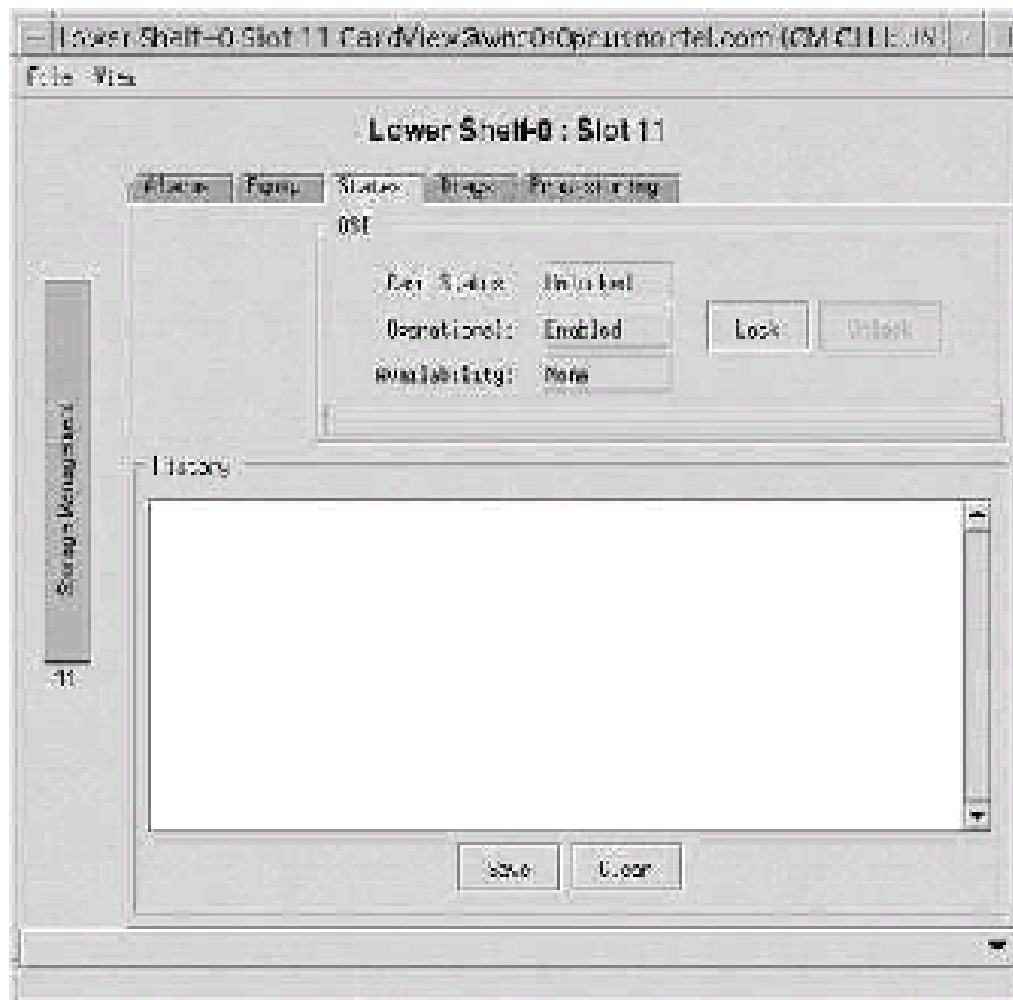
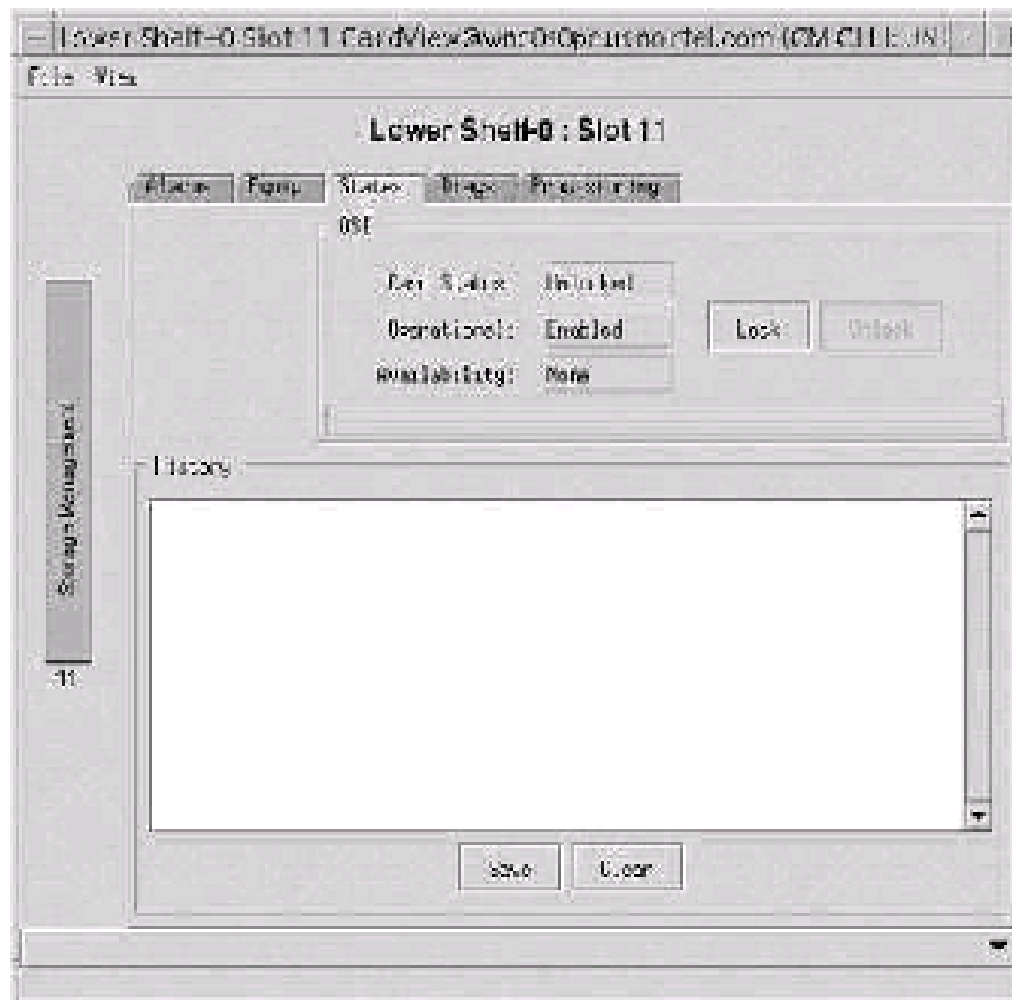
**Figure 1 Non-System Card View**

**Figure 2 Shelf Controller Card View**

### 1.3 Hardware Requirements or Dependencies

N/A

### 1.4 Software Requirements or Dependencies

N/A

### 1.5 Limitations and restrictions

N/A

### 1.6 Interactions

N/A

## 1.7 Applicable Customer Facing Sections

### Fault Management

Logs \_\_\_\_\_

Alarms \_\_\_\_\_

### Configuration

Data Schema \_\_\_\_\_

User Interface   X  

Element Manager \_\_\_\_\_

Security \_\_\_\_\_

Service Order \_\_\_\_\_

Office Parameters \_\_\_\_\_

Accounting (Includes AMA billing) \_\_\_\_\_

Performance (Includes OMs) \_\_\_\_\_

## 1.8 Glossary

***Product = CS 2000***

## 1.9 Introduction

Enhanced 800 (E800) is a U.S. service currently available in the DMS software. E800 service provides the ability to route toll-free 8XX (e.g. 800) calls in a telecommunications network. The 8XX numbers must be mapped to a specific directory number and can be carried by either the Local Exchange Carrier (LEC) or a specific Inter-Exchange Carrier (IEC). When an 8XX call is originated, a database query is performed using the Transaction Capabilities Application Part (TCAP) layer of the Signaling System 7 (SS7) protocol. The database contains a mapping of 8XX numbers to routing directory numbers. Additionally, the database identifies the IEC to handle the call (when applicable). This information is returned in an E800 Response to the switch that initiated the query. The returned information is used by the switch for translations and routing.

Currently, the DMS100/CS2000 End Office (EO) switch provides two methods for translating an E800 Response:

1. Translate using the Standard Pretranslator (STDPRT) name of the originating subscriber.
2. Translate using the STDPRT name provisioned for option PRETRAN in table NSCDEFS. With this option, all E800 Response translations use a single STDPRT subtable.

With the first method, the STDPRT name of the originating subscriber is used when performing the E800 Response translation. However, this method may cause interaction issues with other datafill in the originating subscriber's STDPRT subtable. For example, if the STDPRT subtable contains datafill to route toll calls to treatment (i.e. toll denied), the E800 Response translation may route to treatment in error.

The second method was introduced as a provisioning alternative to avoid interactions with datafill in the originating subscriber's STDPRT subtable. With the second method, a single STDPRT name is provisioned via option PRETRAN in table NSCDEFS. This STDPRT name provides an *override* to the originator's STDPRT name and is used for translating all E800 Responses. However, with routing provided via a single STDPRT subtable, all E800 Response translations are limited to a single set of routes<sup>1</sup>.

This activity provides additional flexibility for E800 Response translations by supporting *multiple* STDPRT names as an *override* to the originator's STDPRT name. With the support of multiple STDPRT names, a DMS100/CS2000 EO switch can be configured with multiple routes<sup>2</sup>. This flexibility is provided with the introduction of new option PRETRANMAP in table NSCDEFS and the introduction of new table NSCPMAP. Table NSCPMAP provides a method to *override* or *map* the originating subscriber's STDPRT name with a new STDPRT name.

A new Software Optionality Control (SOC): NTS00030, "E800 Pretran Mapping" is created for this activity. This SOC has an RTU of A/P (Always Present), and it is always at ON state. New option PRETRANMAP, in table NSCDEFS, always takes precedence over existing option PRETRAN since SOC NTS00030 is always set to ON.

---

1. This restriction applies when the routing is performed from the STDPRT subtable. E800 calls that complete to the IEC are routed from the STDPRT subtable.

2. Applies when routing is performed from subtable STDPRT. E800 calls that complete to the IEC are routed from the STDPRT subtable.

## 1.10 Description

The combination of new table NSCPMAP and new option PRETRANMAP (in table NSCDEFS) provides the flexibility to support multiple STDPRT names for E800 Response translations.

Table NSCPMAP is introduced to provide a mapping from the originator's STDPRT name to a new STDPRT name for use by the E800 Response translation. By providing a mapping on a per originating subscriber's STDPRT name basis, E800 terminating routes can be (indirectly) configured on a per-originating subscriber basis.

New option PRETRANMAP is added to table NSCDEFS as a provisioning trigger for activating a lookup in new table NSCPMAP. In addition, new option PRETRANMAP provides equivalent functionality to the existing NSCDEF's option PRETRAN. This is accomplished by adding fields CALLS and IGNORE<sup>3</sup> to option PRETRANMAP.

The following sections provide a detailed description for this new capability.

### 1.10.1 New Table NSCPMAP

New table NSCPMAP provides the ability to override the originating subscriber's STDPRT name with a new STDPRT name for the E800 Response translation. Table NSCPMAP is accessed when new option PRETRANMAP is provisioned in table NSCDEFS.

Refer to Table 1 on page 1026 for a description of table NSCPMAP. The key field, **ORIGPTNM**, is the originating subscriber's STDPRT name. This STDPRT name is *mapped* to the new STDPRT name that is provisioned for field **MAPPTNM**. The *mapped* STDPRT name is used for the E800 Response translation. Note that neither key ORIGPTNM or field MAPPTNM can be provisioned with the nil pretranslator name - "NPRT". Table control will enforce this restriction.

**Table 1: New Table NSCPMAP**

| Key & Field    | Values             | Comments                                                                               |
|----------------|--------------------|----------------------------------------------------------------------------------------|
| Key: ORIGPTNM  | PRETRANSLATOR_NAME | The table key specifies the originating subscriber's STDPRT name.                      |
| Field: MAPPTNM | PRETRANSLATOR_NAME | This field specifies the new STDPRT name to be used for the E800 Response translation. |

The functionality provided by table NSCPMAP is not activated until option PRETRANMAP is provisioned in table NSCDEFS.

---

3. Existing option PRETRAN in table NSCDEFS consists of fields CALLS and IGNORE.

Following is a provisioning example for new table NSCPMAP:

TABLE: NSCPMAP

ORIGPTNM    MAPPTNM

-----  
P819                  P800

### 1.10.2 New Option PRETRANMAP, Table NSCDEFS

To enable the functionality provided by this activity, new option PRETRANMAP must be provisioned in table NSCDEFS. Option PRETRANMAP consists of three fields as shown in Table 2 on page 1027.

**Table 2: Table NSCDEFS, New Option PRETRANMAP**

| New Option | Subfields         | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PRETRANMAP | DEFPREXLA         | Specifies the default STDPRT name that is to be used if no entry is found in table NSCPMAP. When provisioned to NPRT and no entry is found in table NSCPMAP, the originating subscriber's STDPRT name is used.<br><br>If option PRETRAN already exists in table NSCDEFS, consideration should be given to provisioning option PRETRANMAP with the same <i>values</i> as existing option PRETRAN. By provisioning the same <i>values</i> , the switch behavior is unchanged from option PRETRAN for those STDPRT names that are not provisioned in table NSCPMAP. |
|            | CALLS {ALL, COIN} | Specifies whether ALL calls or only COIN calls should use this functionality.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|            | IGNORE {Y/N}      | Specifies whether this option should be ignored for the AIN or LNP Response translation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

Option PRETRANMAP provides equivalent functionality to existing option PRETRAN by supporting subfields CALLS and IGNORE. Additionally, a DEFPREXLA field is provided which specifies the default STDPRT name to be used in the event an entry is not found in table NSCPMAP. By provisioning a default STDPRT name, only exception cases need to be provisioned in table NSCPMAP.

An added capability provided by option PRETRANMAP is the ability to use the originator's STDPRT name, rather than a default STDPRT name, in the



event an entry is not found in table NSCPMAP. This is accomplished by provisioning NPRT for subfield DEFPREXLA.

An added capability provided by option PRETRANMAP is the ability to use the originator's STDPRT name, rather than a default STDPRT name, in the event an entry is not found in table NSCPMAP. This is accomplished by provisioning NPRT for subfield DEFPREXLA.

Following is a provisioning example for new option PRETRANMAP in table NSCDEFS:

| TABLE: NSCDEFS |         |                            |
|----------------|---------|----------------------------|
| NSCCODE        | TIMEOUT | OPTIONS                    |
| -----          |         |                            |
| E800           | 3       | (PRETRANMAP PDEF ALL N) \$ |

#### **Existing Option PRETRAN Considerations:**

New option PRETRANMAP can be configured to function identical to existing option PRETRAN in table NSCDEFS. This is accomplished by provisioning option PRETRANMAP with the same values that are provisioned for existing option PRETRAN and by not adding STDPRT names in table NSCPMAP.

If existing option PRETRAN functionality is required with the exception of those STDPRT names provisioned in table NSCPMAP, new option PRETRANMAP should be provisioned with the same values as existing option PRETRAN. In this case, new option PRETRANMAP will provide equivalent functionality to existing option PRETRAN with the exception of those STDPRT names provisioned in table NSCPMAP.

#### **1.10.3 New SOC NTS00030**

SOC NTS00030, "E800 Pretran Mapping" is added by this activity. This SOC is always at ON state and does not control the feature functionality. This SOC has an RTU of A/P (Always Present) and the state cannot be changed to IDLE.

Note SOC NTS00030 requires SOC NTS00005, "E800-US".

New option PRETRANMAP in table NSCDEFS controls both the call processing and Traver enhancements provided by this activity (refer to sections "Call Processing" on page 1029 and "Traver" on page 1032).

#### **1.10.4 Recommended Provisioning Procedure for PRETRANMAP**

The following provisioning procedure is recommended:

1. Add the required STDPRT name tuples to table NSCPMAP.

2. For the E800 service, add new option PRETRANMAP in table NSCDEFS. Do not immediately remove option PRETRAN if it is currently provisioned. Once option PRETRANMAP is added, the new functionality is active and option PRETRAN is no longer referenced by the switch software.

If option PRETRAN is currently provisioned in table NSCDEFS, consideration should be given to provisioning option PRETRANMAP with the same *values* as existing option PRETRAN. By provisioning the same *values*, the switch behavior is unchanged from option PRETRAN for those STDPRT names that are not provisioned in table NSCPMAP.

To revert back to the functionality provided by existing option PRETRAN, option PRETRANMAP should be removed from table NSCDEFS. Option PRETRAN (if previously provisioned) must still be present in table NSCDEFS to revert back.

Once the switch is properly configured to use option PRETRANMAP and table NSCPMAP, existing option PRETRAN can optionally be removed from table NSCDEFS. Removal of option PRETRAN is not mandatory.

#### 1.10.5 Call Processing

The DMS100/CS2000 EO call processing software is enhanced to use the new functionality provided by option PRETRANMAP and table NSCPMAP. Figures 3, 4 and 5 provide flow charts of the enhanced call processing behavior. The call processing software enhancements are active only when option PRETRANMAP is provisioned in table NSCDEFS.

Note that figure 4 depicts the switch behavior when an E800 Query is performed on a call and a non-IEC routing number is returned from the E800 database. The E800 Response translation subsequently hits an AIN or LNP trigger resulting in a query to the AIN/LNP database. The IGNORE subfield for option PRETRANMAP specifies whether the AIN/LNP Response translation should ignore the PRETRANMAP option and use the originating subscriber's pretranslator.

Figure 3 E800 Response Translation

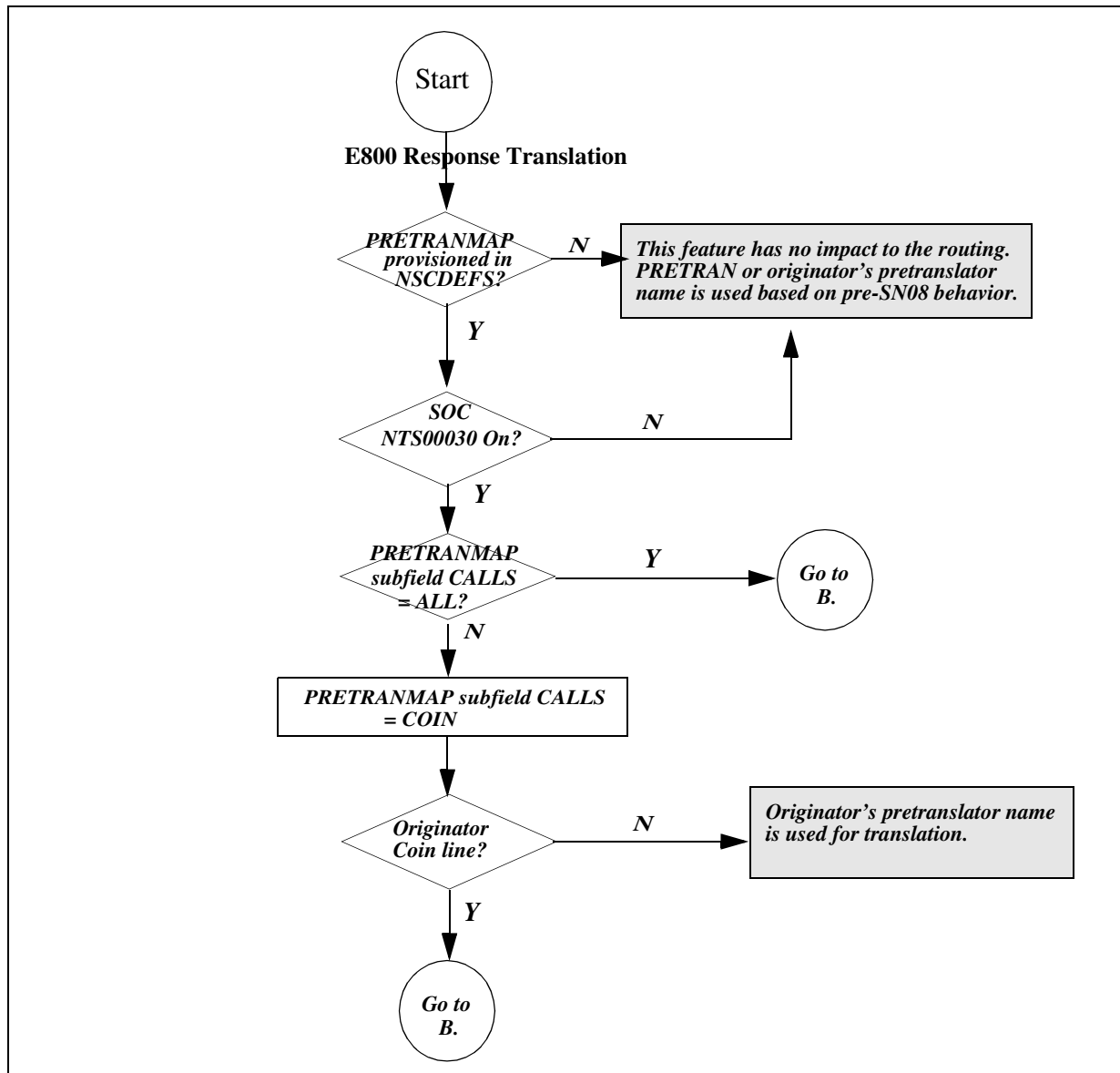


Figure 4 AIN/LNP Response Translation following an E800 Query

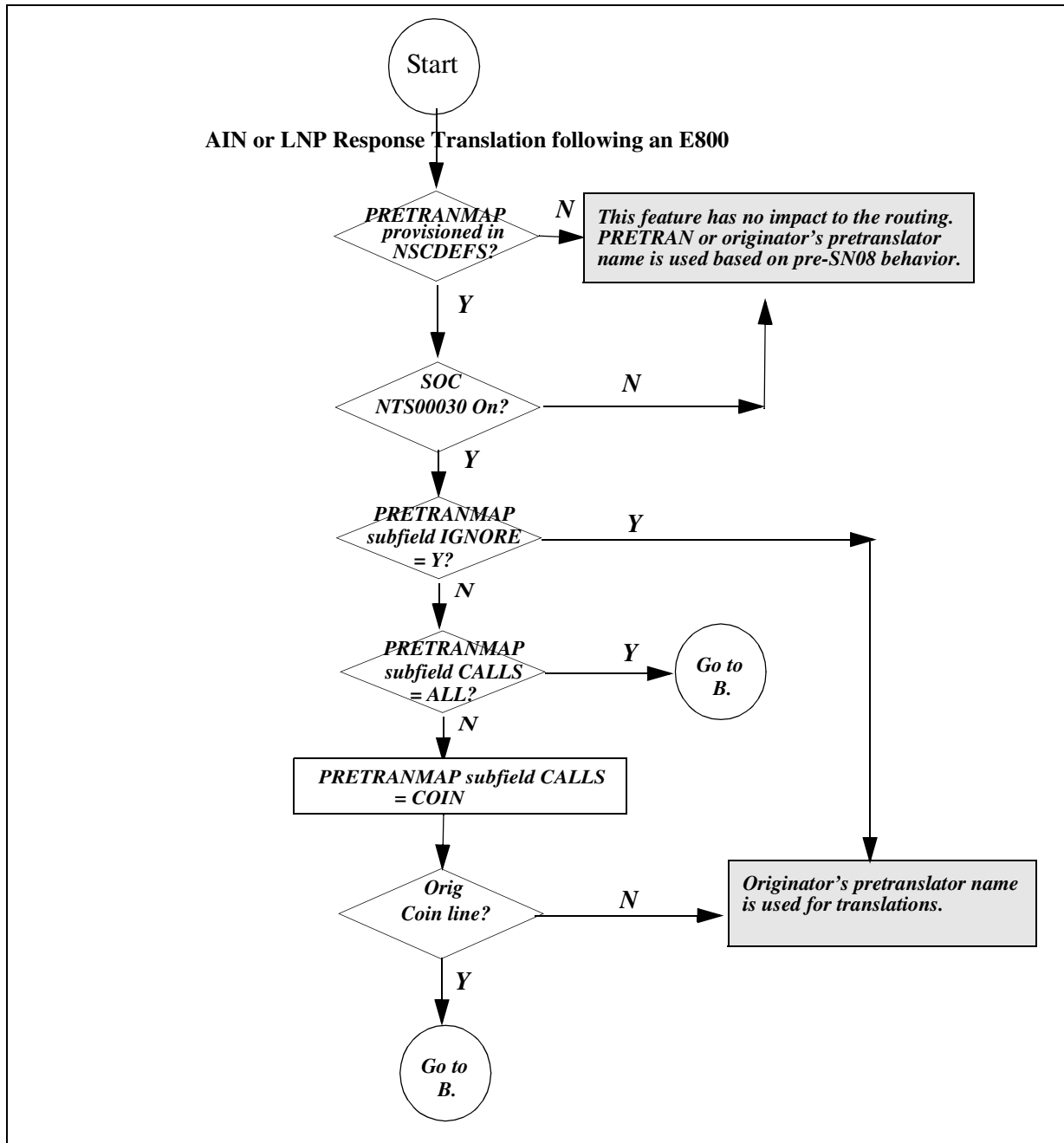
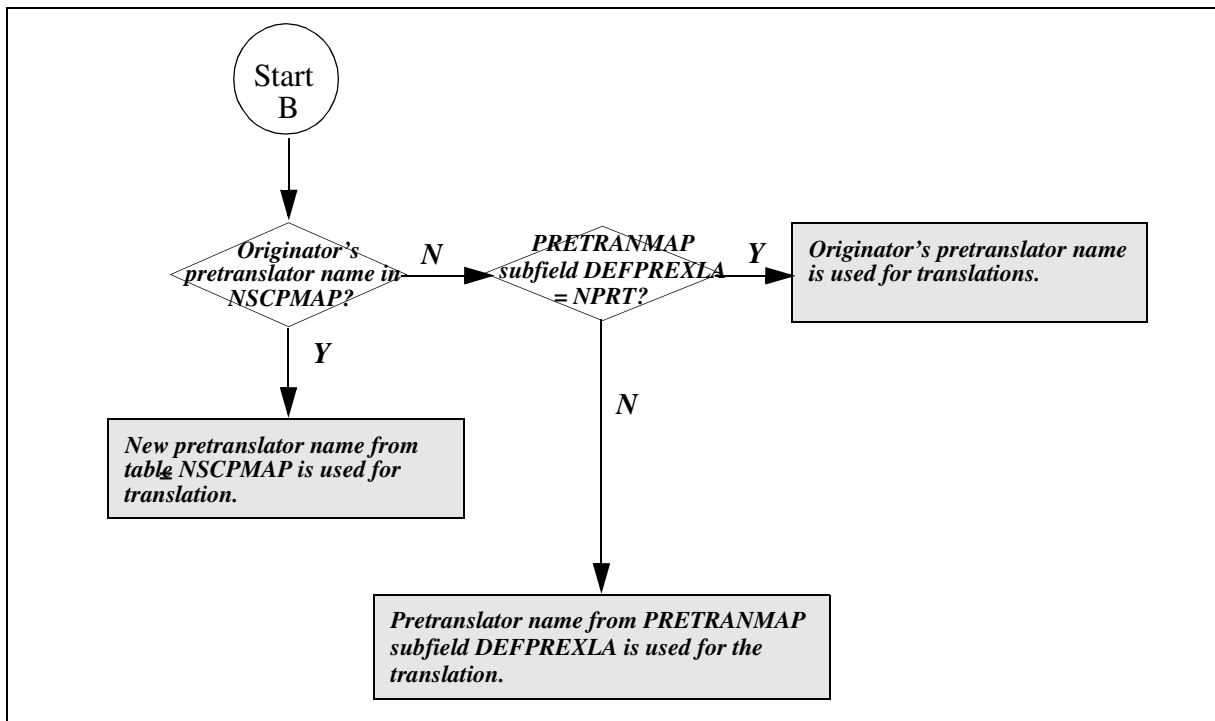


**Figure 5 Response Translation - Part 2**

### 1.10.6 Traver

The DMS100/CS2000 EO Traver software is enhanced to support the display of new option PRETRANMAP in table NSCDEFS and to display the contents of new table NSCPMAP. The existing “NSC” Traver command line option must be input in order to see the new Traver enhancements. The Traver enhancements are active only when option PRETRANMAP is provisioned in table NSCDEFS.

The following set of figures provide examples of the modified Traver output.

**Figure 6 PRETRANMAP:CALLS set to ALL, entry in NSCPMAP**

```

traver l 6215000 nsc 101022215198881111 b

TABLE LINEATTR
0 1FR NONE NT 0 10 NILSFC 0 NIL NIL 00 613_P621_0 L613_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
613_P621_0 FR01 613 P621 TSPS Y RESGRP 0 2 $ $
TABLE RATEAREA
L613_LATA1_0 L613 NIL LATA1 $
TABLE DNATTRS
613 621 5000
(PUBLIC (NAME SAM_SNEAD) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE LENFEAT
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP LNPOFFICE
TABLE NSCDEFS
E800 3 (4DGTIC) (PRETRANMAP PDEF ALL Y) $
TABLE NSCPMAP
P621 P800
USING PRETRANSLATOR FROM TABLE NSCPMAP
TABLE STDPRCT
P800 (1) (0) 4
. SUBTABLE STDPRT
. 1010222 1010222 EA DD 7 P PCAR CAR1 Y OFRT 700 8 25 N
. . TABLE OFRT
. . 700 S D ISUP2WATC
. . EXIT TABLE OFRT
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE STDPRCT
PCAR (1) (0) 6
. SUBTABLE STDPRT
. 15 19 EA DD 1 T NA CAR1 N
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE HPCPATTN
TUPLE NOT FOUND
TABLE HNPACONT
613 Y 915 2 (74) (1) (0) (0) 2 $
. SUBTABLE HNPACODE
. 519 519 FNPA 0

```

(traver for figure 4 continued)

TABLE FNPACONT

519 10 - ( 2 ) ( 0 ) ( 1 ) ( 0 )

. SUBTABLE FNPACODE

. 888 888 3 Y

. SUBTABLE RTEREF

. . 3 N D ISUPIT 0 N N

. EXIT TABLE RTEREF

EXIT TABLE FNPACONT

LNP Info: Called DN is not resident.

LNP Info: HNPA results are used.

TABLE LCASCRCN

613 L613 ( 56 ) OPTL N N Y

. SUBTABLE LCASCR

. TUPLE NOT FOUND. DEFAULT IS NON-LOCAL

TABLE PFXTREAT

TUPLE NOT FOUND. DEFAULT IS TO LEAVE XLA RESULT UNCHANGED

TABLE CLSVSCRC

KEY NOT FOUND

EA:Local override does not apply to this call.

TABLE LATA XLA

LATA1 51 INTER INTER STD

TABLE OCCINFO

CAR1 0222 TRANS Y Y Y Y N N Y Y Y Y LONG 0 FGRPD N N N N N N N Y N N N N Y

TABLE EASAC

TUPLE NOT FOUND

OVERLAP CARRIER SELECTION (OCS) DOES NOT APPLY - AIN\_OFFICE\_TRIGGRP DEFINED

Using Equal Access (EA) route OFRT 700 from Pretranslation

TABLE OFRT

700 S D ISUP2WATC

EXIT TABLE OFRT

TABLE TRIGGRP

LNPOFFICE INFOANAL

. PODP ( DG PODPDIG ) \$ NIL

Trigger AIN PODP is applicable to office.

. LNP ( DG LNPDIG ) ( ESCEA ) ( ESCOP ) ( ESCDN ) ( ESCCN DD ) \$ NIL

Trigger AIN LNP is applicable to office.

AIN Info Analyzed TDP: trigger criteria not met.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 ISUP2WATC 5198881111 ST

TREATMENT ROUTES. TREATMENT IS: GNCT

1 T120

**Figure 7 PRETRANMAP:CALLS set to ALL, no entry in NSCPMAP, default in NSCDEFS**

**traver l 6215000 nsc 101022215198881111 b**

```
TABLE LINEATTR
0 1FR NONE NT 0 10 NILSFC 0 NIL NIL 00 613_P621_0 L613_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
613_P621_0 FR01 613 P621 TSPS Y RESGRP 0 2 $ $
TABLE RATEAREA
L613_LATA1_0 L613 NIL LATA1 $
TABLE DNATTRS
613 621 5000
(PUBLIC (NAME SAM_SNEAD))$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE LENFEAT
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP LNPOFFICE
TABLE NSCDEFS
E800 3 (4DGTIC) (PRETRANMAP PDEF ALL Y) $
TABLE NSCPMAP
TUPLE NOT FOUND
USING PRETRANSLATOR FROM TABLE NSCDEFS
TABLE STDPRTCT
PDEF (1) (0) 4
. SUBTABLE STDPRT
. 1010222 1010222 EA DD 7 P PCAR CAR1 Y OFRT 700 8 25 N
. . TABLE OFRT
. . 700 S D ISUP2WATC
. . EXIT TABLE OFRT
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE STDPRTCT
PCAR (1) (0) 6
. SUBTABLE STDPRT
. 15 19 EA DD 1 T NA CAR1 N
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE HPCPATTN
TUPLE NOT FOUND
TABLE HNPACONT
613 Y 915 2 (74) (1) (0) (0) 2 $
. SUBTABLE HNPACODE
. 519 519 FNPA 0
```

*(remainder of traver is the same as figure 4)*



**Figure 8 PRETRANMAP:CALLS set to ALL, no entry in NSCPMAP, NPRT in NSCDEFS**

**traver l 6215000 nsc 101022215198881111 b**

```

TABLE LINEATTR
0 1FR NONE NT 0 10 NILSFC 0 NIL NIL 00 613_P621_0 L613_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
613_P621_0 FR01 613 P621 TSPS Y RESGRP 0 2 $ $
TABLE RATEAREA
L613_LATA1_0 L613 NIL LATA1 $
TABLE DNATTRS
613 621 5000
(PUBLIC (NAME SAM_SNEAD) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE LENFEAT
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP LNPOFFICE
TABLE NSCDEFS
E800 3 (4DGTIC) (PRETRANMAP NPRT ALL Y) $
TABLE NSCPMAP
TUPLE NOT FOUND
USING PRETRANSLATOR FROM TABLE XLAPLAN
TABLE STDPRCT
P621 (1) (0) 4
. SUBTABLE STDPRCT
. 1010222 1010222 EA DD 7 P PCAR CAR1 Y OFRT 700 8 25 N
. . TABLE OFRT
. . 700 S D ISUP2WATC
. . EXIT TABLE OFRT
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE STDPRCT
PCAR (1) (0) 6
. SUBTABLE STDPRCT
. 15 19 EA DD 1 T NA CAR1 N
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE HPCPATTN
TUPLE NOT FOUND
TABLE HNPACONT
613 Y 915 2 (74) (1) (0) (0) 2 $
. SUBTABLE HNPACODE
. 519 519 FNPA 0

```

*(remainder of traver is the same as figure 4)*

## 1.11 Hardware Requirements or Dependencies

Not applicable.

## 1.12 Software Requirements or Dependencies

New SOC NTS00030, “E800 Pretran Mapping”, is added by this activity. NTS00030 requires existing SOC NTS00005 - “E800-US”.

## 1.13 Limitations and restrictions

The following limitations and restrictions apply:

- E800 is the only service supported by this activity.  
The 800P and E008 services are not supported with option PRETRANMAP in table NSCDEFS<sup>4</sup>. Table control restrictions are added to table NSCDEFS to prevent the PRETRANMAP option from being provisioned for a service other than E800.
- AIN Toll Free Service is not enhanced by this activity.
- Only the DMS100/CS2000 EO E800 software is enhanced by this activity. The DMS200 E800 software is not enhanced.
- NPRT (nil pretranslator name) can not be provisioned in table NSCPMAP. Table control enforces this restriction.
- This feature does not support Attendant Consoles.
- The NSC option of TRAVER is not supported for PRI, PX, and MF/SS7 IBN trunks originating agents.
- The NSC option of TRAVER is not supported by AIN and LNP response translations.

## 1.14 Interactions

The following interactions apply:

- When option PRETRANMAP is provisioned in table NSCDEFS, existing option PRETRAN is no longer referenced by the switch software.

Existing option PRETRAN and new option PRETRANMAP can co-exist in table NSCDEFS. This is permitted to support a transition from existing option PRETRAN to new option PRETRANMAP.

- If a redirection service (e.g. CFW) is encountered which results in an E800 Query and Response transaction, the STDPRT name of the redirecting agent is used to perform the lookup in table NSCPMAP.

---

4. Note the 800P and E008 services are currently not supported with existing option PRETRAN in table NSCDEFS.

- Using AIN it is possible to alter the translation through table XLAMAP and table PXLAMAP. Either the pretranslator name or the LINEATTR index can be altered. In the event AIN returns an 800 routing number resulting in a subsequent E800 TCAP Query, the interaction with new option PRETRANMAP is dependent on whether the previous AIN translation specified a new pretranslator name or a new LINEATTR index:

If the previous AIN translation specified a new pretranslator name, the E800 response translation uses the originating subscriber's pretranslator<sup>5</sup>. The new PRETRANMAP option is consistent with this behavior. If option PRETRANMAP is provisioned, the originating subscriber's pretranslator is used to perform a lookup in table NSCPMAP.

If the previous AIN translation specified a new LINEATTR index, the E800 response translation uses the pretranslator name associated with the new LINEATTR<sup>6</sup>. The new PRETRANMAP option is consistent with this behavior. If option PRETRANMAP is provisioned, the pretranslator associated with the new LINEATTR index is used to perform a lookup in table NSCPMAP.

AIN should not be configured to use a shared LINEATTR index for two (or more) groups of subscribers if the subsequent E800 translation requires a unique pretranslator for each group of subscribers. The mapping provided by table NSCPMAP uses the pretranslator name associated with the shared LINEATTR index. The shared LINEATTR index can only be mapped to a single pretranslator using table NSCPMAP.

## 1.15 Glossary

| Term   | Description                  |
|--------|------------------------------|
| 800P   | 800 Plus                     |
| AIN    | Advanced Intelligent Network |
| CFW    | Call Forwarding              |
| CS2000 | Call Server 2000             |
| DMS100 | Digital Multiplex System 100 |
| DMS200 | Digital Multiplex System 200 |
| E008   | Enhanced 008                 |
| E800   | Enhanced 800                 |
| EO     | End Office                   |

5. Applicable when neither the PRETRAN or PRETRANMAP option is used.

6. Applicable when neither the PRETRAN or PRETRANMAP option is used.

| Term   | Description                               |
|--------|-------------------------------------------|
| IEC    | Inter-Exchange Carrier                    |
| LEC    | Local Exchange Carrier                    |
| LNP    | Local Number Portability                  |
| NPRT   | Nil Pretranslator                         |
| SOC    | Software Optionality Control              |
| NSC    | Number Services Code                      |
| SS7    | Signaling System Number 7                 |
| STDPRT | Standard Pretranslator                    |
| TCAP   | Transaction Capabilities Application Part |

## ***Product = CS 2000***

### **A00007934--E800 Routing Enhancements**

#### ***Functional Description***

##### **1.1 Applicable Solution(s)**

DMS

##### **1.2 Introduction**

Enhanced 800 (E800) is a U.S. service currently available in the DMS software. E800 service provides the ability to route toll-free 8XX (e.g. 800) calls in a telecommunications network. The 8XX numbers must be mapped to a specific directory number and can be carried by either the Local Exchange Carrier (LEC) or a specific Inter-Exchange Carrier (IEC). When an 8XX call is originated, a database query is performed using the Transaction Capabilities Application Part (TCAP) layer of the Signaling System 7 (SS7) protocol. The database contains a mapping of 8XX numbers to routing directory numbers. Additionally, the database identifies the IEC to handle the call (when applicable). This information is returned in an E800 Response to the switch that initiated the query. The returned information is used by the switch for translations and routing.

Currently, the DMS100/CS2000 End Office (EO) switch provides two methods for translating an E800 Response:

1. Translate using the Standard Pretranslator (STDPRT) name of the originating subscriber.
2. Translate using the STDPRT name provisioned for option PRETRAN in table NSCDEFS. With this option, all E800 Response translations use a single STDPRT subtable.

With the first method, the STDPRT name of the originating subscriber is used when performing the E800 Response translation. However, this method may cause interaction issues with other datafill in the originating subscriber's STDPRT subtable. For example, if the STDPRT subtable contains datafill to route toll calls to treatment (i.e. toll denied), the E800 Response translation may route to treatment in error.

The second method was introduced as a provisioning alternative to avoid interactions with datafill in the originating subscriber's STDPRT subtable. With the second method, a single STDPRT name is provisioned via option PRETRAN in table NSCDEFS. This STDPRT name provides an *override* to the originator's STDPRT name and is used for translating all E800 Responses. However, with routing provided via a single STDPRT subtable, all E800 Response translations are limited to a single set of routes<sup>7</sup>.

This activity provides additional flexibility for E800 Response translations by supporting *multiple* STDPRT names as an *override* to the originator's STDPRT name. With the support of multiple STDPRT names, a DMS100/CS2000 EO switch can be configured with multiple routes<sup>8</sup>. This flexibility is provided with the introduction of new option PRETRANMAP in table NSCDEFS and the introduction of new table NSCPMAP. Table NSCPMAP provides a method to *override* or *map* the originating subscriber's STDPRT name with a new STDPRT name.

A new Software Optionality Control (SOC): NTS00030, "E800 Pretran Mapping" is created for this activity. This SOC has an RTU of A/P (Always Present), and it is always at ON state. New option PRETRANMAP, in table NSCDEFS, always takes precedence over existing option PRETRAN since SOC NTS00030 is always set to ON.

### 1.3 Description

The combination of new table NSCPMAP and new option PRETRANMAP (in table NSCDEFS) provides the flexibility to support multiple STDPRT names for E800 Response translations.

---

7. This restriction applies when the routing is performed from the STDPRT subtable. E800 calls that complete to the IEC are routed from the STDPRT subtable.

8. Applies when routing is performed from subtable STDPRT. E800 calls that complete to the IEC are routed from the STDPRT subtable.

Table NSCPMAP is introduced to provide a mapping from the originator's STDPRT name to a new STDPRT name for use by the E800 Response translation. By providing a mapping on a per originating subscriber's STDPRT name basis, E800 terminating routes can be (indirectly) configured on a per-originating subscriber basis.

New option PRETRANMAP is added to table NSCDEFS as a provisioning trigger for activating a lookup in new table NSCPMAP. In addition, new option PRETRANMAP provides equivalent functionality to the existing NSCDEF's option PRETRAN. This is accomplished by adding fields CALLS and IGNORE<sup>9</sup> to option PRETRANMAP.

The following sections provide a detailed description for this new capability.

### 1.3.1 New Table NSCPMAP

New table NSCPMAP provides the ability to override the originating subscriber's STDPRT name with a new STDPRT name for the E800 Response translation. Table NSCPMAP is accessed when new option PRETRANMAP is provisioned in table NSCDEFS.

Refer to Table 1 on page 1026 for a description of table NSCPMAP. The key field, **ORIGPTNM**, is the originating subscriber's STDPRT name. This STDPRT name is *mapped* to the new STDPRT name that is provisioned for field **MAPPTNM**. The *mapped* STDPRT name is used for the E800 Response translation. Note that neither key ORIGPTNM or field MAPPTNM can be provisioned with the nil pretranslator name - "NPRT". Table control will enforce this restriction.

**Table 1: New Table NSCPMAP**

| Key & Field    | Values             | Comments                                                                               |
|----------------|--------------------|----------------------------------------------------------------------------------------|
| Key: ORIGPTNM  | PRETRANSLATOR_NAME | The table key specifies the originating subscriber's STDPRT name.                      |
| Field: MAPPTNM | PRETRANSLATOR_NAME | This field specifies the new STDPRT name to be used for the E800 Response translation. |

The functionality provided by table NSCPMAP is not activated until option PRETRANMAP is provisioned in table NSCDEFS.

---

9. Existing option PRETRAN in table NSCDEFS consists of fields CALLS and IGNORE.

Following is a provisioning example for new table NSCPMAP:

TABLE: NSCPMAP

ORIGPTNM    MAPPTNM

-----  
P819                  P800

### 1.3.2 New Option PRETRANMAP, Table NSCDEFS

To enable the functionality provided by this activity, new option PRETRANMAP must be provisioned in table NSCDEFS. Option PRETRANMAP consists of three fields as shown in Table 2 on page 1027.

**Table 2: Table NSCDEFS, New Option PRETRANMAP**

| New Option | Subfields         | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PRETRANMAP | DEFPREXLA         | Specifies the default STDPRT name that is to be used if no entry is found in table NSCPMAP. When provisioned to NPRT and no entry is found in table NSCPMAP, the originating subscriber's STDPRT name is used.<br><br>If option PRETRAN already exists in table NSCDEFS, consideration should be given to provisioning option PRETRANMAP with the same <i>values</i> as existing option PRETRAN. By provisioning the same <i>values</i> , the switch behavior is unchanged from option PRETRAN for those STDPRT names that are not provisioned in table NSCPMAP. |
|            | CALLS {ALL, COIN} | Specifies whether ALL calls or only COIN calls should use this functionality.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|            | IGNORE {Y/N}      | Specifies whether this option should be ignored for the AIN or LNP Response translation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

Option PRETRANMAP provides equivalent functionality to existing option PRETRAN by supporting subfields CALLS and IGNORE. Additionally, a DEFPREXLA field is provided which specifies the default STDPRT name to be used in the event an entry is not found in table NSCPMAP. By provisioning a default STDPRT name, only exception cases need to be provisioned in table NSCPMAP.

An added capability provided by option PRETRANMAP is the ability to use the originator's STDPRT name, rather than a default STDPRT name, in the

event an entry is not found in table NSCPMAP. This is accomplished by provisioning NPRT for subfield DEFPREXLA.

An added capability provided by option PRETRANMAP is the ability to use the originator's STDPRT name, rather than a default STDPRT name, in the event an entry is not found in table NSCPMAP. This is accomplished by provisioning NPRT for subfield DEFPREXLA.

Following is a provisioning example for new option PRETRANMAP in table NSCDEFS:

| TABLE: NSCDEFS |         |                            |
|----------------|---------|----------------------------|
| NSCCODE        | TIMEOUT | OPTIONS                    |
| -----          |         |                            |
| E800           | 3       | (PRETRANMAP PDEF ALL N) \$ |

#### **Existing Option PRETRAN Considerations:**

New option PRETRANMAP can be configured to function identical to existing option PRETRAN in table NSCDEFS. This is accomplished by provisioning option PRETRANMAP with the same values that are provisioned for existing option PRETRAN and by not adding STDPRT names in table NSCPMAP.

If existing option PRETRAN functionality is required with the exception of those STDPRT names provisioned in table NSCPMAP, new option PRETRANMAP should be provisioned with the same values as existing option PRETRAN. In this case, new option PRETRANMAP will provide equivalent functionality to existing option PRETRAN with the exception of those STDPRT names provisioned in table NSCPMAP.

### **1.3.3 New SOC NTS00030**

SOC NTS00030, "E800 Pretran Mapping" is added by this activity. This SOC is always at ON state and does not control the feature functionality. This SOC has an RTU of A/P (Always Present) and the state cannot be changed to IDLE.

Note SOC NTS00030 requires SOC NTS00005, "E800-US".

New option PRETRANMAP in table NSCDEFS controls both the call processing and Traver enhancements provided by this activity (refer to sections "Call Processing" on page 1029 and "Traver" on page 1032).

### **1.3.4 Recommended Provisioning Procedure for PRETRANMAP**

The following provisioning procedure is recommended:

3. Add the required STDPRT name tuples to table NSCPMAP.



4. For the E800 service, add new option PRETRANMAP in table NSCDEFS. Do not immediately remove option PRETRAN if it is currently provisioned. Once option PRETRANMAP is added, the new functionality is active and option PRETRAN is no longer referenced by the switch software.

If option PRETRAN is currently provisioned in table NSCDEFS, consideration should be given to provisioning option PRETRANMAP with the same *values* as existing option PRETRAN. By provisioning the same *values*, the switch behavior is unchanged from option PRETRAN for those STDPRT names that are not provisioned in table NSCPMAP.

To revert back to the functionality provided by existing option PRETRAN, option PRETRANMAP should be removed from table NSCDEFS. Option PRETRAN (if previously provisioned) must still be present in table NSCDEFS to revert back.

Once the switch is properly configured to use option PRETRANMAP and table NSCPMAP, existing option PRETRAN can optionally be removed from table NSCDEFS. Removal of option PRETRAN is not mandatory.

### 1.3.5 Call Processing

The DMS100/CS2000 EO call processing software is enhanced to use the new functionality provided by option PRETRANMAP and table NSCPMAP. Figures 3, 4 and 5 provide flow charts of the enhanced call processing behavior. The call processing software enhancements are active only when option PRETRANMAP is provisioned in table NSCDEFS.

Note that figure 4 depicts the switch behavior when an E800 Query is performed on a call and a non-IEC routing number is returned from the E800 database. The E800 Response translation subsequently hits an AIN or LNP trigger resulting in a query to the AIN/LNP database. The IGNORE subfield for option PRETRANMAP specifies whether the AIN/LNP Response translation should ignore the PRETRANMAP option and use the originating subscriber's pretranslator.

Figure 9 E800 Response Translation

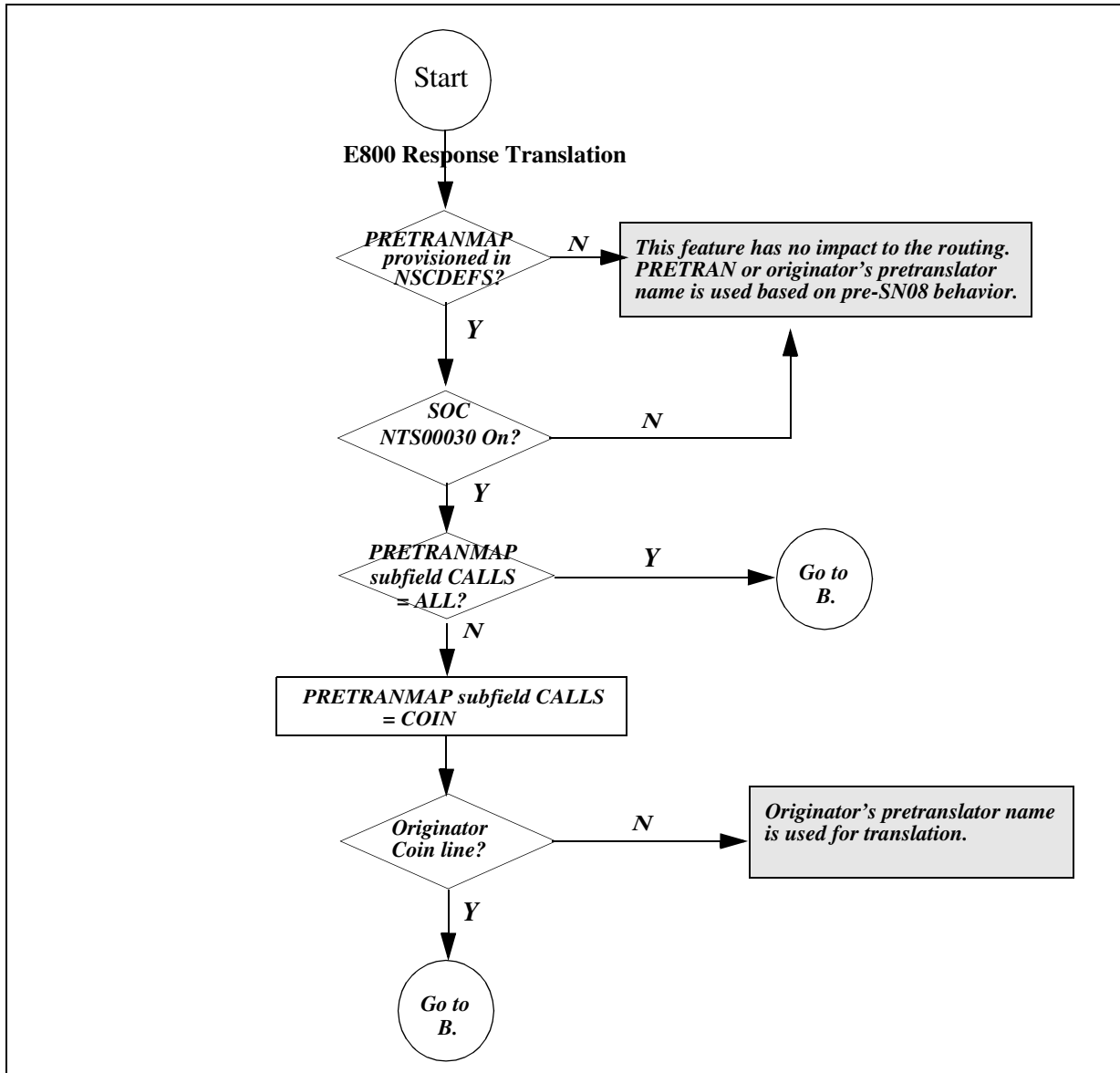


Figure 10 AIN/LNP Response Translation following an E800 Query

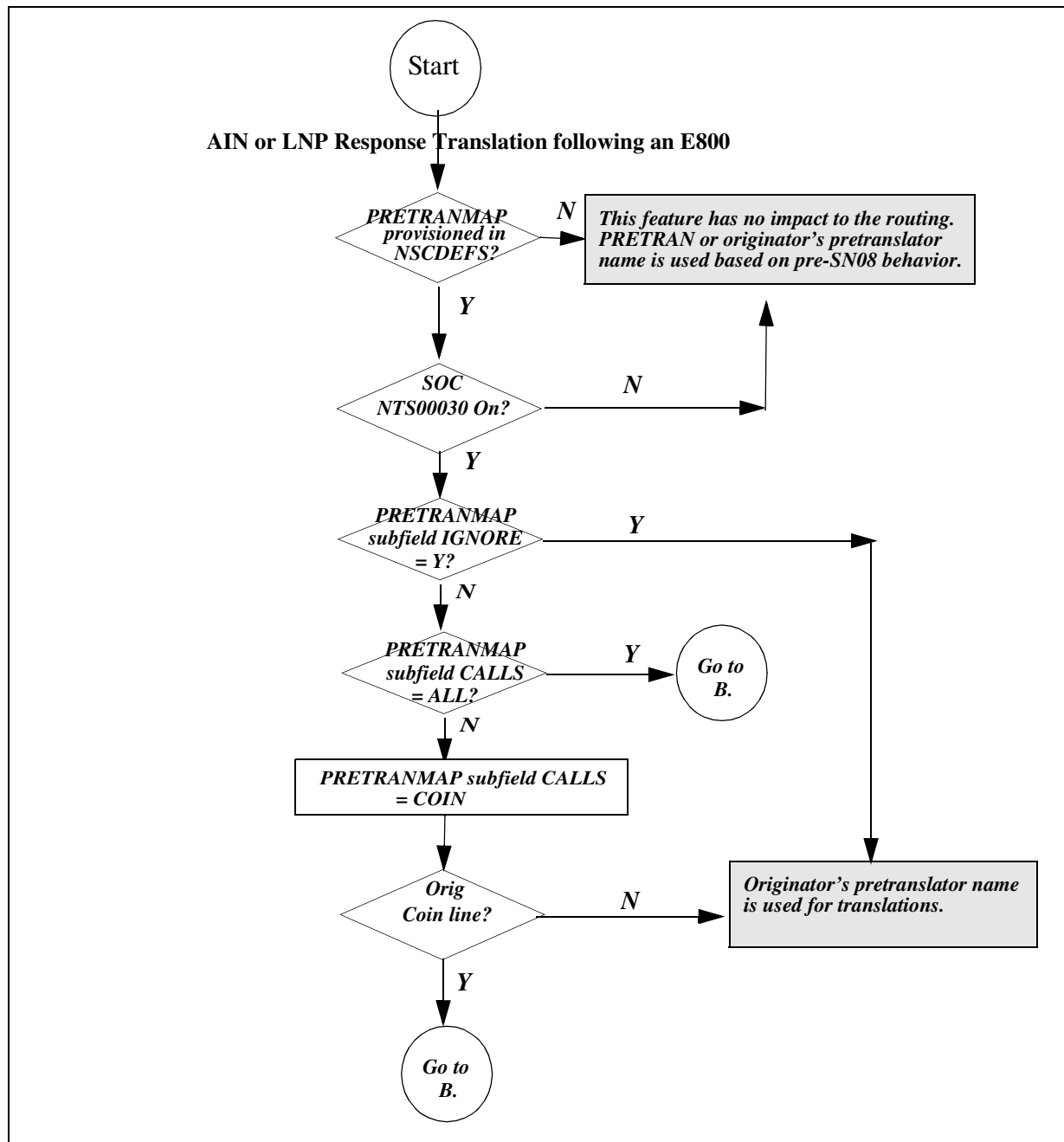
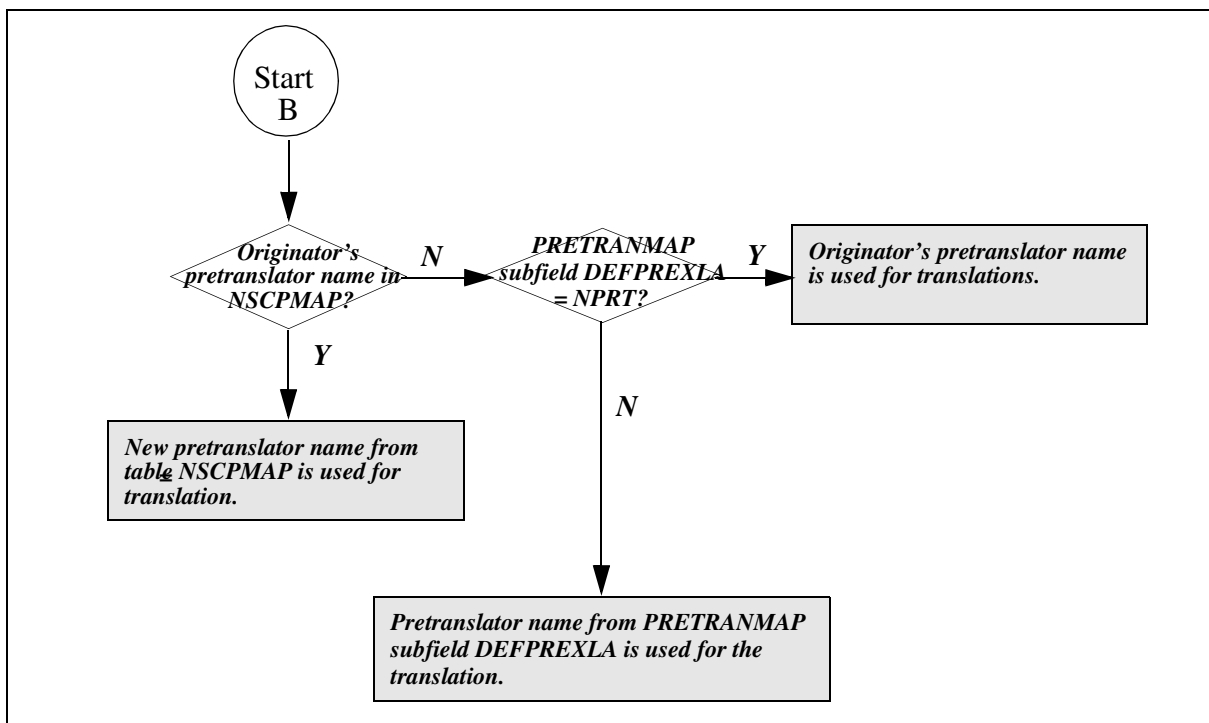


**Figure 11 Response Translation - Part 2**

### 1.3.6 Traver

The DMS100/CS2000 EO Traver software is enhanced to support the display of new option PRETRANMAP in table NSCDEFS and to display the contents of new table NSCPMAP. The existing “NSC” Traver command line option must be input in order to see the new Traver enhancements. The Traver enhancements are active only when option PRETRANMAP is provisioned in table NSCDEFS.

The following set of figures provide examples of the modified Traver output.

**Figure 12 PRETRANMAP:CALLS set to ALL, entry in NSCPMAP**

```

traver l 6215000 nsc 101022215198881111 b

TABLE LINEATTR
0 1FR NONE NT 0 10 NILSFC 0 NIL NIL 00 613_P621_0 L613_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
613_P621_0 FR01 613 P621 TSPS Y RESGRP 0 2 $ $
TABLE RATEAREA
L613_LATA1_0 L613 NIL LATA1 $
TABLE DNATTRS
613 621 5000
(PUBLIC (NAME SAM_SNEAD) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE LENFEAT
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP LNPOFFICE
TABLE NSCDEFS
E800 3 (4DGTIC) (PRETRANMAP PDEF ALL Y) $
TABLE NSCPMAP
P621 P800
USING PRETRANSLATOR FROM TABLE NSCPMAP
TABLE STDPRCT
P800 (1) (0) 4
. SUBTABLE STDPRCT
. 1010222 1010222 EA DD 7 P PCAR CAR1 Y OFRT 700 8 25 N
. . TABLE OFRT
. . 700 S D ISUP2WATC
. . EXIT TABLE OFRT
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE STDPRCT
PCAR (1) (0) 6
. SUBTABLE STDPRCT
. 15 19 EA DD 1 T NA CAR1 N
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE HPCPATTN
TUPLE NOT FOUND
TABLE HNPACONT
613 Y 915 2 (74) (1) (0) (0) 2 $
. SUBTABLE HNPACODE
. 519 519 FNPA 0

```

(traver for figure 4 continued)

TABLE FNPACONT

519 10 - ( 2 ) ( 0 ) ( 1 ) ( 0 )

. SUBTABLE FNPACODE

. 888 888 3 Y

. SUBTABLE RTEREF

. . 3 N D ISUPIT 0 N N

. EXIT TABLE RTEREF

EXIT TABLE FNPACONT

LNP Info: Called DN is not resident.

LNP Info: HNPA results are used.

TABLE LCASCRCN

613 L613 ( 56 ) OPTL N N Y

. SUBTABLE LCASCR

. TUPLE NOT FOUND. DEFAULT IS NON-LOCAL

TABLE PFXTREAT

TUPLE NOT FOUND. DEFAULT IS TO LEAVE XLA RESULT UNCHANGED

TABLE CLSVSCRC

KEY NOT FOUND

EA:Local override does not apply to this call.

TABLE LATA XLA

LATA1 51 INTER INTER STD

TABLE OCCINFO

CAR1 0222 TRANS Y Y Y Y N N Y Y Y Y LONG 0 FGRPD N N N N N N N Y N N N N Y

TABLE EASAC

TUPLE NOT FOUND

OVERLAP CARRIER SELECTION (OCS) DOES NOT APPLY - AIN\_OFFICE\_TRIGGRP DEFINED

Using Equal Access (EA) route OFRT 700 from Pretranslation

TABLE OFRT

700 S D ISUP2WATC

EXIT TABLE OFRT

TABLE TRIGGRP

LNPOFFICE INFOANAL

. PODP ( DG PODPDIG ) \$ NIL

Trigger AIN PODP is applicable to office.

. LNP ( DG LNPDIG ) ( ESCEA ) ( ESCOP ) ( ESCDN ) ( ESCCN DD ) \$ NIL

Trigger AIN LNP is applicable to office.

AIN Info Analyzed TDP: trigger criteria not met.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 ISUP2WATC 5198881111 ST

TREATMENT ROUTES. TREATMENT IS: GNCT

1 T120

**Figure 13 PRETRANMAP:CALLS set to ALL, no entry in NSCPMAP, default in NSCDEFS**

traver l 6215000 nsc 101022215198881111 b

```
TABLE LINEATTR
0 1FR NONE NT 0 10 NILSFC 0 NIL NIL 00 613_P621_0 L613_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
613_P621_0 FR01 613 P621 TSPS Y RESGRP 0 2 $ $
TABLE RATEAREA
L613_LATA1_0 L613 NIL LATA1 $
TABLE DNATTRS
613 621 5000
(PUBLIC (NAME SAM_SNEAD) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE LENFEAT
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP LNPOFFICE
TABLE NSCDEFS
E800 3 (4DGTIC) (PRETRANMAP PDEF ALL Y) $
TABLE NSCPMAP
TUPLE NOT FOUND
USING PRETRANSLATOR FROM TABLE NSCDEFS
TABLE STDPRTCT
PDEF (1) (0) 4
. SUBTABLE STDPRT
. 1010222 1010222 EA DD 7 P PCAR CAR1 Y OFRT 700 8 25 N
. . TABLE OFRT
. . 700 S D ISUP2WATC
. . EXIT TABLE OFRT
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE STDPRTCT
PCAR (1) (0) 6
. SUBTABLE STDPRT
. 15 19 EA DD 1 T NA CAR1 N
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE HPCPATTN
TUPLE NOT FOUND
TABLE HNPACONT
613 Y 915 2 (74) (1) (0) (0) 2 $
. SUBTABLE HNPACODE
. 519 519 FNPA 0
```

*(remainder of traver is the same as figure 4)*

**Figure 14 PRETRANMAP:CALLS set to ALL, no entry in NSCPMAP, NPRT in NSCDEFS**

**traver l 6215000 nsc 101022215198881111 b**

```
TABLE LINEATTR
0 1FR NONE NT 0 10 NILSFC 0 NIL NIL 00 613_P621_0 L613_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
613_P621_0 FR01 613 P621 TSPS Y RESGRP 0 2 $ $
TABLE RATEAREA
L613_LATA1_0 L613 NIL LATA1 $
TABLE DNATTRS
613 621 5000
(PUBLIC (NAME SAM_SNEAD) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE LENFEAT
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP LNPOFFICE
TABLE NSCDEFS
E800 3 (4DGTIC) (PRETRANMAP NPRT ALL Y) $
TABLE NSCPMAP
TUPLE NOT FOUND
USING PRETRANSLATOR FROM TABLE XLAPLAN
TABLE STDPRTCT
P621 (1) (0) 4
. SUBTABLE STDPRT
. 1010222 1010222 EA DD 7 P PCAR CAR1 Y OFRT 700 8 25 N
. . TABLE OFRT
. . 700 S D ISUP2WATC
. . EXIT TABLE OFRT
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE STDPRTCT
PCAR (1) (0) 6
. SUBTABLE STDPRT
. 15 19 EA DD 1 T NA CAR1 N
. SUBTABLE AMAPRT
. KEY NOT FOUND
. DEFAULT VALUE IS: NONE OVRNONE N
TABLE HPCPATTN
TUPLE NOT FOUND
TABLE HNPACONT
613 Y 915 2 (74) (1) (0) (0) 2 $
. SUBTABLE HNPACODE
. 519 519 FNPA 0
```

*(remainder of traver is the same as figure 4)*



## 1.4 Hardware Requirements or Dependencies

Not applicable.

## 1.5 Software Requirements or Dependencies

New SOC NTS00030, “E800 Pretran Mapping”, is added by this activity. NTS00030 requires existing SOC NTS00005 - “E800-US”.

## 1.6 Limitations and restrictions

The following limitations and restrictions apply:

- E800 is the only service supported by this activity.  
The 800P and E008 services are not supported with option PRETRANMAP in table NSCDEFS<sup>10</sup>. Table control restrictions are added to table NSCDEFS to prevent the PRETRANMAP option from being provisioned for a service other than E800.
- AIN Toll Free Service is not enhanced by this activity.
- Only the DMS100/CS2000 EO E800 software is enhanced by this activity. The DMS200 E800 software is not enhanced.
- NPRT (nil pretranslator name) can not be provisioned in table NSCPMAP. Table control enforces this restriction.
- This feature does not support Attendant Consoles.
- The NSC option of TRAVER is not supported for PRI, PX, and MF/SS7 IBN trunks originating agents.
- The NSC option of TRAVER is not supported by AIN and LNP response translations.

## 1.7 Interactions

The following interactions apply:

- When option PRETRANMAP is provisioned in table NSCDEFS, existing option PRETRAN is no longer referenced by the switch software.

Existing option PRETRAN and new option PRETRANMAP can co-exist in table NSCDEFS. This is permitted to support a transition from existing option PRETRAN to new option PRETRANMAP.

- If a redirection service (e.g. CFW) is encountered which results in an E800 Query and Response transaction, the STDPRT name of the redirecting agent is used to perform the lookup in table NSCPMAP.

---

10. Note the 800P and E008 services are currently not supported with existing option PRETRAN in table NSCDEFS.

- Using AIN it is possible to alter the translation through table XLAMAP and table PXLAMAP. Either the pretranslator name or the LINEATTR index can be altered. In the event AIN returns an 800 routing number resulting in a subsequent E800 TCAP Query, the interaction with new option PRETRANMAP is dependent on whether the previous AIN translation specified a new pretranslator name or a new LINEATTR index:

If the previous AIN translation specified a new pretranslator name, the E800 response translation uses the originating subscriber's pretranslator<sup>11</sup>. The new PRETRANMAP option is consistent with this behavior. If option PRETRANMAP is provisioned, the originating subscriber's pretranslator is used to perform a lookup in table NSCPMAP.

If the previous AIN translation specified a new LINEATTR index, the E800 response translation uses the pretranslator name associated with the new LINEATTR<sup>12</sup>. The new PRETRANMAP option is consistent with this behavior. If option PRETRANMAP is provisioned, the pretranslator associated with the new LINEATTR index is used to perform a lookup in table NSCPMAP.

AIN should not be configured to use a shared LINEATTR index for two (or more) groups of subscribers if the subsequent E800 translation requires a unique pretranslator for each group of subscribers. The mapping provided by table NSCPMAP uses the pretranslator name associated with the shared LINEATTR index. The shared LINEATTR index can only be mapped to a single pretranslator using table NSCPMAP.

## 1.8 Glossary

| Term   | Description                  |
|--------|------------------------------|
| 800P   | 800 Plus                     |
| AIN    | Advanced Intelligent Network |
| CFW    | Call Forwarding              |
| CS2000 | Call Server 2000             |
| DMS100 | Digital Multiplex System 100 |
| DMS200 | Digital Multiplex System 200 |
| E008   | Enhanced 008                 |
| E800   | Enhanced 800                 |
| EO     | End Office                   |

11. Applicable when neither the PRETRAN or PRETRANMAP option is used.

12. Applicable when neither the PRETRAN or PRETRANMAP option is used.

| Term   | Description                               |
|--------|-------------------------------------------|
| IEC    | Inter-Exchange Carrier                    |
| LEC    | Local Exchange Carrier                    |
| LNP    | Local Number Portability                  |
| NPRT   | Nil Pretranslator                         |
| SOC    | Software Optionality Control              |
| NSC    | Number Services Code                      |
| SS7    | Signaling System Number 7                 |
| STDPRT | Standard Pretranslator                    |
| TCAP   | Transaction Capabilities Application Part |

## ***Product = CS 2000***

### **A00008350--Trunk group OM registers for establish bearer path failures**

#### ***Functional Description***

#### **1.1 Applicable Solution(s)**

PT-AAL1

#### **1.2 Description**

This activity provides an enhancement to the per call failure handling in the CS2K Core by providing new OM registers. These registers will be pegged on a per-trunk group basis when the AUDT106 logs are generated. If throttling of logs is in effect resulting in suppression of AUDT106 logs, these OM registers will continue to be pegged to maintain an accurate count of the failures.

This activity addresses the following:

1. Creating new OM registers in the existing TRK/TRNK2, TRK2NET1/TRK2NET2 OM Groups
2. Pegging the new OM registers

OSS needs to be updated for these additional registers.

### 1.2.1 Creating new OM registers in TRK/TRNK2 OM Groups

The AUDT106 log is generated when a call is forced down by the release of a trunk. Prior to this activity, customers relied on counting the number of AUDT106 logs in order to determine the impact to connecting offices (via trunks) of call failures.

This activity introduces a new register MIDFAIL at the end of the existing registers of the TRK OM group. This register will provide established bearer path failure counts on a per-trunk group basis.

| OM Group Name | NEW, CHANGED or DELETED | Reason                          |
|---------------|-------------------------|---------------------------------|
| TRK           | Changed                 | A new register MIDFAIL is added |

Another register MIDFAIL2 will be introduced in the TRNK2 OM group. This is the extension register of MIDFAIL.

| OM Group Name | NEW, CHANGED or DELETED | Reason                           |
|---------------|-------------------------|----------------------------------|
| TRNK2         | Changed                 | A new register MIDFAIL2 is added |

The snapshot after the addition looks as below.

**Figure 1 TRK OM Group**

TRK

CLASS: ACTIVE

START:2004/10/06 04:25:00 WED; STOP: 2004/10/06 04:25:33 WED;

SLOWSAMPLES: 1 ; FASTSAMPLES: 3 ;

KEY (COMMON\_LANGUAGE\_NAME)

INFO (OM2TRKINFO)

|          |          |         |                |
|----------|----------|---------|----------------|
| INCATOT  | PRERTEAB | INFAIL  | NATTMPT        |
| NOVFLATB | GLARE    | OUTFAIL | DEFLDCA        |
| DREU     | PREU     | TRU     | SBU            |
| MBU      | OUTMTCHF | CONNECT | TANDEM         |
| AOF      | ANF      | TOTU    | ANSWER         |
| INVAUTH  | BLKCTRK  | MAXBU   | TRU2WIN        |
| NCTPASS  | NCTFAIL  | ACCCONG | NOANSWER       |
| NPQUERY  | NPRESP   | NPBDRTF | <b>MIDFAIL</b> |

51 DALI

IC 0 0

|   |   |   |          |
|---|---|---|----------|
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | <b>0</b> |

52 VTOA2WATC0

2W 0 0

|   |   |   |          |
|---|---|---|----------|
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | 0        |
| 0 | 0 | 0 | <b>0</b> |

**Figure 2 TRNK2 OM Group**

TRNK2

CLASS: ACTIVE

START:2004/10/06 04:30:00 WED; STOP: 2004/10/06 04:34:07 WED;

SLOWSAMPLES: 3 ; FASTSAMPLES: 25 ;

KEY (COMMON\_LANGUAGE\_NAME)

INFO (OM2TRKINFO)

| INCATOT2 | NATTMPT2 | DEFLDCA2        | TRU2  |
|----------|----------|-----------------|-------|
| SBU2     | CONNECT2 | TANDEM2         | TOTU2 |
| ANSWER2  | TRU2WIN2 | <b>MIDFAIL2</b> |       |

51 DALI

|    |   |   |          |   |   |
|----|---|---|----------|---|---|
| IC | 0 | 0 |          |   |   |
|    | 0 | 0 | 0        | 0 | 0 |
|    | 0 | 0 | 0        | 0 | 0 |
|    | 0 | 0 | <b>0</b> |   |   |

52 VTOA2WATC0

|    |   |   |          |   |   |
|----|---|---|----------|---|---|
| 2W | 0 | 0 |          |   |   |
|    | 0 | 0 | 0        | 0 | 0 |
|    | 0 | 0 | 0        | 0 | 0 |
|    | 0 | 0 | <b>0</b> |   |   |

53 VER90

|    |   |   |          |   |   |
|----|---|---|----------|---|---|
| OG | 0 | 0 |          |   |   |
|    | 0 | 0 | 0        | 0 | 0 |
|    | 0 | 0 | 0        | 0 | 0 |
|    | 0 | 0 | <b>0</b> |   |   |

### 1.2.2 Creating new OM registers in TRK2NET1/TRK2NET2 OM Groups

The OM groups TRK2NET1/TRK2NET2 were introduced as part of the Trimodal Logs and OM activity.

This activity introduces a new register MIDFAIL3 at the end of the existing registers of the TRK2NET1 OM group. This register will provide established bearer path failure counts on a per bearer network per-trunk group basis.

| OM Group Name | NEW, CHANGED or DELETED | Reason                           |
|---------------|-------------------------|----------------------------------|
| TRK2NET1      | Changed                 | A new register MIDFAIL3 is added |

Another register MIDFAIL4 will be introduced in the TRK2NET2 OM group. This is the extension register of MIDFAIL3.

| OM Group Name | NEW, CHANGED or DELETED | Reason                           |
|---------------|-------------------------|----------------------------------|
| TRK2NET2      | Changed                 | A new register MIDFAIL4 is added |

**Note:** The OMSHOW command would display the OM groups and its fields. However the tuples of the TRK2NET1 OM group or any Trimodal OM groups are not displayed unless the MULTINET\_DISPLAY\_ACTIVE parameter in the table OFCVAR is set to 'Y'.

The snapshot after the addition looks as below.

**Figure 3 TRK2NET1 OM Group**

TRK2NET1

CLASS: ACTIVE

START:2004/10/06 04:35:00 WED; STOP: 2004/10/06 04:36:37 WED;

SLOWSAMPLES: 1 ; FASTSAMPLES: 10 ;

INFO (TRK2NET1\_INFO)

|         |                 |          |         |
|---------|-----------------|----------|---------|
| INCAATT | PRERTEA1        | NINFAIL  | NATMPT  |
| NVFLATB | GLARE1          | OUTFL    | TRFCU   |
| SBSYU   | MBSYU           | TRKNWBLK | CNCTAT  |
| TNDMATT | ANIOFCFL        | NANF     | TOTBSYU |
| NANSWER | INVATHCD        | MAXBSY   | NACCCNG |
| NOANSWR | <b>MIDFAIL3</b> |          |         |

0

| TTT | NET | 0 | ENET | 100 | OG | 3 | 1        |
|-----|-----|---|------|-----|----|---|----------|
| 0   |     |   | 0    |     | 0  |   | 0        |
| 0   |     |   | 0    |     | 0  |   | 0        |
| 0   |     |   | 0    |     | 0  |   | 0        |
| 0   |     |   | 0    |     | 0  |   | 0        |
| 0   |     |   | 0    |     | 0  |   | <b>0</b> |
| 0   |     |   | 0    |     |    |   |          |

1

| TTT | NET | 1 | A1_P | 100 | OG | 0 | 0        |
|-----|-----|---|------|-----|----|---|----------|
| 0   |     |   | 0    |     | 0  |   | 0        |
| 0   |     |   | 0    |     | 0  |   | 0        |
| 0   |     |   | 0    |     | 0  |   | 0        |
| 0   |     |   | 0    |     | 0  |   | 0        |
| 0   |     |   | 0    |     | 0  |   | <b>0</b> |
| 0   |     |   | 0    |     |    |   |          |



**Figure 4 TRK2NET2 OM Group**

```

TRK2NET2

CLASS: ACTIVE
START:2004/10/06 04:35:00 WED; STOP: 2004/10/06 04:39:48 WED;
SLOWSAMPLES: 3 ; FASTSAMPLES: 29 ;

 INFO (TRK2NET1_INFO)
 INCAATT2 NATMPT2 TRFCU2 SBSYU2
 CNCTAT2 TNDMATT2 TOTBSYU2 NANSWER2
 MIDFAIL4

0
 TTT NET 0 ENET 100 OG 3 1
 0 0 0 0
 0 0 0 0
 0

1
 TTT NET 1 A1_P 100 OG 0 0
 0 0 0 0
 0 0 0 0
 0

2
 TTT NET 2 A1_S 100 OG 0 0
 0 0 0 0
 0 0 0 0
 0

```

**Note:** Office parameter OFFICETYPE in table OFCSTD controls the generation of the registers for these OM Groups. These new registers will be included in all supported office types as defined for each of the OM groups.

### 1.2.3 Pegging the new OM register

The OM registers MIDFAIL and MIDFAIL3 will be pegged from the same location where the AUDT106 logs are generated irrespective of whether the throttle occurs or not.

## 1.3 Hardware Requirements or Dependencies

None

## 1.4 Software Requirements or Dependencies

None

## 1.5 Limitations and restrictions

None

## 1.6 Glossary

| Term | Description              |
|------|--------------------------|
| OM   | Operational Measurements |
| CS2K | Call Server 2000         |

## 1.7 References

A00003487 - Trimodal Provisioning, Logs and OMs.

A00006777 - GWC Core LOGs for call failures.

NTP 297-8021-814; North American DMS-100; Operational Measurements Reference Manual

NN 10264-709; Succession Performance Management Operational Measurements Reference

## *Product = CS 2000*

### **A00008902 -- SAM21 Log Changes (UA-AAL1)**

#### ***Design Description excerpts***

This feature add two lines at the end of the alarm detail entry, based on the digits of the alarm ID, for example, SCU310. The system will divide the three digits into two groups: the first digit stands for the alarm's category, and the

last two digits stand for the alarm's cause. The system uses the mapping table that follows to find the appropriate text strings for the alarm category and the alarm cause, and it then appends those two text strings to the end of the alarm detail.

### Example

OFC\_NAME \*\*\* SCU310 JUL30 17:48:52 5000 FLT Alarm Raised

Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1

Time: Thu Jul 30 17:48:45 EST 2002

Reason: CPU load high. One Minute Load is 19.11

Category: processingError

Cause: cpuCyclesLimitExceeded

## Mapping Tables

### Problem Category mapped to integers

|                  |     |
|------------------|-----|
| communications   | (1) |
| qualityOfService | (2) |
| processingError  | (3) |
| equipment        | (4) |
| environmental    | (5) |

### Probable Cause Values mapped to integers

| ITU-T X.733 probable causes       |            |
|-----------------------------------|------------|
| <b>adapterError</b>               | <b>(1)</b> |
| applicationSubsystemFailure       | (2)        |
| bandwidthReduced                  | (3)        |
| callEstablishmentError            | (4)        |
| communicationsProtocolError       | (5)        |
| communicationsSubsystemFailure    | (6)        |
| configurationOrCustomizationError | (7)        |
| congestion                        | (8)        |
| corruptData                       | (9)        |
| cpuCyclesLimitExceeded            | (10)       |

**Probable Cause Values mapped to integers**

|                                            |      |
|--------------------------------------------|------|
| dataSetOrModemError                        | (11) |
| degradedSignal                             | (12) |
| dteDCEInterfaceError                       | (13) |
| enclosureDoorOpen                          | (14) |
| equipmentMalfunction                       | (15) |
| excessiveVibration                         | (16) |
| fileError                                  | (17) |
| fireDetected                               | (18) |
| floodDetected                              | (19) |
| framingError                               | (20) |
| heatingOrVentilationOrCoolingSystemProblem | (21) |
| humidityUnacceptable                       | (22) |
| inputOutputDeviceError                     | (23) |
| inputDeviceError                           | (24) |
| IANError                                   | (25) |
| leakDetected                               | (26) |
| localNodeTransmissionError                 | (27) |
| lossOfFrame                                | (28) |
| lossOfSignal                               | (29) |
| materialSupplyExhausted                    | (30) |
| multiplexerProblem                         | (31) |
| outOfMemory                                | (32) |
| ouputDeviceError                           | (33) |
| performanceDegraded                        | (34) |
| powerProblem                               | (35) |
| pressureUnacceptable                       | (36) |
| processorProblem                           | (37) |
| pumpFailure                                | (38) |
| queueSizeExceeded                          | (39) |

**Probable Cause Values mapped to integers**

|                                                    |              |
|----------------------------------------------------|--------------|
| receiveFailure                                     | (40)         |
| receiverFailure                                    | (41)         |
| remoteNodeTransmissionError                        | (42)         |
| resourceAtOrNearingCapacity                        | (43)         |
| responseTimeExcessive                              | (44)         |
| retransmissionRateExcessive                        | (45)         |
| softwareError                                      | (46)         |
| softwareProgramAbnormallyTerminated                | (47)         |
| softwareProgramError                               | (48)         |
| storageCapacityProblem                             | (49)         |
| temperatureUnacceptable                            | (50)         |
| thresholdCrossed                                   | (51)         |
| timingProblem                                      | (52)         |
| toxicLeakDetected                                  | (53)         |
| transmitFailure                                    | (54)         |
| transmitterFailure                                 | (55)         |
| underlyingResourceUnavailable                      | (56)         |
| versionMismatch                                    | (57)         |
| Probable Cause values 58-100 are currently unused. |              |
| <b>ITU-T X.736 probable causes</b>                 |              |
| <b>authenticationFailure</b>                       | <b>(101)</b> |
| breachOfConfidentiality                            | (102)        |
| cableTamper                                        | (103)        |
| delayedInformation                                 | (104)        |
| denialOfService                                    | (105)        |
| duplicateInformation                               | (106)        |
| informationMissing                                 | (107)        |
| informationModificationDetected                    | (108)        |
| informationOutOfSequence                           | (109)        |

**Probable Cause Values mapped to integers**

|                           |       |
|---------------------------|-------|
| intrusionDetection        | (110) |
| keyExpired                | (111) |
| nonRepudiationFailure     | (112) |
| outOfHoursActivity        | (113) |
| outOfService              | (114) |
| proceduralError           | (115) |
| unauthorizedAccessAttempt | (116) |
| unexpectedInformation     | (117) |
| unspecifiedReason         | (118) |

***Product = CS 2000*****A59039138 -- (Visual) Message Waiting Indicator (V)MWI/CFX (DMS)**

**Note:** This feature was developed in SN05 and SN06 but was not activated for those releases in the North American market. It is now active and available in the North American market for SN07.

**Description****Overview**

This activity provides the following functionality in for the Integrated Access Cable IP Solution:

- CMWI (Class Message Waiting Indicator) for CEPT and Bellcore lines on Succession.
- Announcement as an optional replacement for the MWT stuttered dial tone indications for MWT suboptions CMWI and STD.

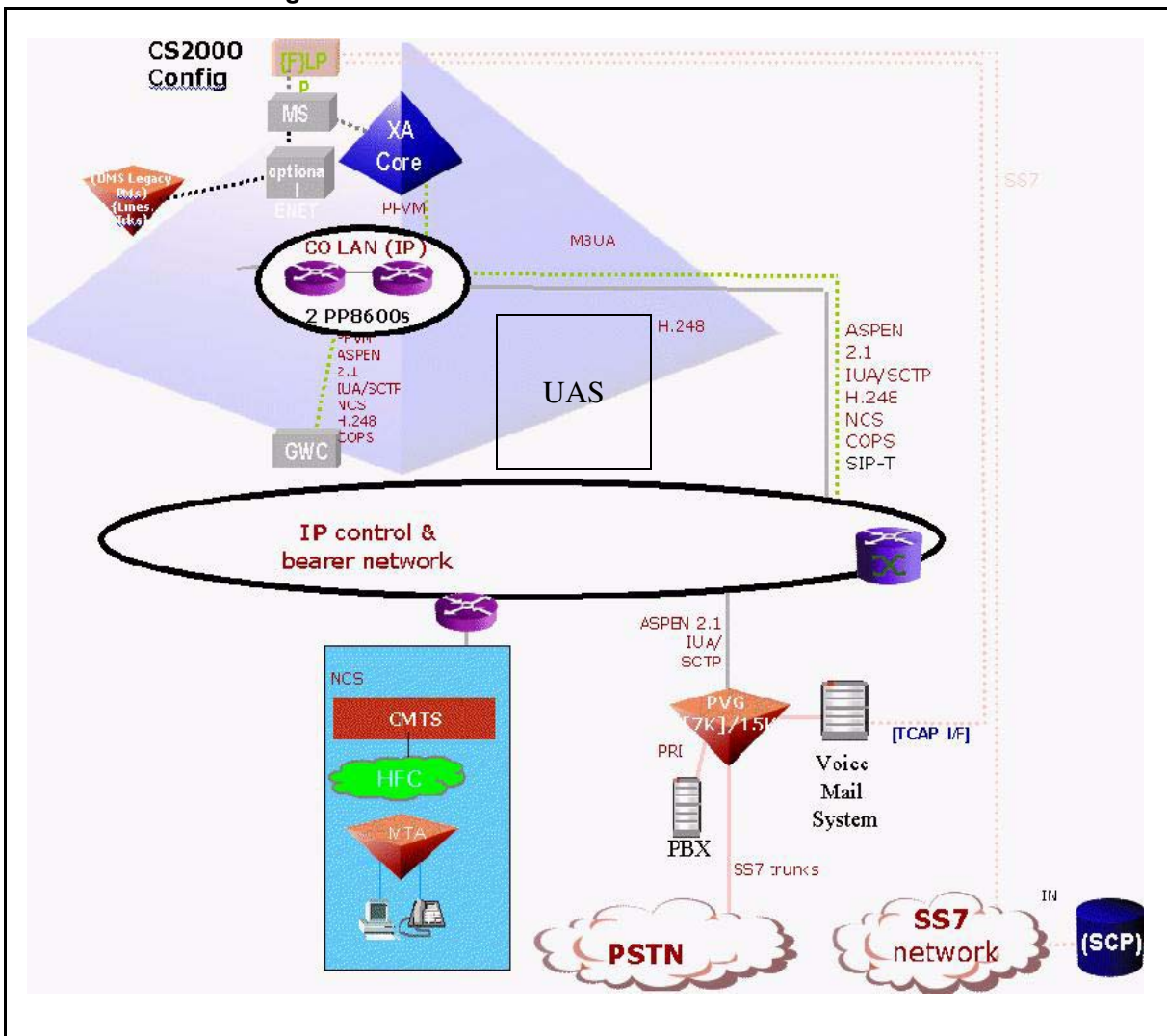
**Background Information**

Message Waiting allows a user to have a list of messages stored against their station. When a message is queued for a station, the MWI (Message Waiting Indicator) associated with the line is activated. When the last message is retrieved, the MWI is deactivated.

The MWT option has several sub options (STD, MWL, CMWI, PRN, MWL\_STD). This activity focuses on STD and CMWI suboptions.

- CMWI (Class Message Waiting)<sup>13</sup> is used for sets which are capable of displaying a MWI request in a display or as a flashing lamp. In addition it provides audible (stuttered dial tone) or ring splash notification. The last can be activated and deactivated by dialing an activation code.
- STD (Stuttered Dial Tone) This is only used for applying a stuttered dial tone if a message is waiting.

### Configuration VMWI

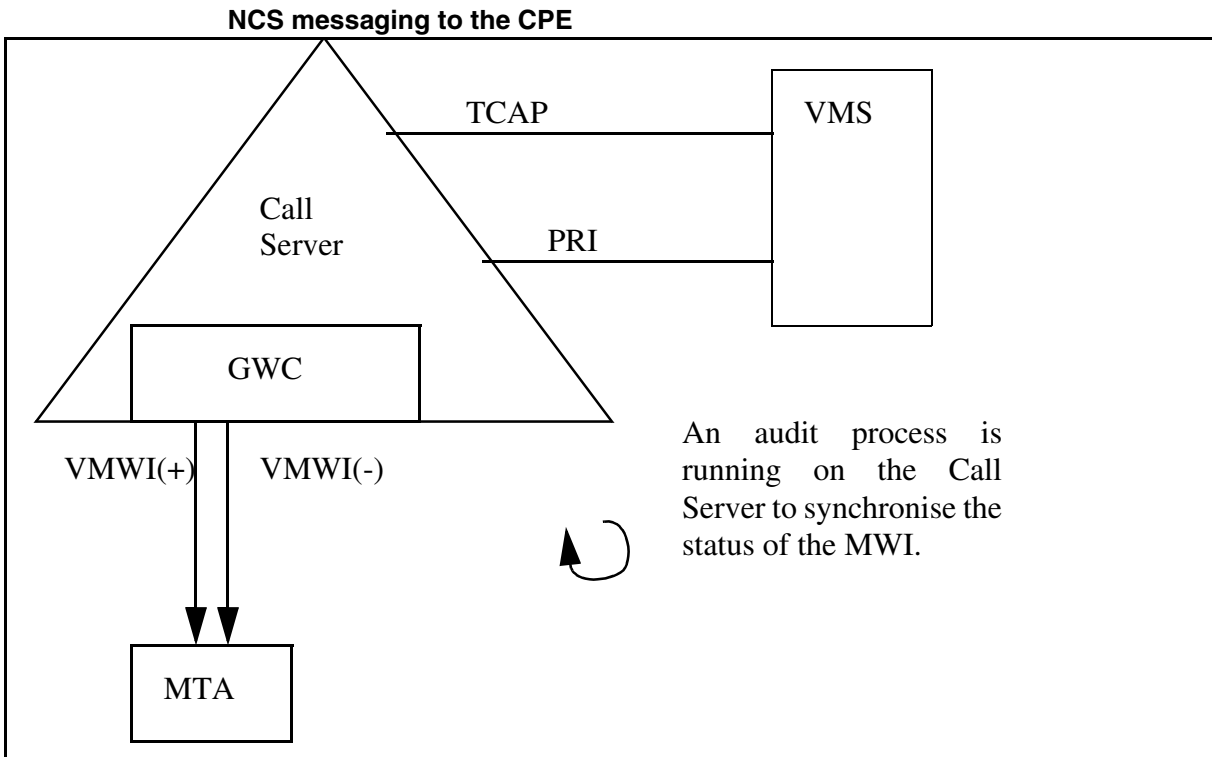


On MMP the Visual Message Waiting was signalled to the user by a special Line Class Tone. For Integrated Access Cable Media an NCS<sup>14</sup> message is

13. AG1954 'CLASS: VISUAL MESSAGE WAITING INDICATOR'

used. For activating the MWI a VMWI(+) message is sent. For deactivation a VMWI(-).

In addition to this the Call Server should periodically refresh the CPE's (Customer Premise Equipment) visual indicator (Audit).



### Agent Interworking

The Controlling user is a VMS (Voice Mail System) connected over

- PRI (MG15000 [previously PVG], PDTC)
- TCAP (LPP, USP)

to the Call Server.

The receiving user can be an IBN line connected via

- GWC - hosted on Motorola CG4500E MTA
- PLGC



## Provisioning of the MWT service

The message waiting service can be provisioned with the following options: {STD,MWL,CMWL,PRN,MWL\_STD}.

When the MWTANN announcement option is selected for MWT, datafill is required for the announcement. The CLI for this announcement must be MWT. The CLI can not be changed by the telco.

Below is sample datafill from a lab switch for the MWTANN feature:

```
> table clii
TABLE: CLLI
>pos mwt
MWT 433 5 TEST
>quit
CI:
>table anns
TABLE: ANNS
>pos mwt
MWT ALL 1 1 1 STND N 59 60
>quit
CI:
>table annmems
TABLE: ANNMEMS
>pos mwt 1
MWT 1
DRAM DRA
(0 DTM 7 3)$
>quit
CI:
>table annphlst
TABLE: ANNPHLST
>pos mwt 0
MWT 0
(HAVE_MSG)$
>quit

Create the announcement using DRAMREC
> DRAMREC
> connect the HSET to a DRAM with available space.....
>Record have_msg 3 nopad 8 3 12
> QUIT
```

\*\*\*\*This in turn creates a tuple in table dramphrs in a SN06 and beyond load. \*\*\*\*

```
>table dramphrs
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: DRAMPHRS
>pos 8 have_msg
8 HAVE_MSG 12 4 3 Y N 4
```

**Table IBNFEAT**

This feature adds the new announcement field MWT\_ANNOUNCEMENT to the MWT feature in table IBNFEAT. A datafill example follows.

```
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
LEN:
>HOST 01 0 07 00
DNNO:
>0
DF:
>mwt
FEATURE:
>mwt
NOTICE:
>std
MWT_ANNOUNCEMENT: N
>y
CAR:
>n
CRX: N
>n
TUPLE TO BE ADDED:
HOST 01 0 07 00
 0 MWT MWT STD Y N N
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
>
```

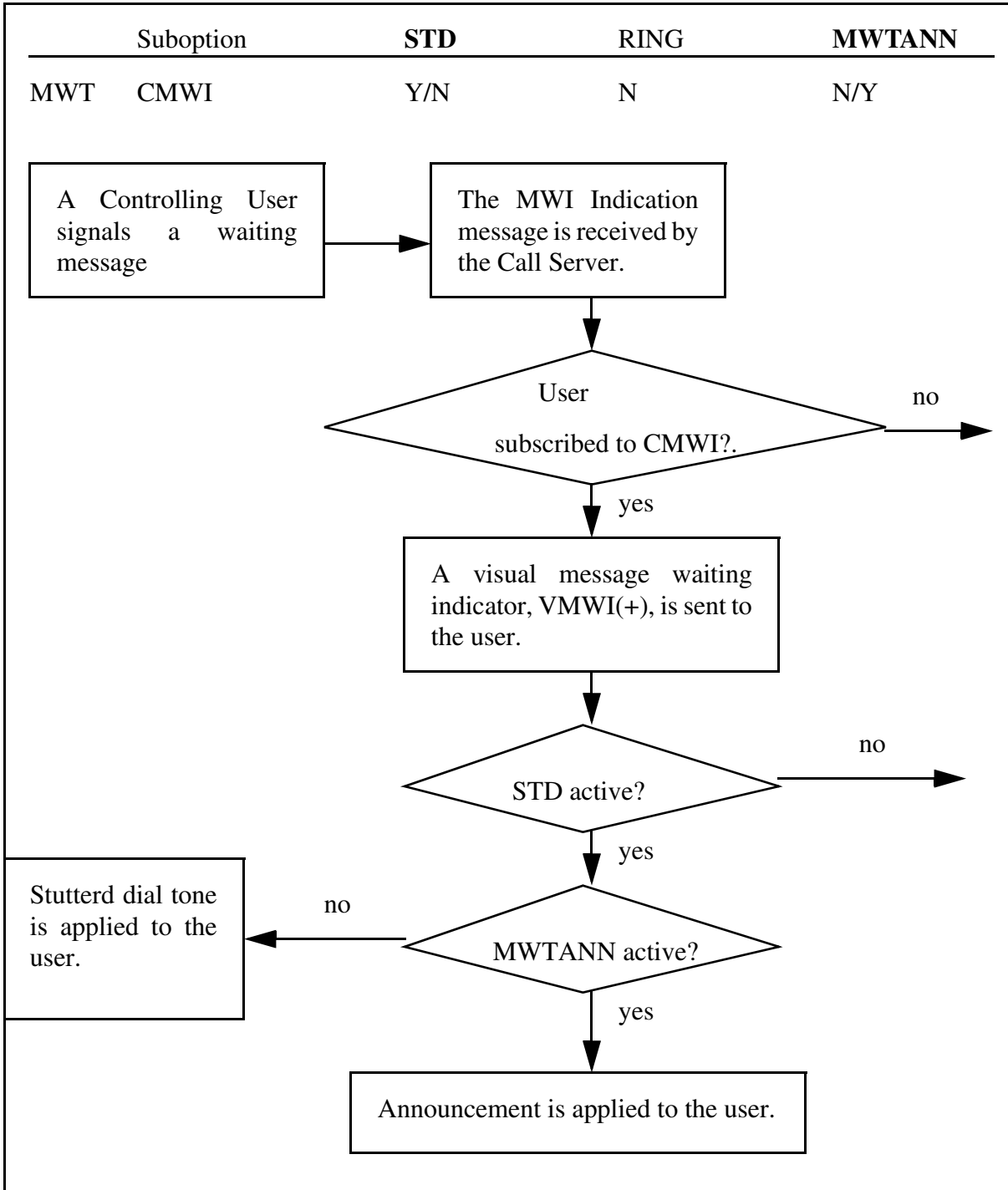
**Overview of the CMWI Service**

CLASS Message Waiting Indicator (CMWI) was developed under feature AG1954. The CMWI allows a subscriber to combine the visual message waiting indicator with audible indication types.

- **STD - Stuttered Dial Tone**  
On active message waiting a stuttered dial tone is applied when the user goes off-hook
- **Ring Splash**  
On active message waiting a ring burst is applied to the users' phone
- **MWTANN - Announcement**  
On active message waiting an announcement is applied to the user.

For the Integrated Access Cable IP solution the signaling to the end user was shown in [“NCS messaging to the CPE” on page 1067](#).

Figure [“CMWI Overview” on page 1070](#) shows a functional overview on how the different indication components work together.

**CMWI Overview**

This feature creates a new SERVORD prompt called MWT\_ANNOUNCEMENT. The provisioning for the CMWI service looks as follows:

**SERVORD example for CMWI**

```
>DN_OR_LEN:
>8838441020

OPTION:
>mw

NOTICE:
>cmwi

CMWISTD:
>y

MWT_ANNOUNCEMENT:

>y

CMWIRING:
>y

STATUS:
>act

CAR:
>y

CRRCFW:
>all

CRX:
>n

OPTION:
>$

COMMAND AS ENTERED:

ADO NOW 1 12 4 AM 8838441020 (MWT CMWI Y y Y ACT Y ALL N) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
```

The CMWI option must be activated in table RESOFC.

**Table RESOFC**

| KEY  | ENABLED | ACCESS      | FEATDATA |
|------|---------|-------------|----------|
| CMWI | Y       | SUBSCR CMWI | SINGLE 5 |

The datafill above shows an example of the CMWI entry where the feature is enabled, using the Single Data Message format and allows 5 retransmissions per activation/deactivation request.

### STD suboption

The STD option enables a subscriber to hear a stuttered dial tone if a message is waiting for them. This example shows the new SERVORD prompt called MWT\_ANNOUNCEMENT.

#### SERVORD example for STD suboption

```
>DN_OR_LEN:
>8838441020

OPTION:
>mwt

NOTICE:
>STD

MWT_ANNOUNCEMENT:

>Y

OPTION:
>$

COMMAND AS ENTERED:

ADO NOW 1 12 4 AM 8838441020 (MWT STD Y Y ALL N) $

ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
```

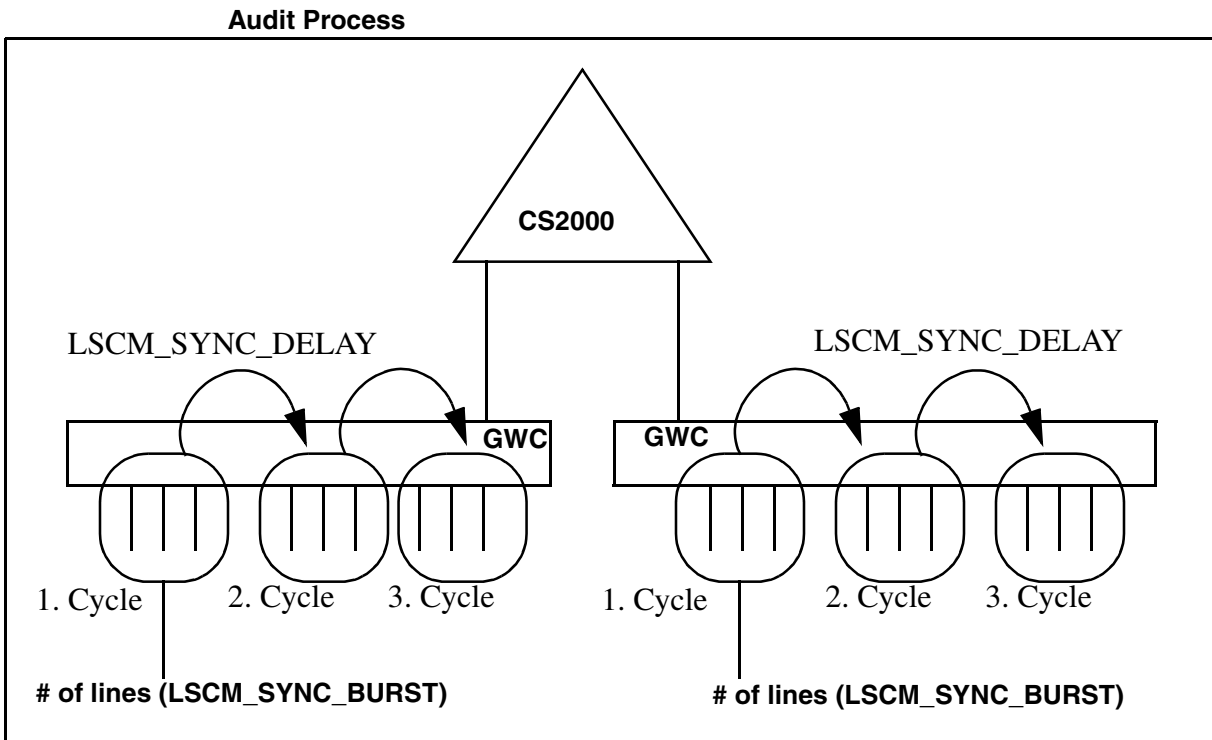
### Datafilling the Audit for CMWI

In table OFCENG two tuples have to be datafilled in order to start the audit.

#### OFCENG - Audit

| Tuple           | Value                                                  |
|-----------------|--------------------------------------------------------|
| LSCM_SYNC_BURST | # of lines audited per peripheral in one cycle (0..10) |
| LSCM_SYNC_DELAY | delay between audit cycles (5 to 6000 s)               |

The next figure shows the how the audit based on the two datafillable parameters works. LSCM\_SYNC\_BURST gives the number of lines on an each peripheral which is audited by one cycle. The LSCM\_SYNC\_DELAY defines the time between the cycles.



Engineering information is provided below.

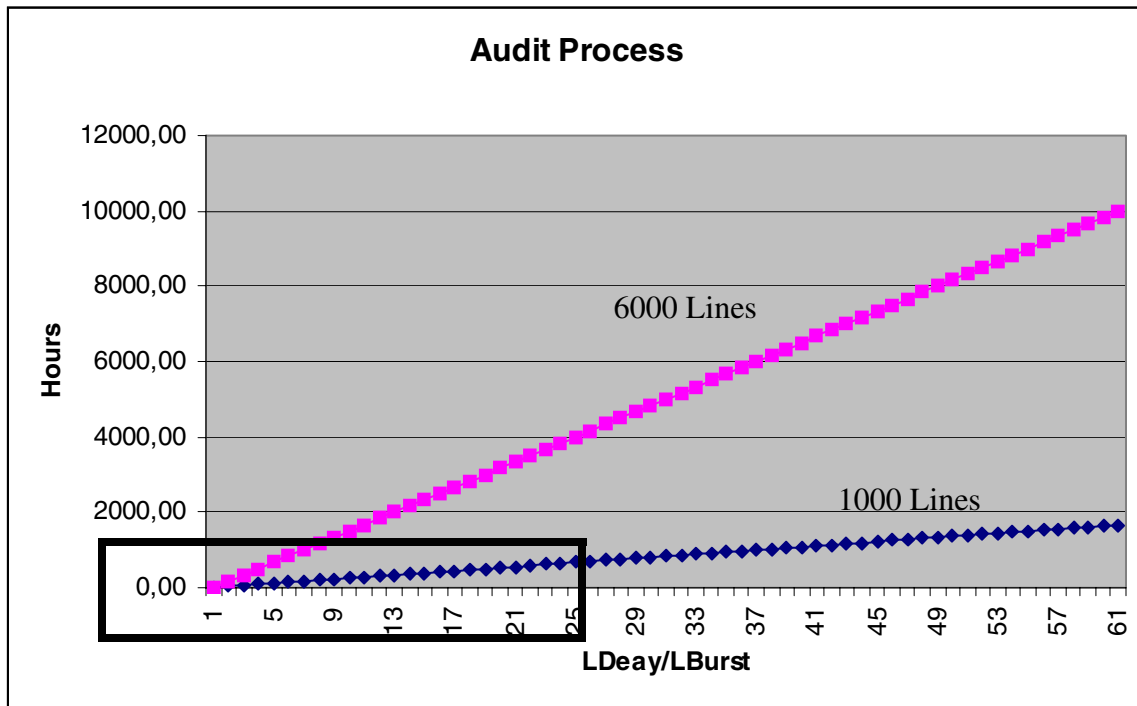
The following variables are defined:

- $L_{Burst}$  (as datafilled)
- $L_{SyncDelay}$  (as datafilled)
- $N_{all}$  (Number of all Lines connected to Peripherals)
- $t_{circle}$  (Time for one complete Circle for all Lines)
- $t_{c1}$  (Time for one circle)

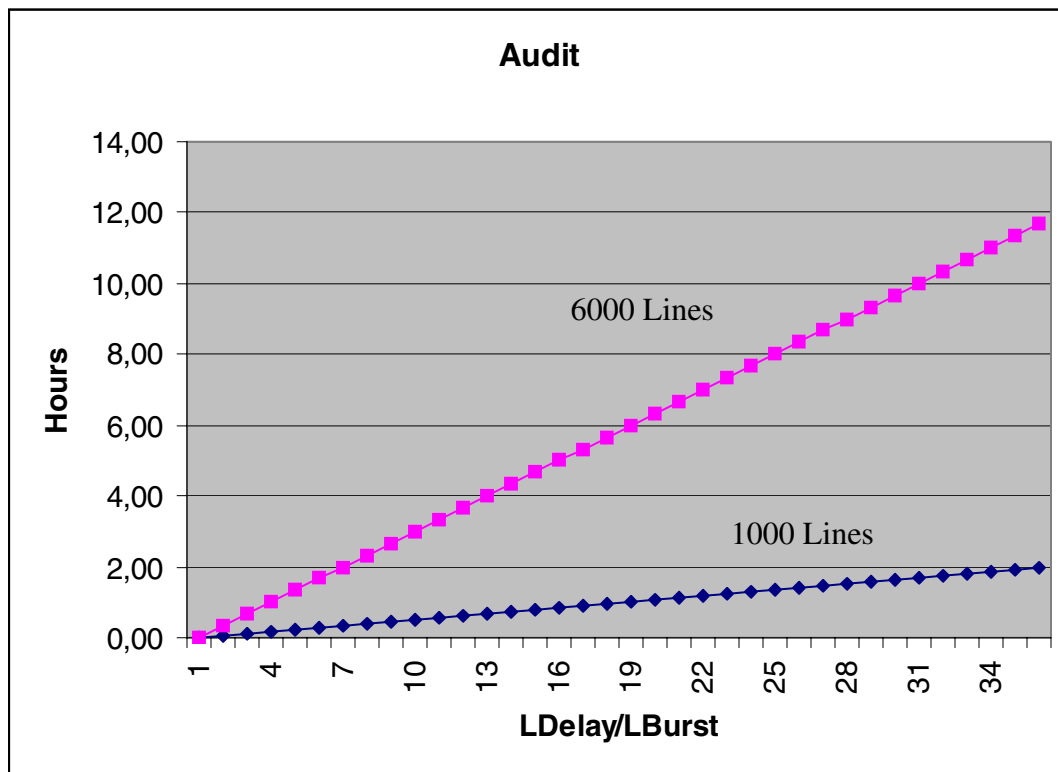
For the first calculation  $t_{c1} \ll 1s$  and is not be considered.

$$\left( \frac{L_{Burst}}{L_{SyncDelay} \cdot N_{all}} \right)^{-1} = t_{circle}$$

Diagram for Audit Process



A detailed view of the marked area is shown in the next figure.

**Diagram for Audit Process--detail**

If  $t_{c1}$  is not considered to be small in comparison with the complete cycle time the equation will change into:

$$\left( \frac{L_{Burst}}{(L_{SyncDelay} + t_{c1}) \cdot N_{all}} \right)^{-1} = t_{circle}$$

$t_{c1}$  is not only dependent on the time of the audit itself. Traffic and System Usage need to be considered.

### **Hardware Requirements or Dependencies**

n/a

### **Software Requirements or Dependencies**

n/a



## Limitations and restrictions

- SMDI as a Controlling User is not included in this activity.
- No CEPT style user activation/deactivation for CMWI Ring Splash supported
- V5.2 Receiving Users are not covered by this activity.
- MWT\_ANNOUNCEMENT will not be visible in KSETFEAT table for ISDN lines,
- Since MWT\_ANNOUNCEMENT is not supported for ISDN lines, this field automatically set to FALSE, during addition of MWT option to ISDN lines.

## Interactions

- CFIND: CFIND has precedence over MWI when Call Forwarding is active
- WML: The warm line timer is started after the announcement for MWT has finished playing.
- CEPT CFU (Call Forwarding Universal): CFU always gives a special dial tone to the user if CFU is active. If CFU and MWI are active and the user has the MWI announcement option, and first the announcement is played and then the user will hear the CEPT CFU tone.
- CEPT CFB/CFD: No interaction

## Applicable customer facing sections

### Fault Management

|        |       |
|--------|-------|
| Logs   | _____ |
| Alarms | _____ |

### Configuration

|                    |       |
|--------------------|-------|
| Data Schema        | _____ |
| User Interface     | _____ |
| Element Management | _____ |
| Security           | _____ |
| Service Order      | __X__ |
| Office Parameters  | _____ |

|                                   |       |
|-----------------------------------|-------|
| Accounting (includes AMA billing) | _____ |
|-----------------------------------|-------|

|                                                 |       |
|-------------------------------------------------|-------|
| Performance (includes operational measurements) | _____ |
|-------------------------------------------------|-------|

## Glossary

| Term  | Description                                                        |
|-------|--------------------------------------------------------------------|
| VMS   | Voice Mail System                                                  |
| CMWI  | Class Message Waiting Indicator                                    |
| MWI   | Message Waiting Indicator                                          |
| PRI   | Primary Rate Interface                                             |
| CEPT  | European Conference of Post and Telecommunications Administrations |
| CFx   | Call Forwarding                                                    |
| CLASS | Custom Local Area Signalling Service                               |

## References

- PKT-SP-EC-MGCP-I02-991201 PacketCable Network-Based Call Signalling Protocol Specification

***Product = CS 2000***

## Q00720293--Change in SWREL value

### 1.1 Applicable Solution(s)

All

### 1.2 Description of change

Office parameter SITELABELINFO in table OFCVAR controls the SWREL (Software Release) value. The default value is derived from the actual product load of the switch, i.e. SNxx. Effective with SN07, the software release value is no longer NCSxx/UCSxx, but is now SNxx. The SWREL value is used in the Block Header record when writing CDR records to DIRP files. It is also passed to the SDM and CBM when using SBA billing.

The SWREL value is not transferred with an ONP as are the SITEID and SITELOC portions of SITELABELINFO. To check the value for a software load, use the IMAGENAME command. Once the ONP has completed, the customer may change the default SWREL value if desired.

## ***Product = CS 2000 TOPS***

### **A00007271--TOPS EOL for SN08**

#### ***Functional Description***

##### **1.1 Applicable Solution(s)**

PT-AAL1

##### **1.2 Description**

This feature addresses all activities needed to support the TOPS End Of Life (EOL) program through SN08, including the following:

- Disables the TOPS Position via the Enhanced TOPS Message Switch (ETMS) functionality.
- Disables the TOPS Operator Centralization (OC) via the ETMS functionality.
- Identifies usage of the OSSAIN Management Information System (MIS) in the TOPS EOL logs.
- Removes the tables, parms, and OM groups which are obsolete.

Upgrades to SN08 or higher will result in loss of functionality if proper conversions to replacement features are not performed prior to the upgrade.

##### **1.3 Hardware Requirements or Dependencies**

None.

##### **1.4 Software Requirements or Dependencies**

None.

##### **1.5 Limitations and restrictions**

A position using an ETMS for data connectivity to a host will not be able to RTS or login once the host is upgraded to SN08 or higher.

A remote using an ETMS for data connectivity to a host will not be able to send calls to that host once the host is upgraded to SN08 or higher.

A host using an ETMS for data connectivity to a remote will stop receiving calls from that remote once the remote is upgraded to SN08 or higher.

##### **1.6 Interactions**

Positions connected via ETMS must be replaced by IP positions prior to an upgrade to SN08 or higher.

TDM-OC links must be replaced by OC-IP links prior to an upgrade to SN08 or higher. **Any OCHOST or OCHOSTQ tuple which references a TDM-OC link will cause a TABXFR to halt if not replaced prior to such an upgrade.**

## 1.7 Glossary

| Term | Description                      |
|------|----------------------------------|
| EOL  | End Of Life                      |
| ETMS | Enhanced TOPS Message Switch     |
| IP   | Internet Protocol                |
| OC   | Operator Centralization          |
| MIS  | Management Information System    |
| TOPS | Traffic Operator Position System |

## 2: Fault Management for A00007271

### 2.1 Fault management strategy

Not applicable.

### 2.2 Fault management tools and utilities

Not applicable.

### 2.3 Logs

Log Title/Log ID: TEOL100

The TEOL100 log was added in CSP12 and patched back to CSP09. This feature merely adds a potential new line to the existing log.

#### 2.3.1 Format

If OSSAIN MIS is used during a week, a TEOL100 log will be generated at midnight the following Sunday with the “OSSAIN MIS” functionality listed (other functionalities may also be listed). For example:

```
TEOL100 mmmdd hh:mm:ss ssdd INFO TOPS End Of Life Notification
Use of functionality scheduled for removal:
 Functionality Used Scheduled Removal

 OSSAIN MIS SN10
```

### 2.3.2 Explanation

Description: A TEOL100 log identifies functionality no longer supported in an upcoming load. A log is generated only when a functionality is used while scheduled for removal within 3 releases. All such functionalities used in the previous week are listed in that week's TEOL100 log.

### 2.3.3 Field descriptions

**Table 1 Field descriptions**

| Field              | Value      | Description                                                                              |
|--------------------|------------|------------------------------------------------------------------------------------------|
| Functionality Used | OSSAIN MIS | This field identifies the functionality that is scheduled for removal yet is being used. |
| Scheduled Removal  | SN10       | This field identifies the release in which the functionality is scheduled to be removed. |

### 2.3.4 Action

If there is a plan in place to transition off of the identified functionality prior to upgrading to the identified release (or beyond), then the notification logs can be ignored. If there is no such plan in place, then the next level of support should be contacted to initiate an appropriate transition plan.

### 2.3.5 Associated Operational Measurements or Performance Measurements

Unchanged.

### 2.3.6 Additional information

The log indicates only that the functionality was used one or more times in the previous week. It does not indicate when the functionality was used (i.e. the time of the log itself is not at all related to the time of usage), nor does it indicate the number of times it was used.

## 2.4 Alarms

Not Applicable.

## 2.5 Related documentation

A59036888 - TOPS EOL Succession Baseline

# 3: Configuration for A00007271

## 3.1 Hardware and Software Requirements

None.

## 3.2 Initial Configuration

Not applicable.

## 3.3 Office Parameters

The following office parameters have been deleted as of SN08:

- TOPS\_CROSS\_TEAM\_ROUTING (table OFCVAR)
- TOPS\_PASSWORD\_ENABLE (table OFCENG)

## 3.4 Upgrade Considerations

### 3.4.1 Dump and Restore

This section documents the behavior of certain tables over an ONP from a pre-SN08 load to an SN08 load (or higher).

#### 3.4.1.0.1 Table TMSOCDL

All tuples datafilled in table TMSOCDL will be dropped.

#### 3.4.1.0.2 Table OCGRP

All tuples datafilled in table OCGRP as LAPD (indicating ETMS) will be dropped.

#### 3.4.1.0.3 Table VLMEM

All tuples datafilled in table VLMEM which reference a LAPD tuple in OCGRP will be dropped.

#### 3.4.1.0.4 Table OCHOST

*A tuple datafilled in table OCHOST which references a LAPD tuple in OCGRP will halt the table transfer.*

#### 3.4.1.0.5 Table OCHOSTQ

*All tuples datafilled in table OCHOSTQ which reference a LAPD tuple in OCGRP will halt the table transfer.*

#### 3.4.1.0.6 Table TQMSFCQA

*All tuples datafilled in table TQMSFCQA as SA (in the ASSTAREA field) will halt the table transfer.*

#### 3.4.1.0.7 Table TOPSPOS

All tuples datafilled in table TOPSPOS as TMS (indicating ETMS) will be dropped.

#### 3.4.1.0.8 Table PARSMBR

All tuples datafilled in table PARSMBR which reference a TMS tuple in TOPSPOS will be dropped.

### 3.4.2 Element Management Upgrade

Not applicable.

### 3.4.3 Downgrade impact

None.

## 3.5 Data Schema

### 3.5.1 New/modified tables

**Table 1 New or modified tables**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| ARUIBMRT       | DELETED                  | N/A                                |
| DUAQOPT        | DELETED                  | N/A                                |
| DQMODEM        | DELETED                  | N/A                                |
| HOBI CDEV      | DELETED                  | N/A                                |
| OPR DAT        | DELETED                  | N/A                                |
| SAQSIZE        | DELETED                  | N/A                                |
| TOPSPARM       | CHANGED                  | UNCHANGED                          |
| VSN OPT        | CHANGED                  | UNCHANGED                          |
| VROPT          | CHANGED                  | UNCHANGED                          |
| OCGRP          | CHANGED                  | UNCHANGED                          |
| TOPSPOS        | CHANGED                  | UNCHANGED                          |
| OCHOSTQ        | CHANGED                  | UNCHANGED                          |
| TQMSFCQA       | CHANGED                  | UNCHANGED                          |
| TMSOCDL        | CHANGED                  | UNCHANGED                          |
| TQOGTKEY       | CHANGED                  | UNCHANGED                          |

### 3.5.2 Table information

The following tables have been deleted as of SN08:

- ARUIBMRT
- DUAQOPT
- DQMODEM
- HOBI CDEV

The following tables have been deleted as of SN08:

- OPRDAT
- SAQSIZE

#### **3.5.2.1 Name: TOPSPARM**

The following parms have been removed as of SN08, and cannot be re-added:

- LANG\_ERROR\_SCREEN\_DISPLAY
- ADAS\_ENABLE

The following parms have been removed as of SN08, and cannot be re-added:

- SA\_QUEUEING\_BY\_REQUEST\_AGE

#### **3.5.2.2 Name: VSNOPT**

The following parms have been removed as of SN08, and cannot be re-added:

- OPR\_0PLUS\_3RD\_DISPLAY
- OPR\_0PLUS\_COL\_DISPLAY
- OPR\_0PLUS\_3RDCON\_DISPLAY
- OPR\_0PLUS\_CLDCON\_DISPLAY

#### **3.5.2.3 Name: VROPT**

The following parms have been removed as of SN08, and cannot be re-added:

- DA\_BP\_HOTEL\_ROOM\_REQUIRED

The following parms have been removed as of SN08, and cannot be re-added:

- TOPSACD\_DASERV\_INSTANCE
- TOPSACD\_INTCserv\_INSTANCE

#### **3.5.2.4 Name: OCGRP**

All tuples with a DLSEL (within the DLOVRLAY field) of LAPD will be removed as of SN08, and cannot be re-added.

#### **3.5.2.5 Name: TOPSPOS**

All tuples with a DATATYPE (within the DATAPATH field) of TMS will be removed as of SN08, and cannot be re-added.

#### **3.5.2.6 Name: OCHOSTQ**

As of SN08, all tuples which have a REROUTESEL of Y will have VLTHROTL removed from their REASONS set (if it is present). If a REASONS set contains only VLTHROTL, then the REROUTESEL will be set to N and the ALTHOST will be removed. VLTHROTL cannot be re-added to a REASONS set.



**3.5.2.7 Name: TQMSFCQA**

All tuples with an ASSTTYPE (within the ASSTAREA field) of SA cannot be added as of SN08.

**3.5.2.8 Name: TMSOCDL**

All tuples will be removed as of SN08, and cannot be re-added.

**3.5.2.9 Name: TQOGTKEY**

A tuple with a KEYTYPE (within the KEYINFO field) of ASST will be removed as of SN08, and cannot be re-added.

**3.6 Service Orders**

Not applicable.

**3.7 Software optionality control (SOC)**

Not applicable.

**3.8 Element Management**

Not applicable.

**3.9 User interface changes**

Not applicable.

**3.10 OSSGate Interface Changes**

Not applicable.

**3.11 Security**

Not applicable.

**3.12 Configuration Walkthrough**

Not applicable.

**4: Performance for A00007271****4.1 Performance management strategy**

Not applicable.

**4.2 Performance management tools and utilities**

Not applicable.

## 4.3 Performance Measurements (PM), Operational Measurements (OM), and stats

### 4.3.1 OM groups removed

The following TOPS OM groups have been removed as of SN08:

- DUAQ
- DUAQMOD

The following TOPS OM groups have been removed as of SN08:

- TOPSPSZ

### 4.3.2 OM group TOPSALT changed

The ALTVL register has been removed from the TOPSALT OM group as of SN08. The ALTDEF, ALTOFL, ALTDL, and ALTTOT registers are unchanged, although the ALTTOT register will now appear on the same line as the others.

Previously, a tuple was displayed within OM group TOPSALT if and only if the corresponding call queue was datafilled in table OCHOSTQ. As of SN08, a tuple is displayed within TOPSALT if and only if the corresponding call queue is datafilled in OCHOSTQ **with a REROUTESEL (within the RRDATA field) of Y**. Tuples with a REROUTESEL of N do not specify an alternate host, and hence cannot generate a peg in TOPSALT for that call queue.

### 4.3.3 OM group TOPSOC changed

The OCMCCS register has been removed from the TOPSOC OM group as of SN08. The OCINI and OCQABN registers are unchanged.

***Product = CS 2000 TOPS***

## **A00007713--TOPS-IP Robustness**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

PT-AAL1, DMS

#### **1.2 Description**

The feature enhances the TOPS-IP product with the following:

- A TOPS615 information log indicating operator teams and number of positions in each team using voice auto-compression is created.
- The post command in the mapci;mtc;appl;topsip;topspos level is enhanced to create a post set of all in service IP positions with auto-compression on. The listset command displays the positions in the posted set. The info command in the mapci;mtc;appl;topsip;topspos level is enhanced to display the auto-compression status for the posted position.

## 1.2.1 Background

IP positions typically select the G.711 voice packet protocol as long as voice quality (latency, jitter, packet loss) is acceptable. When facilities are lost or data network equipment fails, and the available bandwidth is less than that required for IP positions, network performance degrades (that is, packet loss and jitter increase). IP positions detect the network quality degradation and will go into the voice auto-compression mode selecting G.723 protocol on the next call. Once auto-compression is entered, the position remains in that mode for approximately four hours.

## 1.2.2 New Functionality

### 1.2.2.1 TOPS615 Log

The IP position sends an auto-compression message to TOPS to indicate the position has voice auto-compression turned on. When the position exits the auto-compression mode, an auto-compression message indicating off is sent.

The TOPS615 information log is generated indicating the operator teams and the number of positions in each team with auto-compression turned on. The log is generated if an auto-compression message has arrived during an approximate 5 minute audit period. It is also generated if an IP position with auto-compression turned on goes through a service affecting state change (i.e. bsy). Once auto-compression has been turned off for all positions, the log indicates no operator teams or positions have auto-compression on.

### 1.2.2.2 TOPSPOS MAP Post / Info Commands

The mapci;mtc;appl;topsip;topspos post command has parameter 'AC' added. When used, this parameter creates a post set of all in service IP positions with voice auto-compression turned on. The listset command is then used to display the position list.

The mapci;mtc;appl;topsip;topspos info command is enhanced to display the auto-compression status for the posted position.

## 1.3 Hardware Requirements or Dependencies

None

## 1.4 Software Requirements or Dependencies

- TOPS base functionality, SOC option OSB00101

## 1.5 Limitations and restrictions

- The auto-compression status of IP positions is not maintained during the One Night Process norestartswact. The auto-compression status is turned off for all IP positions after the norestartswact.
- If the auto-compression message indicating auto-compression has been turned off is lost, manual intervention (i.e. bsy) may be required to update the auto-compression status.
- If the auto-compression message indicating auto-compression has been turned on is lost, the auto-compression status in the switch is not updated to indicate an on status. In this event, the RAMP position may be utilized verify the auto-compression status.
- The IP position software must be capable of sending the auto-compression message.

## 1.6 Interactions

TOPS-IP positions send TOPS an auto-compression message indicating if auto-compression is on or off.

### Glossary

| Term | Description                             |
|------|-----------------------------------------|
| IP   | Internet Protocol                       |
| MAP  | Maintenance and Administration Position |
| RAMP | Remote Access Maintenance Position      |





# SN08 Feature Deltas

***Product = IEMS***

## **A00007302--SN08 IEMS-CEM Integration**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Description**

This feature integrates the functionality of CEM (Core Element Manager) to the IEMS (Integrated Element Management System).

CEM includes the Resource Discovery (RD), Fault Management (FM) and Performance Management (PM) support for wireline succession core (call server). Adding, deleting and managing CEM will be possible from IEMS.

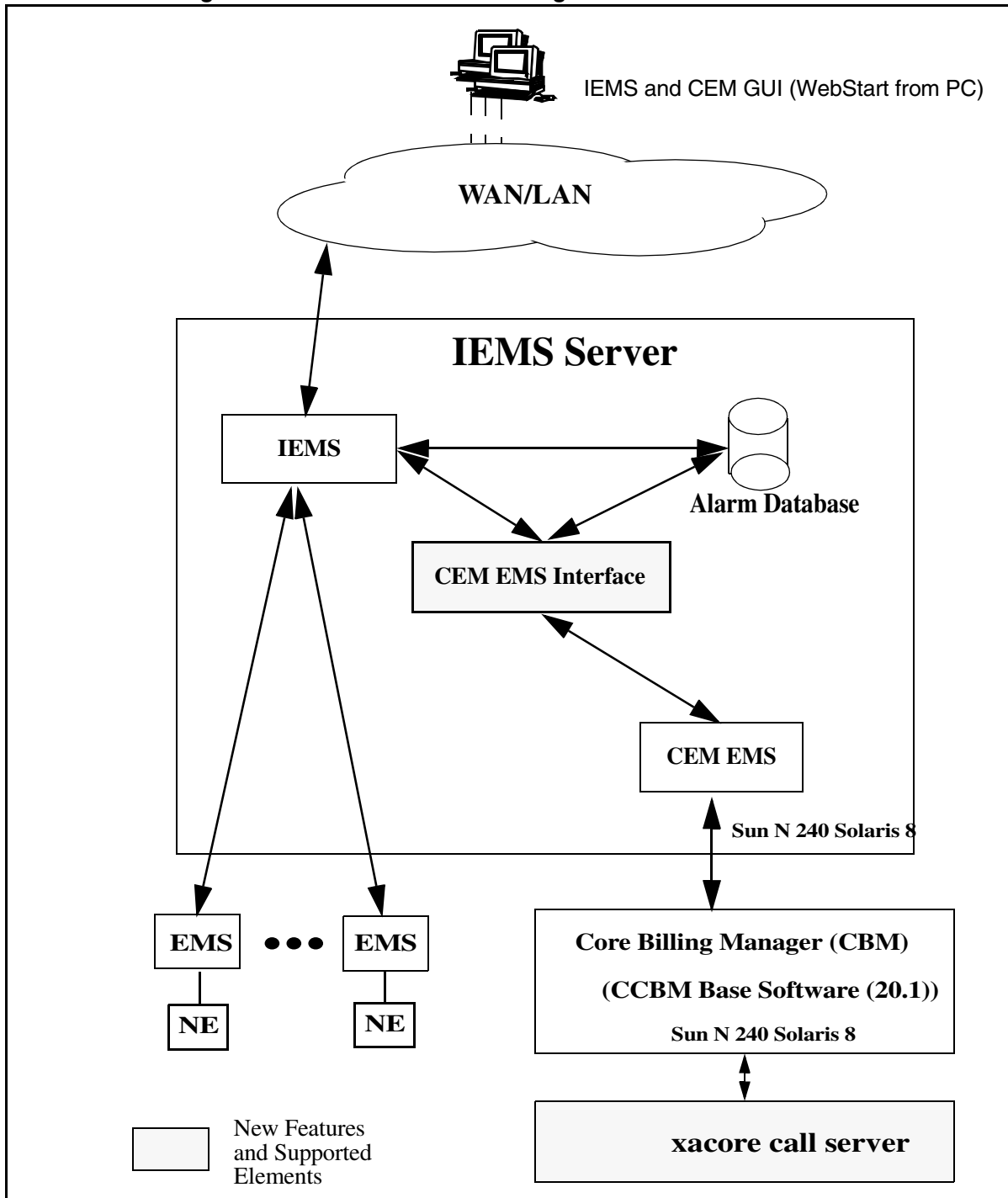
IEMS is comprehensive OAM&P solution with aggregated OSS interfaces, central browser and launching point and with unified security management.

The Core Element Manager system is the Nortel implementation of a Element Management System which provides

- An interconnection between the specific management applications that are on workstations and operated by systems personnel, over a Local Area Network/Wide Area Network (LAN/WAN) using Transmission Control Protocol/Internet Protocol (TCP/IP).
- An exchange of management information (data) between the management applications and the various elements of the Core Network elements. In the Circuit Core Network, the management application is the Core Element Manager, installed on a PC or Sun platform.
- Mediation functionality (data accumulation, filtering, manipulation, and transfer) between the network elements and the Core Element Manager workstation.

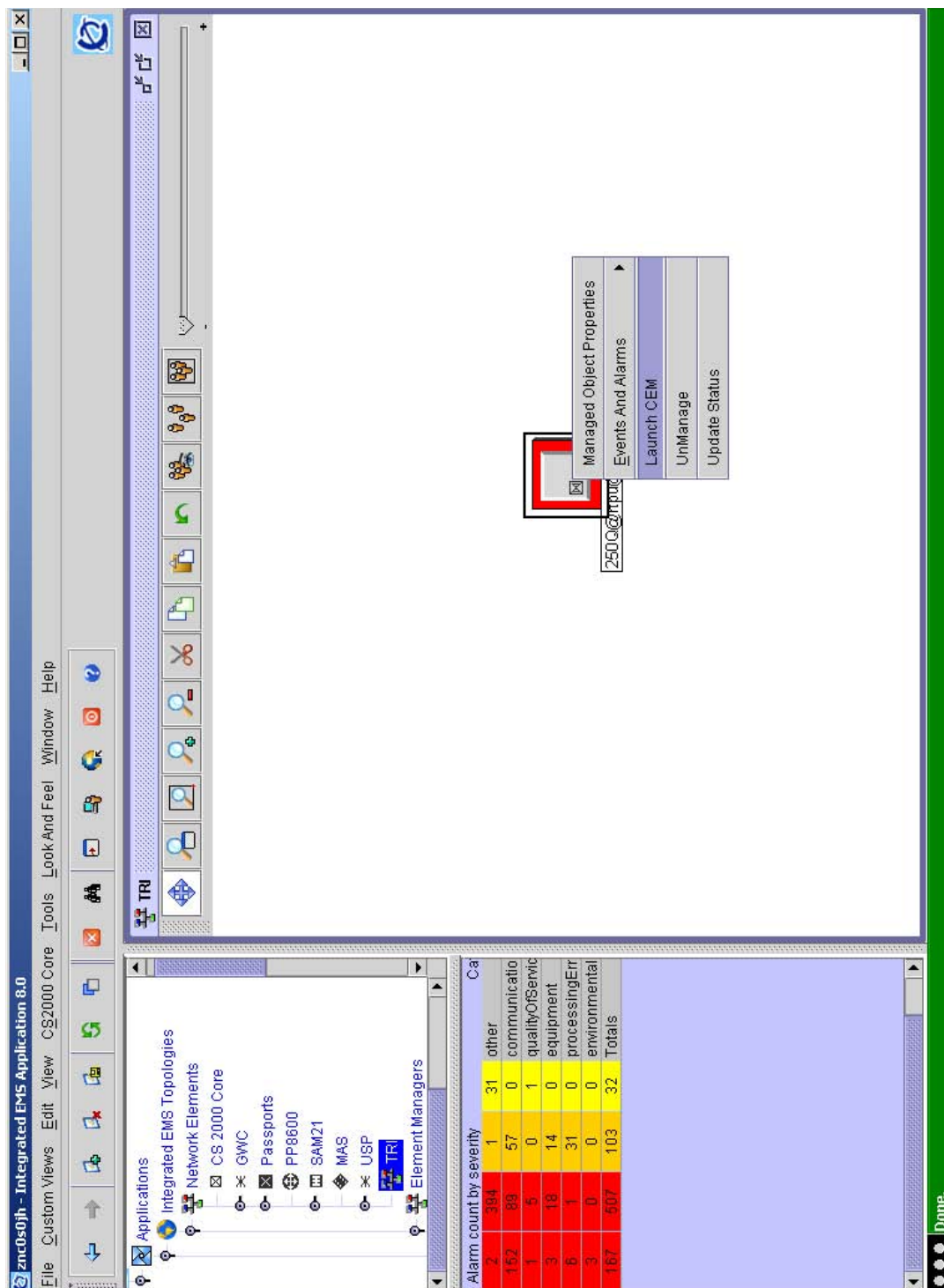
An overview for the integration of IEMS to CEM is shown in Figure 1 below:

**Figure 1 Functional Behavior Diagram**



### 1.2.1 Launching CEM From IEMS.

Launch the CEM Browser by selecting the NE from the “Element Manager” subtree in the left panel. Upon the right click on the NE icon, a menu list is invoked where “Launch CEM” can be selected to invoke the CEM Browser.





### 1.2.2 CEM components

The CEM software includes the Core Element Manager GUI, CEM Server, and OMC-S in CBM.

- Core Element Manager Browser: The GUI works on a PC or SUN Platform as a facilitator interaction between operations, administration, maintenance, and provisioning (OAM&P) personnel and the network elements.
- Core Element Manager (CEM) Server runs in a solaris box. The CEM server does back end work for performance management, fault management, configuration management and security management. Only one instance of CEM server software can run with a single IEMS.
- CBM is the mediation device which connects to the network element and get raw data such as OMs, logs and also the table data and pass this information to the cem server software.

These three components together performs the performance management, configuration management, fault management and security management functionality of an element management system.

#### **Fault Management**

The Fault Management (FM) function displays logs of alarm or fault events that occur within the network usually within a switch node. These alarms or events may have an impact on the overall service of the network element. To aid you in correcting any problems with a network element, the Fault Management function gives you information about the element so you can perform further maintenance operations. To help manage the alarms or events that occur within the network, Fault Management provides the following capabilities:

- displays alarms for a specific switch node. When a repeated alarm occurs for the same problem and the same resource, the most current alarm is shown. The previous alarms are kept as cleared alarms.
- displays a time-based histogram of alarm activity for time periods of 1 to 30 day. By default, the retention period is 30 days for uncleared alarms and 7 days for cleared alarms.
- displays alarms by alarm type (active, cleared, manual, and/or cleared manual alarms)
- displays alarms by selected severities (Critical, Major, Minor, Warning, unknown, or any combination)
- displays the element color to reflect the current alarm status

- displays alarms for specific filters, and causes specific actions to happen
- provides alarm notifications as they occur within the underlying resources
- exports alarm data to file
- prints alarm data
- provides filter criteria for alarms
- provides online help for alarms
- provides actions triggered by alarms

### **Configuration Management**

The Configuration Management function allows you to manage network elements (call server) within a circuit core network. The Configuration Management identifies the configuration and status of the network when it is initialized. The network elements are identified by icons and are arranged according to the network hierarchy. The Element Manager displays complete information for each target network element and its subordinate elements. The configuration display is updated automatically by the Configuration Manager maintaining consistency between the Element Manager display and its managed objects. This display is called containment tree.

The Configuration Manager includes the following features:

- Physical, Logical, icon, or List views from the Element Manager
- Pin and Unpin nodes
- nodes sorted by name or severity
- find carriers and linksets
- saving and retrieving of notes for nodes
- table access (add/read/delete/modify tuple operations)
- customs wizards to create/modify/delete trunks and other table access operations
- integration with performance management
- launch the Threshold Management window for a PM resource
- threshold management information in the info window for PM resources (last Value: Critical, Major, Minor)

- threshold crossed information in the info bubble
- Performance Management information in the info window for PM resources (pmCurrentData)
- Print support for CM window.

**Figure 2 Configuration Management Window in Icon view**

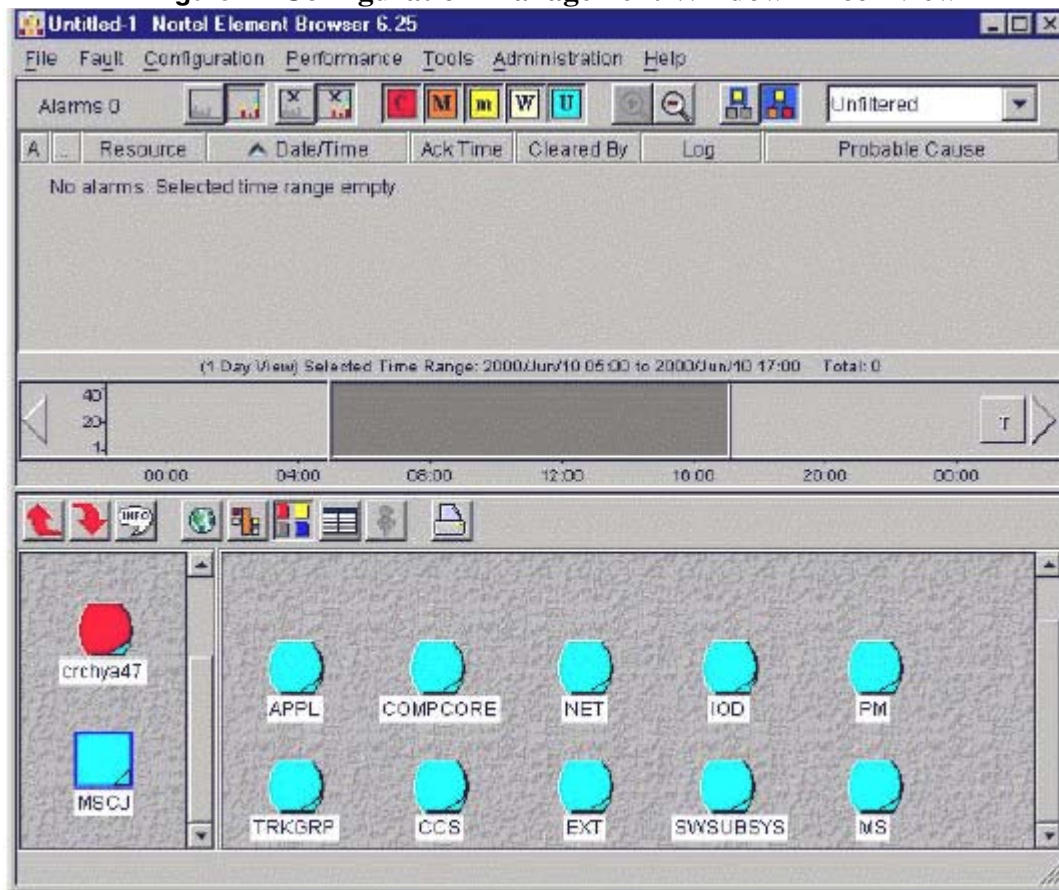


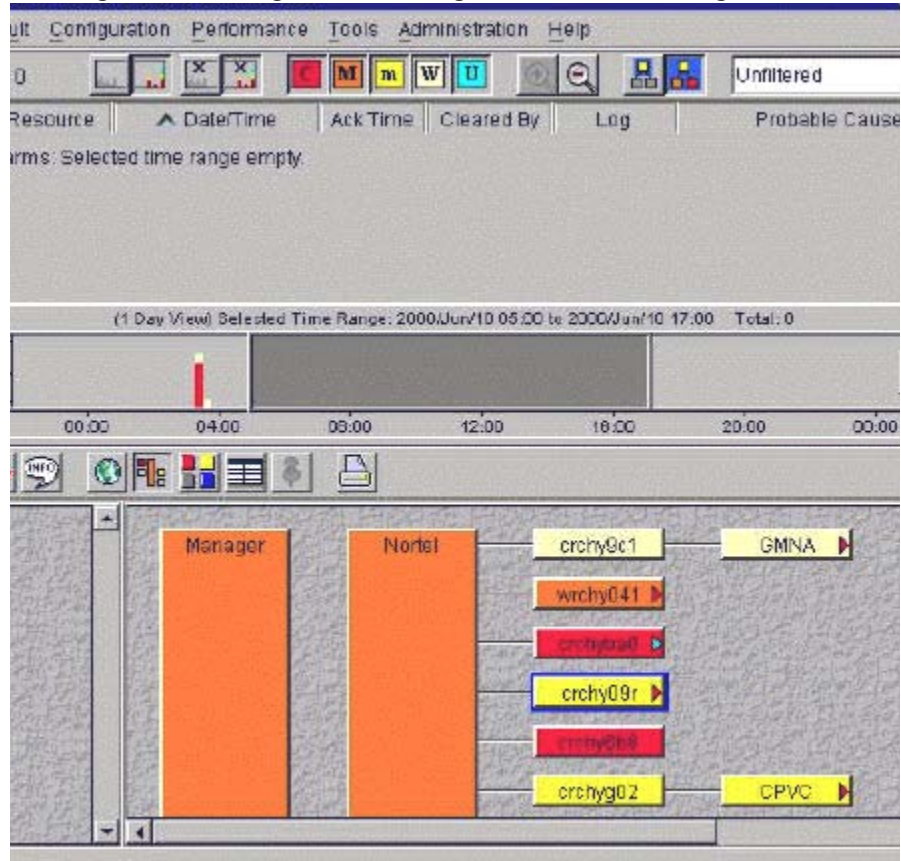
**Figure 3 Configuration Management window in logical mode**

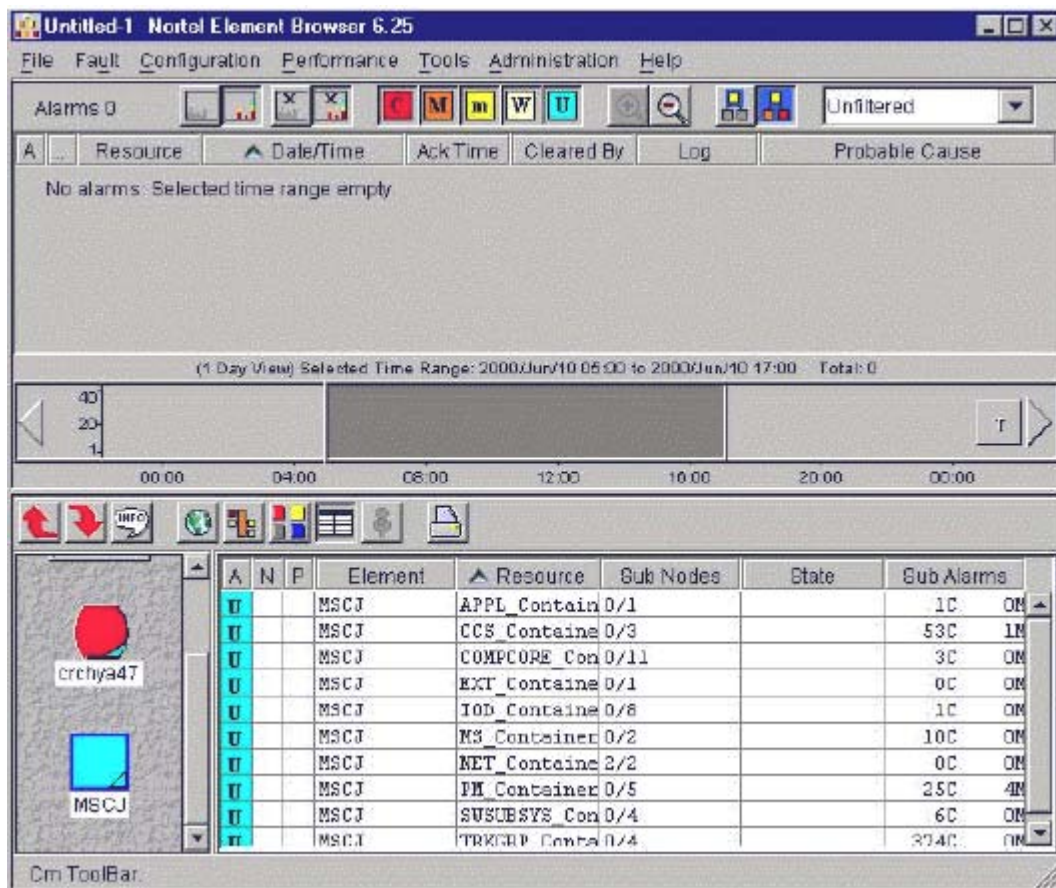
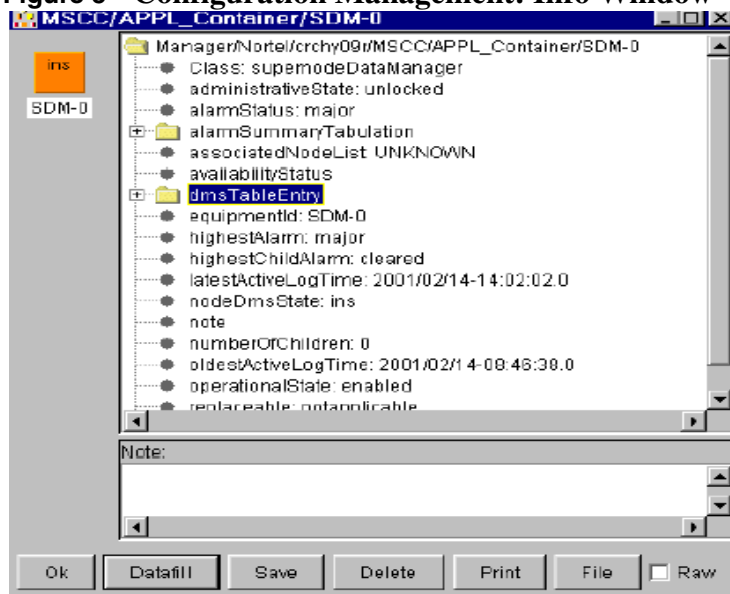
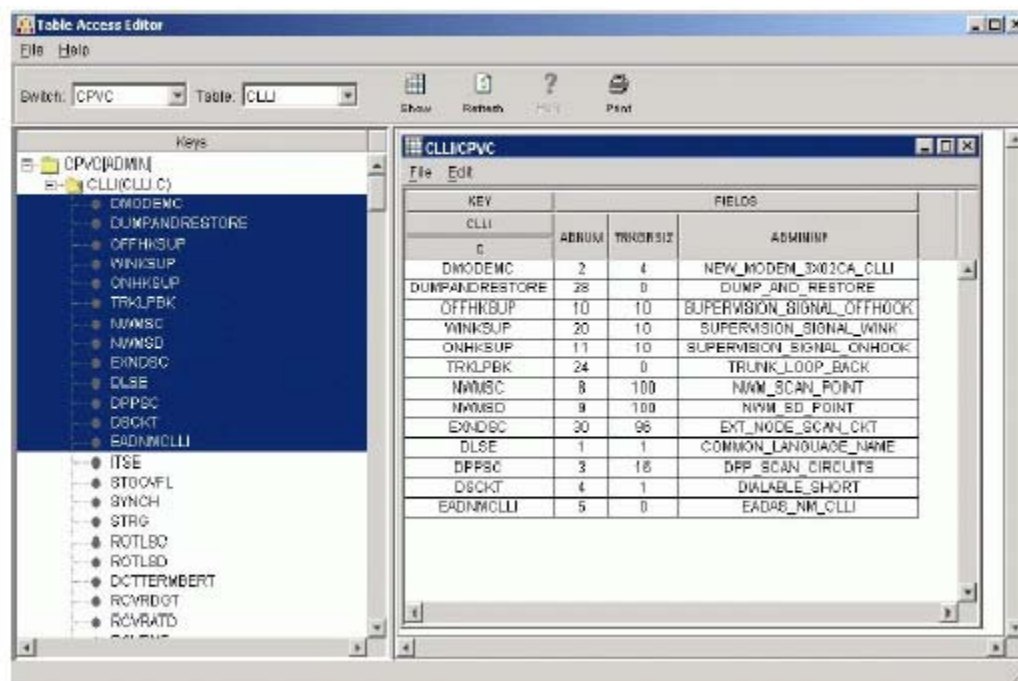
**Figure 4 Configuration Management Window in List view**



**Figure 5 Configuration Management: Info Window****Figure 6 Table Access Editor**

## Performance Management

The Operational Measurements (OM) system provides the operating company with the following measurements for the Circuit Core Networks (CCN) Call Server:

- switch performance measurements
- traffic measurements
- service data

You can view OM records to ensure that the CS switch operates at its fullest potential with optimum efficiency. New OM data is transferred from the switch every transfer period, such as every 15 or 30 minutes.

The Performance Management (PM) functionality does the following:

- Provides access to OMs in predefined measurement groups
- Displays OMs in operator-configurable studies, including a graph of specific OMs over a given timeframe
- Configures real-time updates of OMs with the CS transfer period as the minimum update frequency
- Allows exports and mass exports of OMs to files in two formats, the original switch text format, or a tab-delimited format for use by third-party applications such as spreadsheets or graphing utilities
- Displays data from multiple network elements on the same graph
- Displays errors, such as incomplete OM data for the requested study
- Sends the output display to printer
- Allows OM threshold settings
- Displays summary reports on a network elements

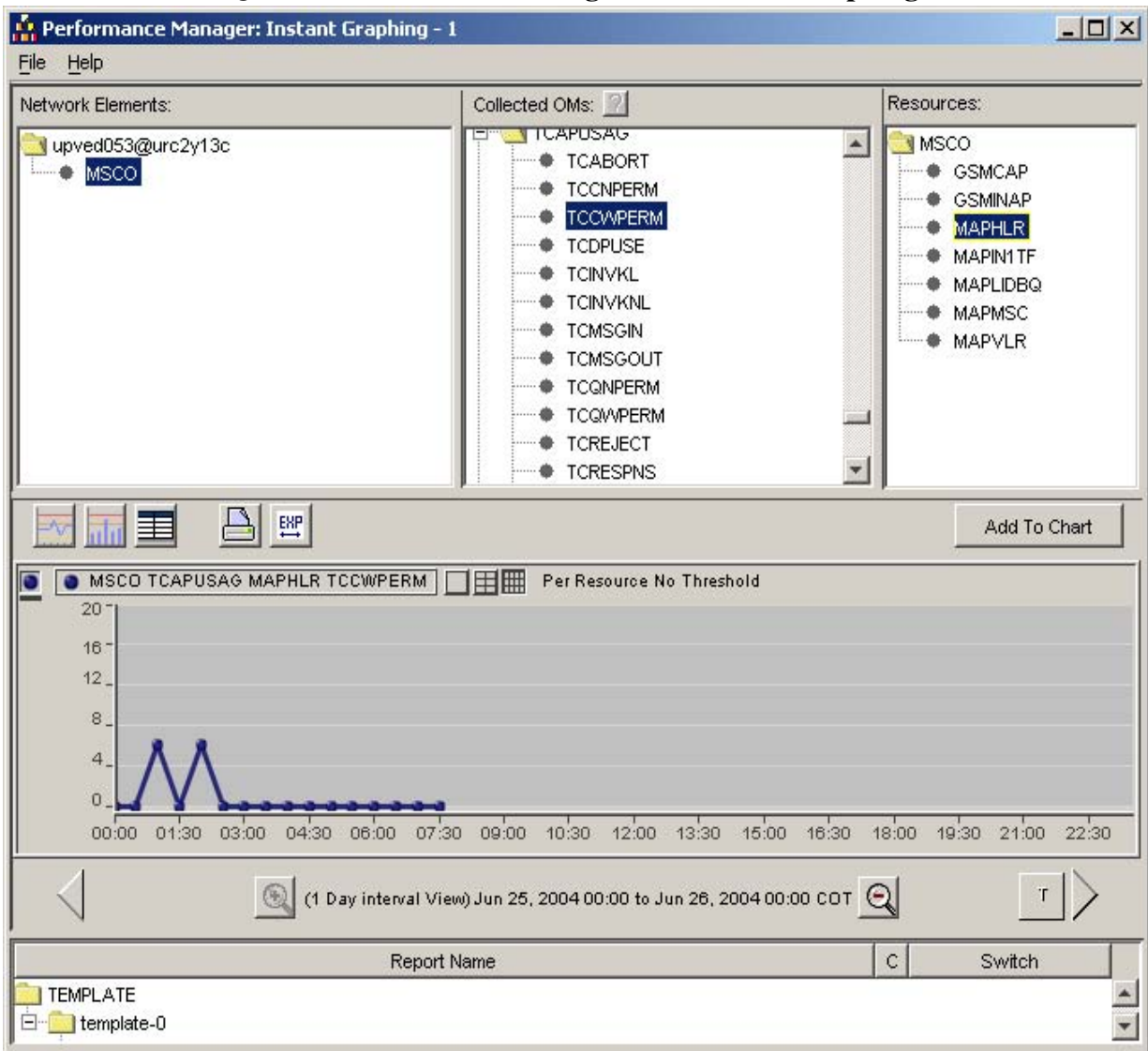
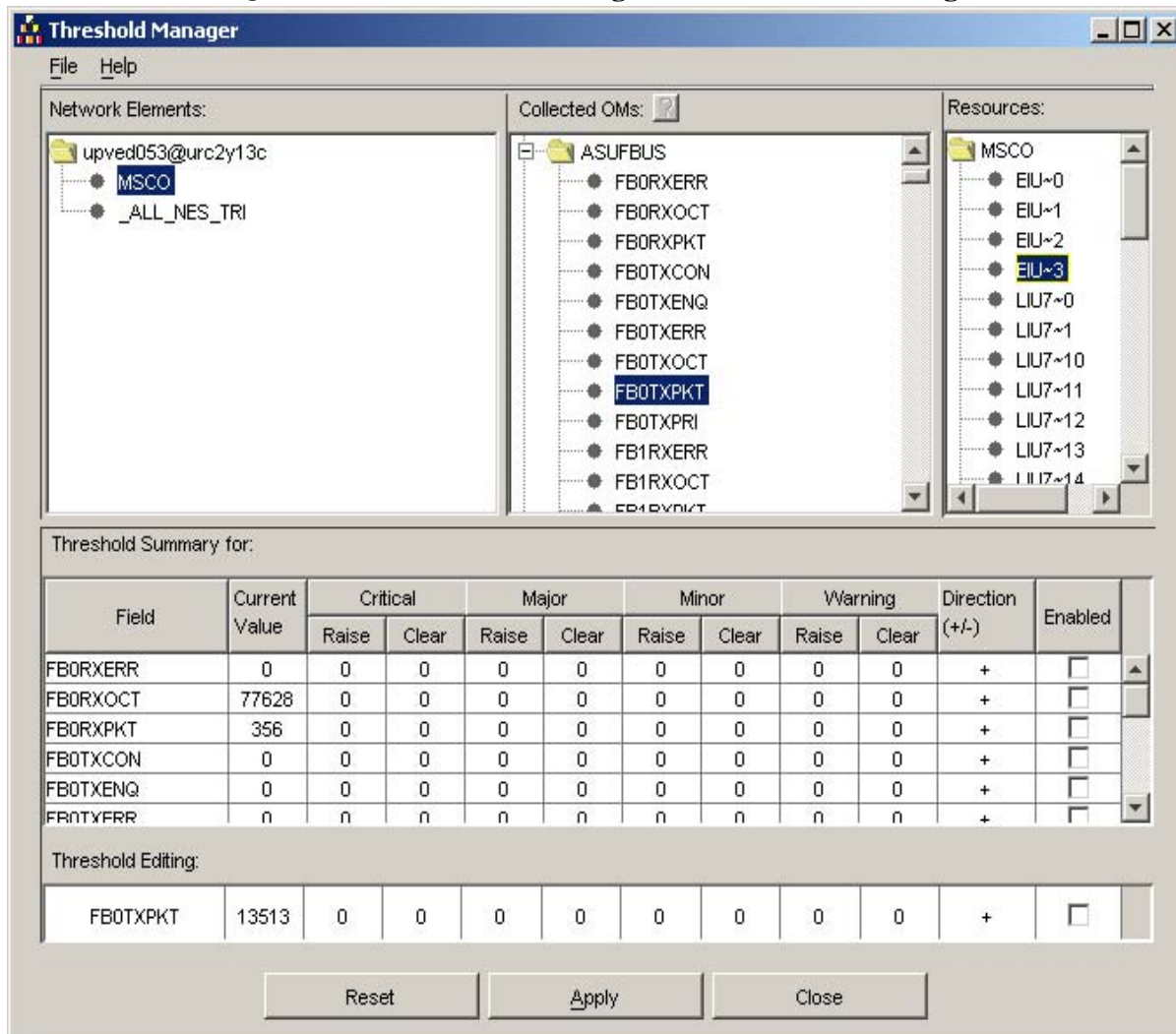
**Figure 7 Performance Management: Instant Graphing Window**



**Figure 8 Performance Management:Threshold Manager Window**

### Security Management

It is necessary to restrict access to the CEM browser to only users with valid login credentials. The security framework on the CEM system is provisioned with the functionality like login to access the CEM browser, encrypted login credentials, account lockout due to consecutive failed login attempts, change password capability, configuration of the Telnet or FTP session, timeout interval periods, generate Security Alarms and Event Logs (Journal File).

### 1.2.3 Launching CEM from IEMS

The integration of CEM into IEMS will enhance the capabilities of IEMS to manage the cs2k node through the CEM. Alarms from cs2k are stored in the IEMS alarm database and displayed in the existing alarm panel in the IEMS GUI.

### 1.2.4 Discovery of new resources

The resource discovery is implemented by extracting call server switch configuration data via the dmsDataServer. The status of resources are discovered through remote procedure calls (RPC's) on the core from rpcServer process on CBM. This feature ensures that all the tables representing the call server switch resources are discovered. The Table Access function in the CEM Browser supports all the tables residing in the call server switch.

The new RPC's will discover following resources:

- GWC (packetized lines and trunks)
- MG4K (packetized AAL1 trunks)
- IWSPM (hybrid interworking)
- LTC, LGC, SMA (legacy lines peripheral)
- LCD type nodes (legacy lines) – LCM, RDT, RCC
- ABI (packetized legacy lines)
- DPT (virtual trunks, BICC and SIP-T)

### 1.2.5 Support for New OM's

For the PM functionality, accumulation for all the call server OM's are supported. Pre-canned studies for the current DMS-MSC OM's that are common to the call server are also supported. OM groups can be selected and exported in tab delimited format or switch format which is exactly the way they appear in the core. Also OM group studies (graphical and text) are possible from the CEM GUI for the past OM reports. The extension OM groups and OM registers will be combined with base groups and registers. Please refer to the Appendix B for the OM's supported in this feature. These will be available through the interfaces provided by CEM. The existing performance subsystem in IEMS does not change.

### 1.2.6 Mapping of new logs

Alarms from the core will be mapped to their respective components in the containment tree. Please refer to the Appendix A of DID (Design Intent Document) for the logs supported in this feature.

## 1.2.7 Single authentication for IEMS and CEM

User will be required to enter the user's name and password as the IEMS login window. The userid will then be passed down to CEM.

### 1.2.7.1 Password Management and User Access Control

All password management and user access control will be done through Succession's central security admin system. CEM will be using the SSPFS user defined groups for user access control.

## 1.2.8 Configuration Tools

By default CEM Server supports logs for which there is a mapping defined but An configuration script/tool can be used to configure other logs (for which there is no mapping) coming from succession core.

Using this tool any logs that are coming from succession core can be unblocked and passed through to CEM Server. Such logs that are by default blocked, but later unblocked, get mapped into default containers in the CEM containment tree.

### 1.2.8.1 Addrep/Delrep Tool

A tool called llClient (log list client) on the CEM Server could be used to addrep or delrep the logs coming from the core. The tool provides the below listed functionalities -

- addrep - to pass through a log coming from core so that CEM will be able to receive the log
- delrep - to block a log coming from core so that the log will not be received by CEM
- addrep all - to pass through all logs coming from core so that CEM can receive all of them

#### Usage:

1. On the CEM Server, login as user nortel or root and change directory to /opt/nortel/exe/coreEMS/GEM18/llClient/dat/.
2. Edit the SDM\_HOST parameter value and give the hostname of the SDM/CBM, slicename or the IP Address of the SDM/CBM the server is connected to.
3. Change directory to /opt/nortel/exe/coreEMS/GEM18/llClient/bin/.

4. Issue command: `./logListClient.start <operation> <logType> <logNumber>`, where, operation is `addrep` or `delrep`, logType is the log name to `addrep` or `delrep` and logNumber is the number of the log to `addrep` or `delrep`.

[Note: Use “NIL” as logNumber to `addrep` or `delrep` all logs of a type.]

5. To make the `addrep` of the log function, the `logNormalizer` process must be busy/rts'ed using command line tool `applman` (Application Manager) on the CEM Sun Server. This tool is used to stop and start the CEM related processes running on the CEM Sun Server. Follow steps below for doing the same -

- a) On the CEM Server, change the directory to `/opt/nortel/data/coreEMS/nodes/server/bin`
- b) Issue the command `./applman -c`
- c) Issue command `down OMC-S`
- d) Issue command `down <slicename>`
- e) Issue command `busy logNormalizer`
- f) Issue command `rts logNormalizer`
- g) Issue command `exit` to exit from `applman`
- h) Issue command `help` to know all the available options in `applman`

5. Use “all” to `addrep` all logs. Usage - `./logListClient.start addrep all`.  
To restore to the previous configuration, follow steps below -

- a) Login to the SDM/CBM as root.
- b) Change directory to `/sdm/configdata/lsv` in case of SDM or `/cbmdata/configdata/00/lsv` in case of CBM.
- c) Issue command: `cp cmlogs.config.old cmlogs.config`
- d) Busy and Rts the `logDelivery` process using `sdmmtc` on the SDM or using `cbmmtc` on the CBM.

## 1.2.9 CEM Processes for handling OM's and Logs

### 1.2.9.1 Data Server process

The `dmsDataServer` process runs on the Core Billing Manager (CBM) platform, connects to call server node and receives both the Performance and Configuration data through Base APIs (Table Access Service and OM Access

Service). Depending on whether its operational measurements (OM) or configuration data, it forwards it to performance manager or configuration manager respectively.

The following warning/error/information messages are generated in cutlog to reflect various problems. These messages can be seen in /var/adm/custlog file to find exact cause and fix.

1. Desc Msg: Could not read switch name

Fix Msg: Check state of switch

2. Desc Msg: Could not create tuple

Fix Msg: Check state of switch

3. Desc Msg: Could not read VRINV table

Fix Msg: Check state of switch

4. Desc Msg: Could not initialize OM Access

Fix Msg: Contact system administrator

5. Desc Msg: Could not initialize OM Access

Fix Msg: Contact system administrator

6. Desc Msg: Could not get keyinfo object, excluding group , <group>

Fix Msg: Check OM group for bad key/info type

7. Desc Msg: Could not get key, excluding group , <group>

Fix Msg: Check OM group for bad key type

8. Desc Msg: Could not get info, excluding group , <group>

Fix Msg: Check OM group for bad info type

9. Desc Msg: Could not register initialization timer

Fix Msg: Contact administrator

10. Desc Msg: Rejecting register request for excluded group: <group>

Fix Msg: Check group key/info for validity

11. Desc Msg: “Could not open listening connection

Fix Msg: Check /etc/services

12. Desc Msg: Could not open listening connection: <service name>

Fix Msg: Check services file

### 1.2.9.2 NLClient and NLServer

The operational measurements (OM) are available on the CEM server for graphing, dashboard, thresholding, mass export and correlation. The CEM server gets all the performance data from CBM through NLServer and nlSafServer processes running on CBM platform. The nlClient process running on the IEMS server receives OM data from nlSafServer and NLServer, process it and forward it to the upstream processes. All these processes makes the handling of OM data easier and faster. It offloads the load on CEM server in processing OM data.

The nlClient process will generate the following warning/error/information messages in cutlog to reflect various problems. These messages can be seen in /op/nortel/logs/coreEMS/custlog file to find exact cause and fix.

1. Desc Msg: Failed to Read NLClient listenconfiguration

Fix Msg: update the NLClient.cfg file

2. Desc Msg: Failed to Read NLServer Service configuration

Fix Msg: update the NLClient.cfg file

3. Desc Msg: Failed to Read ConfigBroker Service configuration

Fix Msg: update the NLClient.cfg file

4. Desc Msg: Failed to Read SafServer Service configuration

Fix Msg: update the NLClient.cfg file

5. Desc Msg: Failed to read NLClient config file

Fix Msg: Contact next level of support

6. Desc Msg: Failed to register synchronous listen connection

Fix Msg: Contact next level of support

7. Desc Msg: Failed to initialize synchronous listen connection at service

Fix Msg: Contact next level of support

8. Desc Msg: Communications not initialized

Fix Msg: Contact next level of support

9. Desc Msg: Failed to register for connection to safServer at service  
<safConnectService>

Fix Msg: Contact next level of support

10. Desc Msg: Input from unknown end point

Fix Msg: Contact next level of support

11. Desc Msg: Failed to register for connection to nlServer at service  
<nlConnectService>

Fix Msg: Contact next level of support

12. Desc Msg: Failed to register for connection to nlServer at port <portnum>

Fix Msg: Contact next level of support

13. Desc Msg: Receive from NLServer failed

Fix Msg: Contact next level of support

14. Desc Msg: Lost connection to Cfg Broker

Fix Msg: Check CfgBroker Processes

15. Desc Msg: Receive from Data Collector failed

Fix Msg: Contact next level of support

16. Desc Msg: Unknown command received from archive client

Fix Msg: Contact next level of support

17. Desc Msg: Can not read command from synchronous client

Fix Msg: Contact next level of support

18. Desc Msg: Error while doing a send, discarding send queue

Fix Msg: Check Client Processes

19. Desc Msg: exiting due to failure in memory allocation

Fix Msg: restart the process after verifying the memory availability in the system

20. Desc Msg: Failed to Read NLClient listenconfiguration

Fix Msg: update the NLClient.cfg file

The following warning/error/information messages in cutlog will be generated by the NLServer and nlSafServer to reflect various problems. These messages can be seen in /var/adm/custlog file on the CBM to find exact cause and fix.

1. Desc Msg: Failed to register for connection to export Server at service <service name>

Fix Msg: Contact next level of support

2. Desc Msg: Failed to register for connection to Data Server at port <port number>

Fix Msg: Contact next level of support

3. Desc Msg: Failed to register for connection to Data Server at service <service name>

Fix Msg: Contact next level of support

4. Desc Msg: Failed to register for signals

Fix Msg: Contact next level of support

5. Desc Msg: Failed to send error

Fix Msg: Check SAFServer Process

6. Desc Msg: Communications not initialized

Fix Msg: Contact next level of support

7. Desc Msg: Input from unknown end point

Fix Msg: Contact next level of support

8. Desc Msg: Failed to send registration message to Data Server

Fix Msg: Check Data Server Process



9. Desc Msg: Failed to send deregistration message to Data Server  
Fix Msg: Check Data Server Process
10. Desc Msg: Invalid Message from archive.  
Fix Msg: Contact next level of support.
11. Desc Msg: store is disconnected:deregister the connection  
Fix Msg: Check Archive Process
12. Desc Msg: Receive from Archive failed  
Fix Msg: Contact next level of support
13. Desc Msg: Unreadable Data Server message type  
Fix Msg: Contact next level of support
14. Desc Msg: Unreadable OM report  
Fix Msg: Contact next level of support
15. Desc Msg: Failed to send correlation error data to Archive  
Fix Msg: Check Archive Process
16. Desc Msg: OM Registration failed  
Fix Msg: Contact next level of support
17. Desc Msg: Unreadable registration response  
Fix Msg: Contact next level of support
18. Desc Msg: OM DeRegistration failed  
Fix Msg: Contact next level of support
19. Desc Msg: Unreadable deregistration response from Data Server  
Fix Msg: Contact next level of support
20. Desc Msg: Failed to send CM info request to Data Server  
Fix Msg: Check Data Access Layer Process
21. Desc Msg: Failed to send deferred registration message to Data Server

Fix Msg: Check Data Access Layer Process

22. Desc Msg: Failed to send re-registration message to Data Server

Fix Msg: Check Data Access Layer Process

23. Desc Msg: Fatal status change

Fix Msg: Check Data Access Layer Process

24. Desc Msg: Unreadable OM status received from Data Server

Fix Msg: Contact next level of support

25. Desc Msg: Could not get GroupInfo

Fix Msg: Contact next level of support

26. Desc Msg: Failed to send nlGrpInfoRsp data to Archive

Fix Msg: Check Archive Process

27. Desc Msg: Unreadable CM info message from Data Server

Fix Msg: Contact next level of support

28. Desc Msg: Could not open License File

Fix Msg: Verify file existence and permission

29. Desc Msg: Unexpected message type from Data Server

Fix Msg: Contact next level of support

30. Desc Msg: Lost connection to Data Server

Fix Msg: Check Data Server Process

31. Desc Msg: Receive from Data Server failed

Fix Msg: Contact next level of support

32. Desc Msg: Communications not initialized

Fix Msg: Contact next level of support

33. Desc Msg: Failed to send end\_of\_report msg to store

Fix Msg: Check Archive Process

34. Desc Msg: Connection from unknown end point  
Fix Msg: Contact next level of support
35. Desc Msg: Switch name unknown  
Fix Msg: Contact next level of support
36. Desc Msg: Arithmetic overflow in correlation <correlation name>  
Fix Msg: Contact next level of support
37. Desc Msg: Failed to send OM data to Archive  
Fix Msg: Check Archive Process
38. Desc Msg: Error while doing a send to the Agent, discard send queue  
Fix Msg: Check Agent Process
39. Desc Msg: Port for the service <NLservice name> is not available.  
Fix Msg: Please update /etc/services file & restart NLServer
40. Desc Msg: Failed to register for connection to export Server at service <service name>  
Fix Msg: Contact next level of support
41. Desc Msg: Failed to register for connection to Data Server at port <port num>  
Fix Msg: Contact next level of support
42. Desc Msg: Failed to register for connection to Data Server at service <service name>  
Fix Msg: Contact next level of support

### 1.2.9.3 log Normalizer and logNormSAF Process

The fault data on being received from call server node is processed by logNormalizer process running on CEM. The logNormSAF process (running on the CBM platform) stores and forward this data to the CEM server.

The logNormalizer process generates error/warning/information messages in custlog whenever there is a problem encountered due to improper configuration, improper log formats etc. These messages can be seen in

/opt/nortel/logs/coreEMS/custlog file to find the description and fix of the problem.

1. Desc Msg: Event file <EventFileName> was not found ...logNormalizer exiting

Fix Msg: Check Path.

2. Desc Msg: Event delimiter cannot be more than one charcter long ...logNormalizer exiting

Fix Msg: check event formatter file for the delimiter after a event name and use it

3. Desc Msg: Event file "<<EventFileName<<" is empty ..logNormalizer exiting

Fix Msg: check path, file name and/or read write permission

4. Desc Msg: Event file "<<EventFileName<<" had errors ..logNormalizer exiting

Fix Msg: please look at the event file to check errors

5. Desc Msg: Mapper file "<<MapperFileName<<" was not found ...logNormalizer exiting

Fix Msg: check path, file name and/or read write permission

6. Desc Msg: Mapper delimiter cannot be more than one charcter long ...logNormalizer exiting

Fix Msg: check mapper file for the delimiter after a log name and use it

7. Desc Msg: Mapper file "<<MapperFileName<<" is empty ..logNormalizer exiting

Fix Msg: check path, file name and/or read write permission

8. Desc Msg: Mapper file "<<MapperFileName<<" has errors .."<<argv[0]<<" exiting

Fix Msg: please check the mapper file errors

9. Desc Msg: Mapping information parsing error for log "<<logName<<" empty information or wrong delimiter used

Fix Msg:

10. Desc Msg: output file "<<outputFileName<<" could not be opened  
Fix Msg: No action possible
11. Desc Msg: lostLogFile "<<lostLogFileName<<" could not be opened  
Fix Msg: Call Nortel Personal
12. Desc Msg: lostLogFile "<<outputFileName<<" is empty  
Fix Msg: Call Nortel Personal
13. Desc Msg: lostLogFormat string is empty  
Fix Msg: Call Nortel Personal
14. Desc Msg: lostLogTriggerSize is empty  
Fix Msg: Call Nortel Personal
15. Desc Msg: lostLogVisibleMsg string is empty  
Fix Msg: Call Nortel Personal
16. Desc Msg: lostLogVisLog string is empty  
Fix Msg: Call Nortel Personal
17. Desc Msg: sdmLogList is empty  
Fix Msg: Call Nortel Personal
18. Desc Msg: probeTimer string is empty  
Fix Msg: No probe is assumed
19. Desc Msg: checkLen string is empty  
Fix Msg: No checkLen is assumed
20. Desc Msg: No Lost Log Trigger message has been specified  
Fix Msg: Call Nortel Personal
21. Desc Msg: Could not send events to agent. Agent removed from output list.  
Fix Msg: No agents connected .. start an agent
22. Desc Msg: Unknown log format. No mapping will be done for input

Fix Msg: Contact Nortel Personal

### 1.3 Hardware Requirements or Dependencies

An IEMS server is required.

SDM/CBM is required

### 1.4 Software Requirements or Dependencies

IEMS Load is required

CEM Server software (GEM18) is required

SDM/CBM (GEM18) software is required

SN08 is required.

### 1.5 Limitations and restrictions

N/A

### 1.6 Interactions

This feature interacts with A00007304

### 1.7 Glossary

| Term    | Description                                      |
|---------|--------------------------------------------------|
| CEM     | Core Element Manager                             |
| IEMS    | Integrated Element Management System             |
| SDM     | Supernode Data Manager                           |
| CBM     | Core Billing Manager                             |
| PAM     | Pluggable Authentication Module                  |
| OM      | Operational Measurements                         |
| DMS-MSC | Digital Multiplex Switch-Mobile Switching Center |

### 1.8 Appendix A for A00007302: List of Supported Logs

| Log    | Event | Event Label              |
|--------|-------|--------------------------|
| ESA120 | INFO  | ESA DATA GENERATION      |
| ESA121 | INFO  | ESA DATA GENERATION FAIL |

|         |      |                                      |
|---------|------|--------------------------------------|
| ATM 300 | FLT  | ATM LCD Alarm Raised                 |
| ATM 301 | INFO | ATM LCD Alarm Cleared                |
| ATM 501 | INFO | ATM Signalling Status                |
| ATM 600 | INFO | ATM Address Registration             |
| ATM 605 | INFO | ATM Overload Event                   |
| ATM 806 | TBL  | ATM Packet Alarm                     |
| ATM 807 | INFO | ATM Packet Alarm                     |
| BITS300 | TBL  | BITS Fault Report                    |
| BITS301 | TBL  | BITS Timing Link Degradation         |
| BITS500 | INFO | BITS Timing Link State Change        |
| BITS600 | INFO | BITS Fault Report Cleared            |
| BITS601 | INFO | BITS Timing Link Degradation Cleared |
| BITS610 | INFO | Reference Quality Change             |
| BOOT101 | FAIL | (none)                               |
| C7UP104 | INFO | GROUP CIRCUIT BLO/UBL                |
| C7UP109 | INFO | CQ STATE CHANGE                      |
| C7UP113 | INFO | ISUP MTC TRBL                        |
| C7UP114 | INFO | ISUP ALERT                           |
| C7UP120 | FLT  | INVALID RANGE FIELD                  |
| C7UP130 | FLT  | Hop Counter Expired                  |
| C7UP301 | TBL  | Insufficient HC Value                |
| CARR300 | RTS  | CARRIER                              |
| CARR310 | FLT  | CARRIER                              |
| CARR320 | FLT  | CARRIER                              |
| CARR330 | INFO | CARRIER                              |
| CARR331 | INFO | CARRIER                              |
| CARR340 | INFO | CARRIER                              |
| CARR341 | INFO | CARRIER                              |

|         |        |                                |
|---------|--------|--------------------------------|
| CARR500 | RTS    | CARRIER                        |
| CARR501 | CBSY   | CARRIER                        |
| CARR510 | MANB   | CARRIER                        |
| CARR511 | SYSB   | CARRIER                        |
| CARR512 | CBSY   | CARRIER                        |
| CARR800 | RTS    | CARRIER                        |
| CARR801 | INFO   | CARRIER                        |
| CARR810 | TBL    | CARRIER                        |
| CARR811 | TBL    | CARRIER                        |
| CCMT301 | FLT    | Core PVC Segment Fault         |
| CCMT501 | INFO   | Core Connection State Change   |
| CCMT502 | INFO   | Peer Connection State Change   |
| CCMT601 | INFO   | Core PVC Segment Fault Cleared |
| DPTM500 | RTS    | DPT Terminals INSV             |
| DPTM501 | SYSB   | DPT Terminals OOS              |
| DPTM502 | MANB   | DPT Terminals OOS              |
| DPTM503 | PBSY   | DPT Terminals OOS              |
| DPTM504 | OFFL   | DPT Terminals OOS              |
| DPTM550 | INFO   | DPTRKS STATE CHANGE            |
| DPTM560 | INFO   | DPTRKS STATE CHANGE            |
| DPTM700 | INFO   | DPT Data Mismatch              |
| DPTM701 | INFO   | DPT Data Mismatch Cleared      |
| DPTM800 | (none) | 1st Threshold Exceeded         |
| DPTM801 | (none) | 1st Threshold Cleared          |
| DPTM802 | (none) | 2nd Threshold Exceeded         |
| DPTM803 | (none) | 2nd Threshold Cleared          |
| ENET308 | INFO   | (none)                         |
| ENET311 | FAIL   | ENET PSide Link Test           |



|         |              |                          |
|---------|--------------|--------------------------|
| EXT 102 | INFO         | (none)                   |
| EXT 108 | INFO         | (none)                   |
| IWBM500 | SYSB         | IW_Bridges OOS           |
| IWBM501 | RTS          | IW_Bridges INSV          |
| IWBM603 | INFO         | IWBM Audit               |
| IWBM800 | (none)       | 1st Threshold Exceeded   |
| IWBM801 | (none)       | 1st Threshold Cleared    |
| IWBM802 | (none)       | 2nd Threshold Exceeded   |
| IWBM803 | (none)       | 2nd Threshold Cleared    |
| LINK300 | TBL          | Transport Resource Fault |
| NODE300 | TBL          | Mismatch Fault           |
| NODE301 | TBL          | Hardware Fault           |
| NODE302 | TBL          | Software Alarm           |
| NODE303 | TBL          | Wrong Application Data   |
| NODE323 | TBL          | REx Fault                |
| NODE326 | TBL          | Hardware Fault           |
| NODE328 | TBL          | Hardware Fault           |
| NODE450 | SUMM         | REx Test Summary         |
| NODE500 | INFO         | Node State Change        |
| NODE600 | INFO         | System Recovery Action   |
| SDM 300 | TBL          | SDM Base Maintenance     |
| SDM 301 | TBL          | SDM Base Maintenance     |
| SDM 302 | TBL          | SDM Base Maintenance     |
| SDM 303 | TBL          | SDM Base Maintenance     |
| SDM 306 | TBL /<br>FLT | (none)                   |
| SDM 308 | TBL          | SDM Base Maintenance     |
| SDM 309 | TBL          | SDM Base Maintenance     |
| SDM 314 | n/a          | n/a                      |

|         |      |                                              |
|---------|------|----------------------------------------------|
| SDM 315 | TBL  | SDM Data Dictionary                          |
| SDM 317 | TBL  | SDM Base Maintenance                         |
| SDM 321 | TBL  | SDM Base Maintenance                         |
| SDM 327 | TBL  | SDM Base Maintenance                         |
| SDM 500 | INFO | SDM Base Maintenance                         |
| SDM 501 | RTS  | SDM Base Maintenance                         |
| SDM 502 | MANB | SDM Base Maintenance                         |
| SDM 503 | SYSB | SDM Base Maintenance                         |
| SDM 504 | TBL  | SDM Base Maintenance                         |
| SDM 505 | OFFL | SDM Base Maintenance                         |
| SDM 550 | INFO | Node Status Change                           |
| SDM 600 | INFO | SDM Base Maintenance                         |
| SDM 601 | INFO | SDM Base Maintenance                         |
| SDM 602 | INFO | SDM Base Maintenance                         |
| SDM 603 | INFO | SDM Base Maintenance                         |
| SDM 604 | INFO | Log Delivery Service: lost logs(CM side):XXX |
| SDM 608 | INFO | SDM Base Maintenance                         |
| SDM 609 | INFO | SDM Base Maintenance                         |
| SDM 617 | INFO | SDM Base Maintenance                         |
| SDM 621 | INFO | SDM Base Maintenance                         |
| SDM 627 | INFO | SDM Base Maintenance                         |
| SDM 630 | INFO | SDM Base Maintenance                         |
| SDM 650 | INFO | SDM Link Report                              |
| SDM 700 | INFO | SDM Base Maintenance                         |
| SDMB300 | FLT  | SDM BILLING SYSTEM                           |
| SDMB310 | FLT  | SDM BILLING COMMS                            |
| SDMB315 | TBL  | SDM BILLING SOFT ERROR                       |
| SDMB316 | FLT  | SDM BILLING PROC DEATH                       |

|         |        |                                    |
|---------|--------|------------------------------------|
| SDMB320 | TBL    | SDM BILLING BACKUP                 |
| SDMB321 | FLT    | SDM BILLING BACKUP                 |
| SDMB330 | FAIL   | SDM BILLING CONFIG                 |
| SDMB350 | FLT    | SDM BILLING CONTROL                |
| SDMB355 | TBL    | SDM BILLING DISK                   |
| SDMB360 | TBL    | SDM BILLING COMMS                  |
| SDMB365 | TBL    | SDM BILLING SOFT ERROR             |
| SDMB367 | FLT    | SDM BILLING MIB                    |
| SDMB375 | TBL    | SDM BILLING FILE TRANSFER          |
| SDMB380 | FAIL   | SDM BILLING CONFIG                 |
| SDMB390 | TBL    | SDM BILLING FILE TRANSFER SCHEDULE |
| SDMB400 | SUMM   | SDM BILLING SUMMARY                |
| SDMB530 | INFO   | SDM BILLING CONFIG                 |
| SDMB531 | INFO   | SDM BILLING CONFIG                 |
| SDMB550 | INFO   | SDM BILLING CONTROL                |
| SDMB600 | INFO   | SDM BILLING SYSTEM                 |
| SDMB610 | INFO   | SDM BILLING COMMS                  |
| SDMB615 | INFO   | SDM BILLING SOFT ERROR             |
| SDMB620 | INFO   | SDM BILLING BACKUP                 |
| SDMB621 | INFO   | SDM BILLING BACKUP                 |
| SDMB625 | INFO   | SDM BILLING RECOVERY               |
| SDMB650 | INFO   | SDM BILLING CONTROL                |
| SDMB655 | INFO   | SDM BILLING DISK                   |
| SDMB660 | INFO   | SDM BILLING COMMS                  |
| SDMB675 | INFO   | SDM BILLING FILE TRANSFER          |
| SDMB680 | INFO   | SDM BILLING CONFIG                 |
| SDMB820 | (none) | SDM BILLING BACKUP                 |
| SOS 701 | INFO   | TOD Critical Alarm                 |

|         |      |                                        |
|---------|------|----------------------------------------|
| SOS 702 | INFO | TOD Major Alarm                        |
| SOS 703 | INFO | TOD no Alarm                           |
| SPM 300 | TBL  | Device Fault Report                    |
| SPM 301 | TBL  | Device Patching Report                 |
| SPM 310 | TBL  | ECHO CANCELLER REPORT                  |
| SPM 311 | TBL  | SW Exception Report                    |
| SPM 312 | TBL  | Trap                                   |
| SPM 313 | TBL  | Fault                                  |
| SPM 314 | n/a  | IMC                                    |
| SPM 330 | TBL  | SPM Datasync Report                    |
| SPM 331 | TBL  | Failed Device Protection Switch        |
| SPM 332 | TBL  | SPM REX Aborted                        |
| SPM 334 | TBL  | SPM Clock Performance Out Of Spec      |
| SPM 335 | TBL  | Device Spare                           |
| SPM 336 | TBL  | Clock Range                            |
| SPM 337 | TBL  | SPM Has Entered Holdover               |
| SPM 338 | TBL  | SPM Has Been In Holdover Over 24 Hours |
| SPM 339 | TBL  | Clock Range                            |
| SPM 340 | FAIL | CM WarmSwact SPM Report                |
| SPM 341 | TBL  | SyncRM Entered Holdover                |
| SPM 342 | TBL  | SyncRM Entered Holdover 24             |
| SPM 344 | TBL  | Loss Of BITS Redundancy                |
| SPM 350 | TBL  | Resource Alarm State Changed           |
| SPM 352 | TBL  | SPM Entered ST3E Holdover              |
| SPM 353 | TBL  | SPM Entered ST3E Holdover24            |
| SPM 354 | TBL  | SPM Entered SMC Holdover               |
| SPM 355 | TBL  | SPM Entered SMC Holdover24             |
| SPM 356 | TBL  | SPM - Loss of Clock Unit Redundancy    |

|         |      |                                            |
|---------|------|--------------------------------------------|
| SPM 357 | TBL  | SPM Node Timing Degradation                |
| SPM 370 | FLT  | SPM Health Monitor Event                   |
| SPM 399 | TBL  | SPM Overload Report                        |
| SPM 500 | INFO | Device State Change                        |
| SPM 501 | INFO | Sync Operation Mode Change                 |
| SPM 510 | INFO | Sync Reference Switch                      |
| SPM600  | INFO | MS Mode Changed                            |
| SPM 619 | TBL  | Remote MG4K Fault Details                  |
| SPM 625 | INFO | SPM XOVER NonConformity Report             |
| SPM 630 | INFO | Device Protection Switch                   |
| SPM 637 | INFO | SPM Has Exited Holdover                    |
| SPM 638 | INFO | SPM Has Exited 24 Hour Holdover            |
| SPM 641 | INFO | SyncRM Exited Holdover                     |
| SPM 642 | INFO | SyncRM Exited Holdover 24                  |
| SPM 644 | INFO | Loss Of BITS Redundancy Cleared            |
| SPM 650 | PASS | (null)                                     |
| SPM 651 | FAIL | (null)                                     |
| SPM 652 | INFO | SPM Exited ST3E Holdover                   |
| SPM 653 | INFO | SPM Exited ST3E Holdover24                 |
| SPM 654 | INFO | SPM Exited SMC Holdover                    |
| SPM 655 | INFO | SPM Exited SMC Holdover24                  |
| SPM 656 | INFO | SPM Loss of Clock Unit Redundancy Cleared  |
| SPM 657 | INFO | SPM Node Timing Degradation - Cleared      |
| SPM 658 | INFO | SPM Timing Reference Source Fail - Cleared |
| SPM 660 | INFO | ECHO CANCELLER REPORT                      |
| SPM 661 | INFO | ECHO CANCELLER REPORT                      |
| SPM 670 | INFO | SPM Health Monitor Event                   |
| SPM 700 | INFO | SPM Trunk Subgroup DDM Audit               |

|         |      |                                                   |
|---------|------|---------------------------------------------------|
| SPM 701 | INFO | SPM Trunk Subgroup DDM Audit                      |
| SPM 702 | INFO | SPM Trunk Subgroup DDM Dynamic Update             |
| SPM 703 | INFO | SPM Trunk Member DDM Audit                        |
| SPM 704 | TBL  | SPM Trunk Member DDM Dynamic Update               |
| SPM 705 | TBL  | SPM PTS Trunk Maintenance                         |
| SPM 706 | INFO | SPM PTS Trunk Maintenance                         |
| SPM 707 | INFO | SPM ISDNPARAMETER DDM Dynamic Update              |
| SPM 708 | INFO | SPM ISDNPARAMETER DDM Audit                       |
| SPM 709 | INFO | SPM ISDNPROT DDM Dynamic Update                   |
| SPM 710 | INFO | SPM ISDNPROT DDM Audit                            |
| TRK 882 | INFO | GROUP INFO                                        |
| XAC 300 | FLT  | LowSM (Low Shared Memory)                         |
| XAC 302 | FLT  | LowPE (Low Processor Element)                     |
| XAC 303 | FLT  | MScomm (Message Switch Communication)             |
| XAC 304 | FLT  | TOD (Time Of Day Clock)                           |
| XAC 305 | FLT  | RTIF (Reset Terminal Interface)                   |
| XAC 306 | FLT  | Disk                                              |
| XAC 307 | FLT  | Tape                                              |
| XAC 308 | FLT  | Image Test Report                                 |
| XAC 309 | FLT  | AMDI (ATM Multinode Data Interface)               |
| XAC 310 | MANB | ManB (Card Manual Busy)                           |
| XAC 312 | FLT  | IOP (Input Output Processor Fault)                |
| XAC 320 | FLT  | SysBTh Alarm Raised                               |
| XAC 321 | FLT  | WgSlot (Shelf Audit Failure - Card Configuration) |
| XAC 322 | TBL  | PETrbl (Trouble)                                  |
| XAC 323 | TBL  | SMTTrbl (Trouble)                                 |
| XAC 324 | TBL  | IOTrbl (Trouble)                                  |
| XAC 325 | FLT  | RIBKEY Detected                                   |

|         |      |                                        |
|---------|------|----------------------------------------|
| XAC 326 | FLT  | MS Link Configuration Mismatch         |
| XAC 327 | FLT  | WgSlot (Card Inserted Into Wrong Slot) |
| XAC 329 | FLT  | ETHR (Ethernet)                        |
| XAC 330 | FLT  | FW version mismatch                    |
| XAC 333 | FLT  | FW loading failed                      |
| XAC 400 | INFO | XA-Core Summary Report                 |
| XAC 413 | SUMM | RExSch (REx Schedule Failure)          |
| XAC 415 | INFO | Routine Exercise (REx) Report          |
| XAC 418 | INFO | Split (Entry to Split Mode Failed)     |
| XAC 420 | INFO | SysBTh Ctrl Change                     |
| XAC 600 | INFO | LowSM Condition Cleared                |
| XAC 601 | INFO | MemLim Condition Cleared               |
| XAC 602 | INFO | LowPE Condition Cleared                |
| XAC 603 | INFO | MScomm Alarm Cleared                   |
| XAC 604 | INFO | TOD Alarm Cleared                      |
| XAC 605 | INFO | RTIF Alarm Cleared                     |
| XAC 606 | INFO | Disk Alarm Cleared                     |
| XAC 607 | INFO | Tape Alarm Cleared                     |
| XAC 608 | INFO | Image (Test Passed / Alarm Cleared)    |
| XAC 609 | INFO | AMDl link condition cleared.           |
| XAC 610 | RTS  | Returned To Service                    |
| XAC 612 | INFO | IOP Fault Cleared                      |
| XAC 613 | SUMM | RExSch Alarm Cleared                   |
| XAC 614 | INFO | XATrap Alarm Cleared                   |
| XAC 615 | INFO | REx Started                            |
| XAC 618 | INFO | Split (Split Mode Entered)             |
| XAC 619 | INFO | Split Mode Exited                      |
| XAC 620 | INFO | SysBTh Alarm Cleared                   |

---

|         |      |                                   |
|---------|------|-----------------------------------|
| XAC 622 | INFO | PETrbl Alarm Cleared              |
| XAC 623 | INFO | SMTTrbl Alarm Cleared             |
| XAC 624 | INFO | IOTrbl Alarm Cleared              |
| XAC 625 | INFO | RIBKEY Removed                    |
| XAC 626 | INFO | MS Link Configuration Restored    |
| XAC 627 | INFO | WgSlot Cleared - Card Removed     |
| XAC 628 | INFO | XA-Core Provisioning Report       |
| XAC 629 | INFO | Ethernet link condition cleared.  |
| XAC 630 | INFO | No FW version mismatch            |
| XAC 631 | INFO | FW soaking started                |
| XAC 632 | INFO | FW soaking completed              |
| XAC 633 | INFO | FW loading started                |
| XAC 634 | INFO | FW loading completed              |
| XAC 635 | INFO | FW soaking in progress            |
| XAC 640 | INFO | Test Report                       |
| XAC 641 | INFO | Alarm Enable/Disable Notification |
| XAC 801 | TBL  | MemLim (Memory Limit)             |
| XAC 814 | TBL  | XATrap (XA-Core High Trap Rate)   |
| XACP300 | TBL  | Memory Blocking High              |
| XACP500 | INFO | Memory Blocking Normal            |
| XACP600 | INFO | Memory Blocking Summary           |



## 1.9 Appendix B for A00007302: List of Supported OM's

|          |          |          |          |           |
|----------|----------|----------|----------|-----------|
| AABS     | AABSFILT | AABSHAND | AASV     | ACB       |
| ACCSBNS  | ACCSBNSE | ACCSCCV  | ACCSCCVE | ACDGRP    |
| ACDMISPL | ACMS     | ACRJ     | ACRTS    | ACRTS     |
| ACSYSTR  | ACTAKEDN | ACTRBL   | ADASAPU  | ADASDSGN  |
| ADASSRV  | AIN      | AINACG   | AINICOFF | AINICSUB  |
| AINNCR   | AINOGOFF | AINOGSB2 | AINOGSUB | AIOD      |
| AL1SVCOM | AL1SVCOM | AMA      | ANIOVFL  | ANN       |
| APOCCS   | APSYS    | AR       | ARAN     | ARN       |
| ASR      | ASUFBUS  | ASUMEMUT | ATRK     | ATRK      |
| ATTAMA   | ATTAMA2  | ATTLAMA  | AUDSRVS  | AUTSPID   |
| BCAPCG   | BCAPOF   | BCLID    | BCLIDNL  | BCLIDO    |
| BCTPOOL  | BCTTANDM | BLUEBOX  | BLUEBSTR | C7GTLNK   |
| C7GTWSCR | C7GWSCCP | C7HSLAL1 | C7HSLAL2 | C7HSLATM  |
| C7HSLCAR | C7LINK1  | C7LINK2  | C7LINK3  | C7LINK4   |
| C7LKSET  | C7LPP    | C7LPP2   | C7MTP    | C7MTPRES  |
| C7ROUTE  | C7ROUTE2 | C7ROUTER | C7RTESET | C7SCCP    |
| C7SCCPCO | C7SCCPX  | CAINAGOM | CAINGOM2 | CAINIP    |
| CAINLNP  | CAINMGR2 | CAINMG2S | CAINMSGR | CAINMSG2S |
| CAINNCRS | CAINOM   | CAINTRI2 | CAINTRIG | CAINUIF   |
| CALLFWD  | CALLHOLD | CALLOG   | CALLRDT  | CALLWAIT  |
| CBK      | CCTOOM   | CDACTS   | CDCOM    | CDMCCS    |
| CDR250   | CF3P     | CF6P     | CFRA     | CFWPOTS   |
| CMG      | CMSGCARR | CMSGGEN  | CNAB     | CNAMD     |
| CND      | CNDB     | CNDXPM   | COT      | CP        |
| CP2      | CPICG    | CPICKUP  | CPUSTAT  | CSL       |

|          |          |          |          |          |
|----------|----------|----------|----------|----------|
| CSMI     | CTFP     | CTRYDIR  | CWTPOTS  | DAISGEN  |
| DALINK   | DAMISC   | DCADTALG | DCAIA    | DCAMCEIA |
| DCM      | DCMEBSS  | DCRDEST  | DCRICTRK | DCRLINK  |
| DCRMISC  | DDU      | DPTNODE  | DPTOFC   | DPTOFCP  |
| DRCW     | DRM      | DS1CARR  | DSCWID   | DSINWTS  |
| DSPRMAN  | DTSR     | DTSRPM   | DUTLGEN  | EACARR   |
| EADLD    | EASHRTRK | EATSMS   | EBSMSGCT | ECANRMAN |
| EIUETHER | ENETMAT  | ENETOCC  | ENETPLNK | ENETSYS  |
| ENG640M1 | ESP      | ESUP     | EXNDINV  | EXT      |
| FBTRAFF  | FC       | FCDRALG2 | FCDRALGR | FCDRLOG  |
| FCDRTM1E | FCDRTM2E | FCDRTMP1 | FCDRTMP2 | FCNF     |
| FLEXDIAL | FLEXTYPE | FPDABM   | FPDEVICE | FPSCSI   |
| FRSAGENT | FRSPM    | FRT1     | FTAM     | FTROM    |
| FTRQ     | FTS      | GIACGRP  | GTID     | GWOVL0M  |
| HDBOM    | HFPOM    | HPCBASIC | HPCTRKGP | HTR      |
| HUNT     | IBNAC    | IBNGRP   | IBNSG    | IBNSGLDN |
| ILDBD    | ILDBRA   | ILDMSGCT | ILDOVLD  | ILDSTAT  |
| ININTWRK | INSCTP   | IOC      | IOSYS    | ISA      |
| ISDD     | ISDNPD0M | ISGBD    | ISGBRA   | ISGCPU   |
| ISGOVLD  | ISUPCGRP | ISUPCKTA | ISUPCONG | ISUPCONN |
| ISUPERRS | ISUPUSAG | IWBM     | KSHUNT   | LDS      |
| LIDBCCV  | LINAC    | LINEHAZ  | LM       | LMD      |
| LMSCPUST | LMSMEM   | LNP      | LNREDIAL | LOGS     |
| M20CARR1 | M20CARR2 | M3UA     | MACHCONG | MDCWAKUP |
| MDSACT   | MDSSTAT  | MNATM    | MNATMA1  | MNATMA5  |
| MNATMCH  | MNATMVC  | MPB      | MPCBASE  | MPCFASTA |
| MPCLINK2 | MPCLINK3 | MPHCON   | MPHGRP   | MS       |

|          |          |          |          |          |
|----------|----------|----------|----------|----------|
| MSCHAIN  | MSCHNLK  | MSFBUS   | MSFBUSTP | MSGPSOC  |
| MTA      | MTU      | MULTAUTH | MWICTCAP | MWTCAR   |
| MWTCAR2  | NACDGRP1 | NACDGRP2 | NARUSAGE | NCMCPUST |
| NDS0CARR | NEMASAPL | NETMSG   | NGSSOM   | NIUFBUS  |
| NIUMEMUT | NMC      | NMTCLINK | NMTCNODE | NMTCTYPE |
| NMTCUNIT | NPAPPEG  | NRS      | NRS      | NSC      |
| NSCACG   | NWMFRRCT | NWMFRRTG | NWMSILC  | NWMTGCNT |
| NX25L2   | NX25L3   | NX25LNK  | NX25MLP  | OADATCOM |
| OAFLTRIG | OAINNODE | OAINQMS  | OAINRTE  | OANODEDC |
| OAPCALP1 | OAPCALP2 | OAPCALP3 | OAPCALP4 | OAPCALP5 |
| OAPCALP6 | OAPCALP7 | OAPCALP8 | OAPCALP9 | OAPCP10  |
| OAPMERRN | OAPMERRS | OAPMTYPN | OAPMTYPS | OAPNMIS  |
| OAPNMTC  | OAPSPMTC | OASNPLDC | OASNPOOL | OASVNDCP |
| ODBOM    | OFF250   | OFZ      | OFZ2     | OFZ2NET1 |
| OFZ2NET2 | OGTQMS   | OHBTDTU  | OHBTRES  | OHBTTYPE |
| OHQCBQCG | OHQCBQR2 | OHQCBQR3 | OHQCBQR4 | OHQCBQRT |
| ONI      | OPCHOICE | OSACCP1  | OSACCP2  | OSACND   |
| OSACSP   | OSNND    | OSNSP    | OTS      | PCMCARR  |
| PCNF     | PM       | PM1      | PM2      | PMMSGCNT |
| PMOVL    | PMSTAT   | PMTYP    | PPCO     | PRADCHL2 |
| PRAFAC   | PRASERV  | PRIMWIC  | PRISVCS  | PRKOM    |
| PRP      | PSN_ERDC | PSN_ERFM | PSN_ERPS | PSN_FCTR |
| PSN_NOTF | PSN_PRIM | PSN_USAG | QMSACT   | QMSDATA  |
| QMSMIS   | RADR     | RCF      | RCHDOPT  | RCVR     |
| RECMDOVF | REVALLO  | RLCDIS   | RLDBD    | RLDBRA   |
| RLDMSGCT | RLDSTAT  | RLT      | RMANCMR  | RMSGOMGP |
| RND      | ROAPPL   | ROMISC   | RRTE     | RSCIR    |

|          |          |          |          |          |
|----------|----------|----------|----------|----------|
| RSCIS    | RSDT     | RTEASUM  | RTESVCS  | RTFEAT   |
| RTLTSUM  | RTRSCCP  | RTRTCAP  | SACB     | SCA      |
| SCAISERV | SCAISRV2 | SCAISRV3 | SCAISRV4 | SCAITRAN |
| SCF      | SCMP     | SCPOTS   | SCRJ     | SDS      |
| SEIUTRAN | SERVACT  | SERVBLK  | SETRAF   | SIMRING  |
| SITE     | SITE2    | SITE3    | SLLCOM   | SLLNK    |
| SLLNKINC | SLQ      | SLVPOPT  | SMCOM    | SME      |
| SMGENOM  | SMNCOM   | SMSTOPS  | SOTS     | SPAP     |
| SPC      | SPEEDCAL | SPMACT   | SPMOVLD  | SPMUSAGE |
| SPPIN    | SPRING   | SRA      | SRAOM    | STN      |
| STORE    | SVCT     | SYSPERF  | TC7WRLSS | TCAPERRS |
| TCAPUSAG | TCW      | TDCPROT  | TDCROUT  | TDGTHRU  |
| TDR      | TDRFTMPL | TFCANA   | TFREE533 | TM       |
| TME      | TONES    | TOPAAPPL | TOPASCCP | TOPPACT1 |
| TOPPACT2 | TOPPACT3 | TOPPACT4 | TOPPDID1 | TOPPDID2 |
| TOPPDID3 | TOPPDID4 | TOPPDID5 | TOPPDID6 | TOPPMSG  |
| TOPQOCPS | TOPS950  | TOPSAICC | TOPSALT  | TOPSARU  |
| TOPSBRND | TOPSCCAB | TOPSDA   | TOPSDACC | TOPSDEV  |
| TOPSEA   | TOPSINCC | TOPSISUP | TOPSKFAM | TOPSLNP  |
| TOPSMISC | TOPSMTCE | TOPSOC   | TOPSOLNE | TOPSOLNS |
| TOPSPARS | TOPSPSZ  | TOPSQMS  | TOPSRLT2 | TOPSRON  |
| TOPSRTRS | TOPSTRAF | TOPSUSE  | TOPSVC   | TRA125M1 |
| TRA125M2 | TRA250M1 | TRK      | TRK2NET1 | TRK2NET2 |
| TRKQOSOM | TRKVERDS | TRMSCRND | TRMSCRNO | TRMTCM   |
| TRMTCM2  | TRMTCU   | TRMTCU2  | TRMTCU3  | TRMTER   |
| TRMTFR   | TRMTFR2  | TRMTFR3  | TRMTPR   | TRMTRS   |
| TRNK2    | TROUBLEQ | TS       | TTCCARR  | TWCIBN   |

|          |          |          |         |          |
|----------|----------|----------|---------|----------|
| TWCPOTS  | U3WC     | UCDGRP   | UNBCDC  | UNBMISC  |
| UPSNACT  | UPSNFAIL | USAGSAMP | USGSECS | UTR      |
| VAMPACG  | VFGIWUSE | VFGUSAGE | VOW     | VPSC     |
| VPSC     | VPTRUSAG | VSNCOM   | VSNLINK | VTCAPERR |
| VTCAPRCV | VTCAPSNT | WBTRK    | WC      | WIDEBAND |
| WINTOPS  | XACORE   | XACPOM   | XACSRVC | XASTAT   |
| XIPCOMID | XIPDCOM  | XIPMISC  | XIPSVCS | XLIUL3   |
| XPMLNK   | XPMMSGOC | XPMOCC   | XPMOVL  |          |

## ***Product = IEMS***

### **A00007304--SN08 CEM I & C on IEMS**

#### ***Functional Description***

#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Description**

The CEM server functionality will be provided in conjunction with the IEMS server. CEM will be installed as an overlay on IEMS and SSPFS.

The CEM server is an element manager for the DMS node. It provides powerful fault, performance and configuration management toolsets. This server works in conjunction with the CEM browser which will be integrated into the IEMS product (see feature A00007302).

This feature covers the installation of the CEM server onto the IEMS server. This feature also covers the installation of the CEM components on the SDM and CBM. This feature will also incorporate the Synchronized Backup Manager to be used by CEM (for information about the Backup Manager see feature A00006979)

## 1.3 CEM Installation

The procedure for adding a CEM software package to the server are as follows:

- 1 Obtain the cem tar file and untar it.
- 2 Run the cem\_setup script. Use the full path to start it.
- 3 Use pkgadd to install the Help Package.
- 4 Start the CEM server using /opt/servman/bin/servstart CEM

### 1.3.1 Removing the CEM software

The procedure for removing a CEM software package from the server are as follows:

1. Stop the CEM server using /opt/servman/bin/servstop CEM. Note: It may take a few minutes for CEM to stop completely.
2. Run the cem\_setup uninstall script.
3. Use pkgrm to remove the help package.

## 1.4 CEM Commissioning Manager

The CEM Commissioning Manager is a Java-based graphic user interface tool for configuring managed node instances. A command line interface is also available. The following sections describe in detail how to use the Commissioning Manager.

### 1.4.1 Launch The Commissioning Manager

To launch the Commissioning Manager, do the following:

1. Login on the IEMS server as root.
2. Change directory to /opt/nortel/cem/data/coreEMS/nodes/server/bin/
3. Issue the command “.configCEMS -c” for the command line interface.

The Commissioning Manager main menu will be displayed on the screen after the command line interface being invoked.

#### 1.4.1.1 Create A Managed Node Instance

To create a new managed node instance:

1. Select “1” (Commission a new node) from the Commissioning Manager Command Line Interface main menu.

```
Nortel Networks coreEMS Commissioning Manager
Main menu

[1] Commission a new node
[2] Reconfigure an existing node
[3] Delete an existing node
[4] Add a mated pair monitor
[5] Delete a mated pair monitor
[6] SDM to CBM migration
[0] Exit
Selection: 1
```

2. Then select DMS for the new node when prompted for the device type.

```
*** Configure a Node Instance ***
[1] DMS
[2] HLR200
[3] MDM
[4] NSP
[5] SESM
[6] USP_NES
[7] DS
Select a device type for the new node: 1
```

3. Input a name for the new node when prompted for the “Element Name” of the node. The element name should be a string up to 15 characters drawn from the alphabet (a-z), digits(0-9) and minus sign(-). The first character must be an alpha character and the last character must not be a minus sign. The element name can’t be “server”, “localhost”, “loghost” or the hostname of the localhost.

Hint: Input a string up to 15 characters drawn from “-a-z0-9”. The 1st character must be an alpha character; the last one must not be a minus sign. Element name cannot be “server”, “localhost”, “loghost” or the hostname of the localhost.

Mandatory input.

Element Name: **SDMA2**

4. Input the region name when prompted:

Hint: Enter the region path to the node or select one from the list.  
Valid path characters include alpha-numeric and the '/' characters.  
Mandatory input.  
List of existing regions:  
Nortel  
Region: **Nortel**

5. Select GEM18 for this new node when prompted for “Software Release”.

Hint: Choose a software version.  
Mandatory input.  
[1] GEM18  
Software Release (1): **1**

6. Input the target IP address when prompted for the “Target SDM IP Address”. The target IP address should be in dot-decimal format.

Hint: Input a dot-decimal representation of an IP address or the string 'localhost'.  
Mandatory input.  
Target SDM IP Address: **47.142.106.26**

7. Enter No Call Trace will not be used.

Hint: Answer Yes if the SDM has Call Trace installed, otherwise answer No.  
Mandatory input.  
[1] Yes  
[2] No  
Enable Call Trace (1): **2**

8. Enter No do not install Billing Manager

Hint: Answer Yes if this DMS is an MSC/TriNode, No if this DMS is an HLR.  
Mandatory input.  
[1] Yes  
[2] No  
Install Billing Manager (1): **2**



**9. Answer No to USP**

Hint: Answer Yes if this DMS has USP, otherwise answer No. Not valid if Billing Manager = Yes  
Mandatory input.  
[1] Yes  
[2] No  
Does This DMS Have USP (2): **2**

**10. Answer “y” at the prompt “Proceed to create this node?”.**

Proceed to create this node? [y/n](n): **y**

**11. Answer yes the SDM is already in server mode.**

Commissioning node, please wait...  
Commissioning node completed successfully!  
  
Is sdma2 already in server mode? [y/n](n): **y**

**12. Answer Y to start the nodes applications**

Start all applications of node susan? [y/n](n): **y**

**13. Wait till you get the rts completed message**

Returning to service all applications of node susan.  
This action may take a few minutes.  
Please wait...  
Busy/Rts action completed!

## 14. Exit configCEMS

```
Nortel Networks coreEMS Commissioning Manager
Main menu
```

```

[1] Commission a new node
[2] Reconfigure an existing node
[3] Delete an existing node
[4] Add a mated pair monitor
[5] Delete a mated pair monitor
[6] SDM to CBM migration
[0] Exit
Selection: 0
```

### 1.4.1.2 Delete A Managed Node Instance

Users can delete a managed node instance, and all data and configuration for that node would be permanently removed from the system.

To delete a managed node instance:

1. Select “3” (Delete an existing node) from the Commissioning Manager Command Line Interface main menu.
2. Then select the node instance to be deleted.
3. Answer “y” at the prompt “Proceed to delete this node?”

## 1.5 Backup of CEM

CEM will be backed up using the Synchronized Backup Manager (Feature A00006979). When this backup is run, the information needed by CEM to restore will be located in /opt/nortel/cem/data/coreEMS/configBackup.

## 1.6 Restore of CEM

To restore CEM, make sure that the /opt/nortel/cem/data/coreEMS/configBackup directory contains the following: data\_dir, ldapConfig.tar, nodes.tar and server. Make sure CEM is stopped with servquery -status -group CEM command. If CEM is not stopped run servstop CEM. Then run /opt/nortel/cem/data/coreEMS/nodes/server/bin/postRestore.sh.

## 1.7 CEM SAF (Store and Forward) Process on SDM/CBM

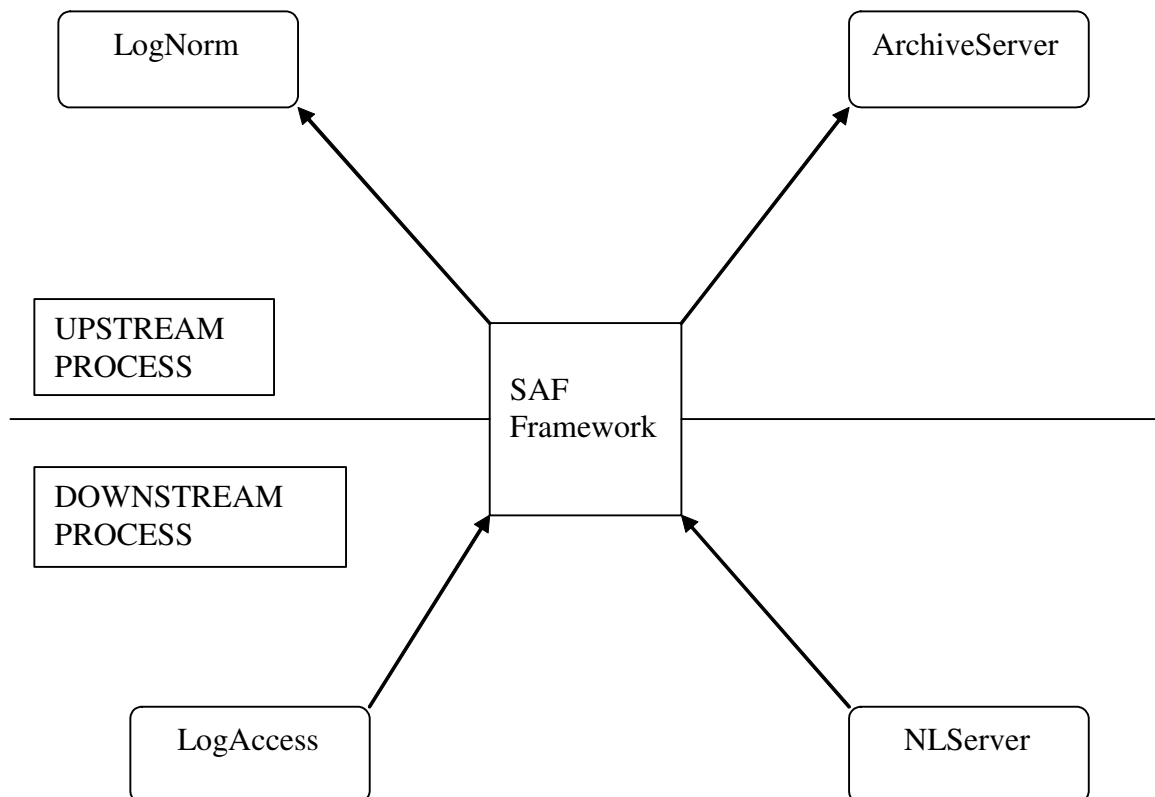
### 1.7.1 Introduction

CEM SAF (Store and Forward Process) Framework has been designed to serve two purposes:

1. Storing and Forwarding the SDM/CBM data on to the appropriate CEM Server process.
2. Synchronization after disconnection from the CEM server process and SDM/CBM.

### 1.7.2 Process Interaction Diagram

Data flow diagram

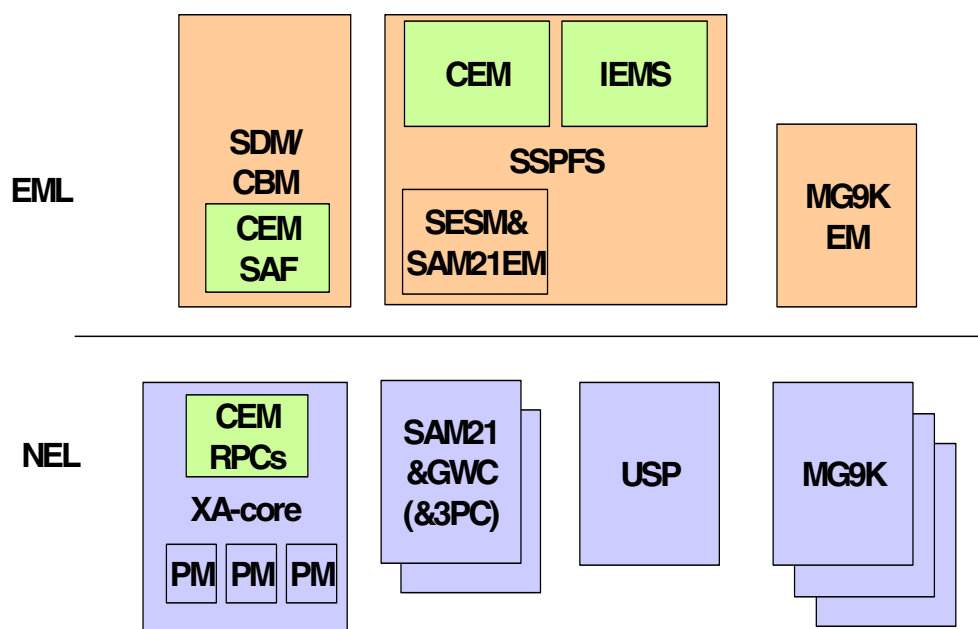


By default SAF process on the SDM/CBM will not be in service after CEM is installed. It has to be turned on to be “in service” state.

### 1.7.3 IEMS and CEM succession architecture

In SN08, the CEM integration with IEMS is taken to the next level, pulling the CEM and IEMS into a combination load and the launching capabilities are further refined and integrated. Additionally, the fault handling and interface between the two management systems will be extended and enhanced to provide uniform handling of alarms between the two.

The Figure below provides an overview of IEMS and CEM succession architecture.



### 1.8 CEM SAF logs on SDM/CBM

The processes included in CEM SAF Framework throw a number of logs depicting any Trouble or Information regarding CEM processes.

The Description of all the SAF Framework processes, warning and info logs thrown by them is documented in the FM section.

### 1.9 File Sets and Directory structure for CEM Processes

The File sets on sdm including CEM processes are:

SDM\_CEM.SAF

SDM\_GEM.dmsDataSrv

SDM\_TntFTPHandl.TntFTPHandl

### 1.9.1 Directory Structure for SAF Data

Data Storage:

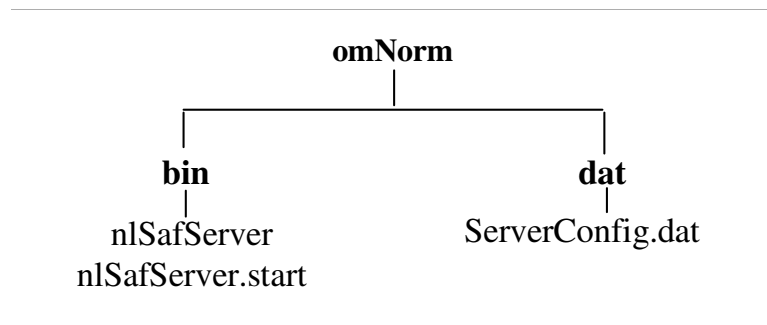
SAF Server stores data in “SAF.DB”

SAF Client stores data in the field specified in “serverConfig.dat” and stores it in the path specified in the file.

### 1.9.2 Directory Structure for SAF package

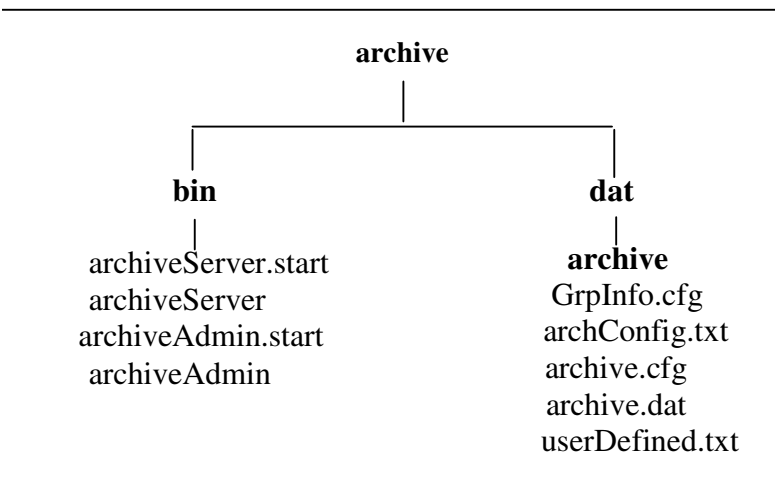
Directory Structure for SAFServer package (on sdm)

From /mscomc/OMC\_S\



Directory Structure for SAFClient package (on server)

From /opt/nortel/data/coreEMS/nodes/<node name>



## 1.10 Ports assigned for the CEM processes

**Table 3:**

| Application      | Port   | Protocol | Description                                       |
|------------------|--------|----------|---------------------------------------------------|
| switchExport     | 7788   | tcp      | switch Mass Export service                        |
| NLServer         | 7982   | tcp      | PM service                                        |
| admind           | 8102   | tcp      | SDM process/link/logic volume information service |
| dmsDataServer    | 8449   | tcp      | tuple service                                     |
| dmsDataServer    | 8450   | tcp      | table schema service                              |
| dmsDataServer    | 8614   | tcp      | table change notification service                 |
| rpcServer        | 22333  | tcp      | rpc service                                       |
| migrationClient  | 22395  | tcp      | control port for Migration Client                 |
| TelnetFTPHandler | 22397  | tcp      | MAPCI pass-through to MSC/HLR                     |
| TelnetFTPHandler | 22398  | tcp      | ftp pass-through to MSC/HLR                       |
| TelnetFTPHandler | 22399  | tcp      | telnet to SDM                                     |
| TelnetFTPHandler | 22400  | tcp      | ftp to SDM                                        |
| TelnetFTPHandler | 22402* | tcp      | telnet access to 3PC application                  |
| tpcStsQuery      | 22403* | tcp      | telnet access to 3PC application status           |
| TelnetFTPHandler | 22404  | tcp      | non-secure ftp access to CM                       |
| TelnetFTPHandler | 22405  | tcp      | non-secure ftp access to SDM/FT                   |
| exportLog        | 23000  | tcp      | CAP log export service                            |
| nlSafServer      | 26002  | tcp      | NLServer store and forward port                   |

**Table 3:**

| Application | Port  | Protocol | Description                          |
|-------------|-------|----------|--------------------------------------|
| logNormSAF  | 26003 | tcp      | logNormalizer store and forward port |

## 1.11 Logs being delrepped for CEM application

**Table 4: List of log delrepped.**

| Logs |
|------|
| AUTH |
| CAFT |
| CALM |
| CDPD |
| CHIP |
| CLFL |
| CPER |
| CPRT |
| CTID |
| DEPS |
| DFA  |
| DIM  |
| DROP |
| ERV  |
| ESNF |
| FCEL |
| FRAU |
| FRS  |
| GAME |

**Table 4: List of log delrepped.**

| Logs |
|------|
| HMT  |
| IOGA |
| IS41 |
| LAM  |
| MBPG |
| MCD2 |
| MCD3 |
| MCDR |
| MIWF |
| MLNP |
| MTX  |
| NCAS |
| NOPT |
| OCC  |
| OM2  |
| OMGA |
| OTAF |
| PCO  |
| PVAL |
| RAD  |
| RFES |
| RFP  |
| RFPE |
| RPC  |
| RRIF |



**Table 4: List of log delrepped.**

| Logs |
|------|
| RSSI |
| SMO  |
| SMS  |
| SMT  |
| SPRF |
| SSR  |
| TIER |
| TUPL |
| X75  |

## **1.12 Hardware Requirements or Dependencies**

An IEMS server is required.

An SDM and CBM are also required.

## **1.13 Software Requirements or Dependencies**

SN08 is required.

## **1.14 Limitations and restriction**

SN08 is required.

## **1.15 Interactions**

This feature interacts with A00007302 and A00006979

## **1.16 Glossary**

| Term | Description                          |
|------|--------------------------------------|
| CEM  | Core Element Manager                 |
| DMS  | Digital Multiplex Switch             |
| IEMS | Integrated Element Management System |

## ***Fault Management for A00007304***

### **2.1 Logs**

#### **2.1.1 CEM SAF Processes logs**

CEM SAF (Store and Forward) Framework throws a number of logs depicting any Trouble or Information regarding CEM processes.

All these logs will fall under two categories:

TROUBLE log or INFO log.

TROUBLE log will be identified in the range TMN300~399

INFO log will be identified in the range TMN600~699

For example:

TMN600: Information only

TMN601: File IO info

TMN604: Application status

TMN630: DataServer OK

TMN302: System error

TMN301: Application error

TMN303: Communication error

TMN309: Data Server error

TMN311: Fatal error

#### **2.1.2 Data Server process logs**

The dmsDataServer process runs on the SDM/CBM, connects to call server core and receives both the Performance and Configuration data through Base APIs (Table Access Service and OM Access Service). Depending on whether its operational measurements (OM) or configuration data, it forwards it to performance manager or configuration manager respectively.

The following warning/error/information messages are generated in custlog to reflect various problems. These messages can be seen in /var/adm/custlog file to find exact cause and fix.

1. Desc Msg: Could not read switch name  
Fix Msg: Check state of switch
2. Desc Msg: Could not create tuple  
Fix Msg: Check state of switch
3. Desc Msg: Could not read VRINV table  
Fix Msg: Check state of switch
4. Desc Msg: Could not initialize OM Access  
Fix Msg: Contact system administrator
5. Desc Msg: Could not initialize OM Access  
Fix Msg: Contact system administrator
6. Desc Msg: Could not get keyinfo object, excluding group, <group>  
Fix Msg: Check OM group for bad key/info type
7. Desc Msg: Could not get key, excluding group, <group>  
Fix Msg: Check OM group for bad key type
8. Desc Msg: Could not get info, excluding group, <group>  
Fix Msg: Check OM group for bad info type
9. Desc Msg: Could not register initialization timer  
Fix Msg: Contact administrator
10. Desc Msg: Rejecting register request for excluded group: <group>  
Fix Msg: Check group key/info for validity
11. Desc Msg: "Could not open listening connection  
Fix Msg: Check /etc/services
12. Desc Msg: Could not open listening connection: <service name>  
Fix Msg: Check services file

### 2.1.3 NLClient and NLServer logs

The operational measurements (OMs) are available on the CEM server for graphing, dashboard, thresholding, mass export and correlation. The CEM server gets all the performance data from SDM/CBM through NLServer and nlSafServer processes running on SDM/CBM. The nlClient process running on the IEMS server receives OM data from nlSafServer and NLServer, process it and forward it to the upstream processes. All these processes makes the handling of OM data easier and faster and offloads the load on CEM server in processing OM data.

The following warning/error/information messages in custlog will be generated by the NLServer and nlSafServer to reflect various problems. These messages can be seen in /var/adm/custlog file on the SDM/CBM to find exact cause and fix.

1. Desc Msg: Failed to register for connection to export Server at service <service name>

Fix Msg: Contact next level of support

2. Desc Msg: Failed to register for connection to Data Server at port <port number>

Fix Msg: Contact next level of support

3. Desc Msg: Failed to register for connection to Data Server at service <service name>

Fix Msg: Contact next level of support

4. Desc Msg: Failed to register for signals

Fix Msg: Contact next level of support

5. Desc Msg: Failed to send error

Fix Msg: Check SAFServer Process

6. Desc Msg: Communications not initialized

Fix Msg: Contact next level of support

7. Desc Msg: Input from unknown end point

Fix Msg: Contact next level of support

8. Desc Msg: Failed to send registration message to Data Server

Fix Msg: Check Data Server Process

9. Desc Msg: Failed to send deregistration message to Data Server

Fix Msg: Check Data Server Process

10. Desc Msg: Invalid Message from archive.

Fix Msg: Contact next level of support.

11. Desc Msg: store is disconnected:deregister the connection

Fix Msg: Check Archive Process

12. Desc Msg: Receive from Archive failed

Fix Msg: Contact next level of support

13. Desc Msg: Unreadable Data Server message type

Fix Msg: Contact next level of support

14. Desc Msg: Unreadable OM report

Fix Msg: Contact next level of support

15. Desc Msg: Failed to send correlation error data to Archive

Fix Msg: Check Archive Process

16. Desc Msg: OM Registration failed

Fix Msg: Contact next level of support

17. Desc Msg: Unreadable registration response

Fix Msg: Contact next level of support

18. Desc Msg: OM DeRegistration failed

Fix Msg: Contact next level of support

19. Desc Msg: Unreadable deregistration response from Data Server

Fix Msg: Contact next level of support

20. Desc Msg: Failed to send CM info request to Data Server

Fix Msg: Check Data Access Layer Process

21. Desc Msg: Failed to send deferred registration message to Data Server  
Fix Msg: Check Data Access Layer Process
22. Desc Msg: Failed to send re-registration message to Data Server  
Fix Msg: Check Data Access Layer Process
23. Desc Msg: Fatal status change  
Fix Msg: Check Data Access Layer Process
24. Desc Msg: Unreadable OM status received from Data Server  
Fix Msg: Contact next level of support
25. Desc Msg: Could not get GroupInfo  
Fix Msg: Contact next level of support
26. Desc Msg: Failed to send nlGrpInfoRsp data to Archive  
Fix Msg: Check Archive Process
27. Desc Msg: Unreadable CM info message from Data Server  
Fix Msg: Contact next level of support
28. Desc Msg: Could not open License File  
Fix Msg: Verify file existence and permission
29. Desc Msg: Unexpected message type from Data Server  
Fix Msg: Contact next level of support
30. Desc Msg: Lost connection to Data Server  
Fix Msg: Check Data Server Process
31. Desc Msg: Receive from Data Server failed  
Fix Msg: Contact next level of support
32. Desc Msg: Communications not initialized  
Fix Msg: Contact next level of support
33. Desc Msg: Failed to send end\_of\_report msg to store

Fix Msg: Check Archive Process

34. Desc Msg: Connection from unknown end point

Fix Msg: Contact next level of support

35. Desc Msg: Switch name unknown

Fix Msg: Contact next level of support

36. Desc Msg: Arithmetic overflow in correlation <correlation name>

Fix Msg: Contact next level of support

37. Desc Msg: Failed to send OM data to Archive

Fix Msg: Check Archive Process

38. Desc Msg: Error while doing a send to the Agent, discard send queue

Fix Msg: Check Agent Process

39. Desc Msg: Port for the service <NLservice name> is not available.

Fix Msg: Please update /etc/services file & restart NLServer

40. Desc Msg: Failed to register for connection to export Server at service <service name>

Fix Msg: Contact next level of support

41. Desc Msg: Failed to register for connection to Data Server at port <port num>

Fix Msg: Contact next level of support

42. Desc Msg: Failed to register for connection to Data Server at service <service name>

Fix Msg: Contact next level of support

#### **2.1.4 log Normalizer and logNormSAF Process logs**

The fault data on being received from call server node (core) is processed by logNormalizer process running on CEM. The logNormSAF process (running on the SDM/CBM) stores and forward this data to the CEM server.

The logNormalizer process generates error/warning/information messages in custlog whenever there is a problem encountered due to improper

configuration, improper log formats etc. These messages can be seen in /opt/nortel/logs/coreEMS/custlog file on the CEM server to find description and fix of the problem.

1. Desc Msg: Event file <EventFileName> was not found...logNormalizer exiting

Fix Msg: Check Path.

2. Desc Msg: Event delimiter cannot be more than one character long...logNormalizer exiting

Fix Msg: check event formatter file for the delimiter after a event name and use it

3. Desc Msg: Event file "<<EventFileName<<" is empty..logNormalizer exiting

Fix Msg: check path, file name and/or read write permission

4. Desc Msg: Event file "<<EventFileName<<" had errors..logNormalizer exiting

Fix Msg: please look at the event file to check errors

5. Desc Msg: Mapper file "<<MapperFileName<<" was not found...logNormalizer exiting

Fix Msg: check path, file name and/or read write permission

6. Desc Msg: Mapper delimiter cannot be more than one character long...logNormalizer exiting

Fix Msg: check mapper file for the delimiter after a log name and use it

7. Desc Msg: Mapper file "<<MapperFileName<<" is empty.logNormalizer exiting

Fix Msg: check path, file name and/or read write permission

8. Desc Msg: Mapper file "<<MapperFileName<<" has errors."<argv[0]<<"exiting

Fix Msg: please check the mapper file errors

9. Desc Msg: Mapping information parsing error for log "<<logName<<"empty information or wrong delimiter used



Fix Msg:

10. Desc Msg: output file "<<outputFileName<<" could not be opened

Fix Msg: No action possible

11. Desc Msg: lostLogFile "<<lostLogFileName<<" could not be opened

Fix Msg: Call Nortel Personal

12. Desc Msg: lostLogFile "<<outputFileName<<" is empty

Fix Msg: Call Nortel Personal

13. Desc Msg: lostLogFormat string is empty

Fix Msg: Call Nortel Personal

14. Desc Msg: lostLogTriggerSize is empty

Fix Msg: Call Nortel Personal

15. Desc Msg: lostLogVisibleMsg string is empty

Fix Msg: Call Nortel Personal

16. Desc Msg: lostLogVisLog string is empty

Fix Msg: Call Nortel Personal

17. Desc Msg: sdmLogList is empty

Fix Msg: Call Nortel Personal

18. Desc Msg: probeTimer string is empty

Fix Msg: No probe is assumed

19. Desc Msg: checkLen string is empty

Fix Msg: No checkLen is assumed

20. Desc Msg: No Lost Log Trigger message has been specified

Fix Msg: Call Nortel Personal

21. Desc Msg: Could not send events to agent. Agent removed from output list.

Fix Msg: No agents connected. start an agent

22. Desc Msg: Unknown log format. No mapping will be done for input

Fix Msg: Contact Nortel Personal

## **2.2 References**

Please refer to the following NTP document for more detailed format of the above logs:

411-8111-511.01.01: GSM/UMTS VCN OAM Reference Manual





# SN08 Feature Deltas

***Product = IEMS***

## **A00007341--MS2000 IEMS Configuration Integration**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Description**

In SN06.2, Nortel made a decision to begin phasing out the UAS (Universal Audio Server) and begin replacing them with a set of Media Server devices, the MS2010 and MS2020. These devices are referred to as MS2000 Series Nodes (Media Server 2000 Series Nodes). In SN06.2 the IP version of the Media Server (MS2010) was deployed. In order to provision and maintain the MS2010 node the MS2000 CLUI (Command Line User Interface) was developed. The MS2000 CLUI ran on the SESM server. In SN08 the MS2000 CLUI was enhanced to handle the provisioning and maintenance of the ATM Media Server (MS2020).

With this feature in SN08, the existing functionality of the MS2000 CLUI will be migrated to reside on the IEMS platform. All of the existing functionality that is captured in the MS2000 CLUI will be migrated to the new MS2000 EM GUI. The existing command line interface will be removed from the SESM software.

##### **1.2.1 MS2000 EM Functionality**

Below is a breakdown of the functionality that is provided by the existing MS2000 CLUI that will be migrated to the MS2000 EM.

##### **1.2.1.1 Configuration**

The following windows will be needed for configuration.

- General Configuration
  - Megaco Call Agent IP Address
  - Is Megaco Call Agent Used
  - Number of Conference Ports
  - Number of TestTrunk Ports
  - Number of Lawful Intercept Ports
  - Number of Announcement Ports
  - APS IP Address
  - Primary Language
  - Secondary Language
- SNMP config (community strings, trusted managers, trap destinations)
- WebServer config (username and password for web interface)
- Network Time Protocol (NTP) settings

The following tables can also be configured for the MS2020 ATM node

- ATM loopback table
- SVC Connection table
- ATM port table
- Remote Gateway table (AAL2 only)
- AAL2 PVC table (AAL2 only)
- SVC Profile table (AAL2 only)

#### **1.2.1.2 Maintenance**

The following maintenance activities will be supported from the client.

- Lock/Unlock of device
- Backup of INI file
- Upload of load files. (CMP, INI, DAT, XML)
- Soft Reset of device

#### **1.2.1.3 User Access Privileges (Authorization)**

The following lays out the access that a user must have to issue the following functions:

**Table 5: User Authorization required for functionality**

| Access                    | Functionality                              |
|---------------------------|--------------------------------------------|
| mg groups with any access | List of any configuration                  |
| mgspov, mgrw, mgadm       | Change Configuration                       |
| mgmtc, mgrw, mgadm        | Lock/Unlock of device                      |
| mgmtc, mgrw, mgadm        | Backup of INI file                         |
| mgmtc, mgrw, mgadm        | Upload of load files. (CMP, INI, DAT, XML) |
| mgmtc, mgrw, mgadm        | Soft Reset of device                       |
| mgadm, mgrw               | Change SNMP Passwords                      |
| mgadm, mgrw               | Change File Transfer Passwords             |

### 1.2.2 New functionality in SN08

Some new functionality that did not exist on the CLUI will be provided in the SN08 MS2000 EM release. These are briefly outlined below:

- The MS2000 EM will make use of the existing IEMS audit logging functionality to provide a log of what user issued a command against an MS2000 node.
- The MS2000 EM will make use of the existing IEMS alarming system to generate an alarm against the EM whenever a configuration of maintenance action by the EM has an unrecoverable failure.

### 1.2.3 Upgrading SN06.2 and SN08 data

Data that existed in SN06.2 and SN08 on the SESM server will need to be transferred to the SN08 IEMS. The data that needs to be transferred is contained in a properties file.

In SN06.2 the file is:

`/opt/nortel/NTsesm/bin/ams.properties`

In SN08 the file is

`/opt/nortel/NTsesm/bin/ms2000.properties`

Either a manual procedure or a script will be written to help the end user with this data migration. TBD.

### **1.3 Hardware Requirements or Dependencies**

The MS2000 EM will run on IEMS and inherits any requirements and dependencies for hardware.

### **1.4 Software Requirements or Dependencies**

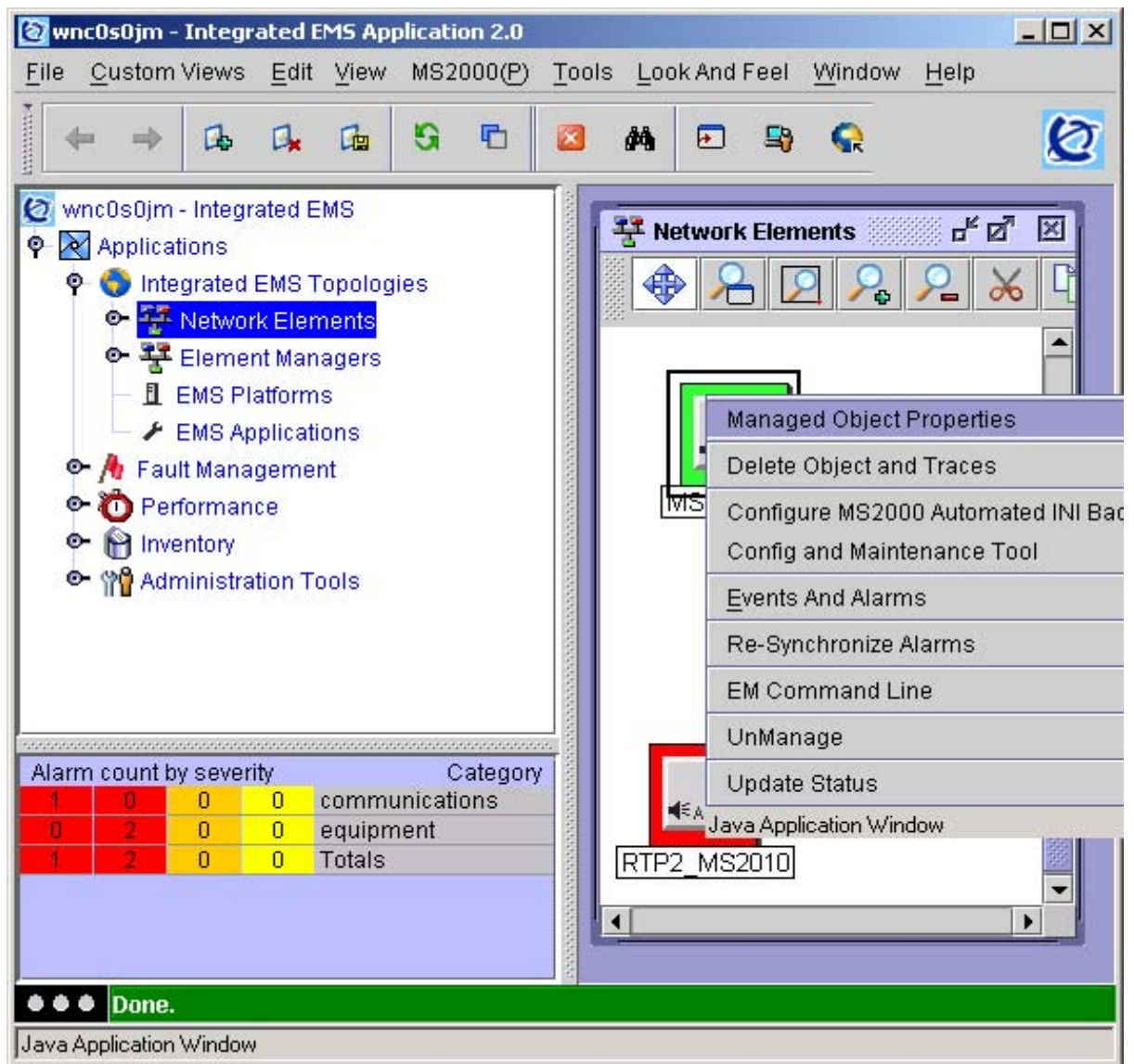
The MS2000 EM will run on IEMS and inherits any requirements and dependencies for software.

### **1.5 Limitations and restrictions**

The existing MS2000 CLUI will be removed from the SESM software and all of its functionality will be migrated to the MS2000 EM.

### **1.6 Interactions**

The MS2000 EM will be built into the IEMS tool such that the EM can be launched by selecting the MS2000 EM from the right click device menu as seen below.



The MS2000 Configuration and Maintenance tool is used to configure and perform some maintenance activities on an MS2010 or MS2020 device. The tool automatically adjusts the display components, behavior, and configuration



options based on the node type (MS2010 or MS2020) and the software version.

The following screen is the display of the tool just after launching. The left hand side displays the Device specific information. The name given in IEMS, the associated IP address entered when the node was added into the system, and the device type (this is determined by querying the MS node).

In the mid section of the left hand side is the Maintenance panel where the following functions can be performed.

- **Soft Reset of the node** - A soft reset of the node is essentially a re-initialization of the software running on the node. For an SN06.2 MS2000 load, only a burn reset was allowed. Starting in SN08 the user could select either to perform a configuration settings burn or to re-initialize with the previous burned settings. When a soft reset is done on the node with the burn option, the existing configuration settings are burned into flash memory and then the node goes through an initialization cycle. This will take the node out of service for a short period of time and will drop any resources in use.
- **Lock/Unlock the node** - The lock function will prevent any audio resources from being allocated on the node. In an SN06.2 MS2000 load, only a graceful lock was supported. A graceful lock will signal to the node that a lock has been requested. This will cause the node to stop allocating new audio resources and will wait for the last resource to be freed before actually locking the node. A force lock will cause the node to immediately free up any resources in use and lock the node.
- **Backup of the INI file** - The initialization file is a configuration data file used by the system to setup the node in event of a reboot. The file contains all of the user defined configuration changes. The tool allows the user to save the initialization file back to the IEMS server or to the tftp server (the SDM or CBM). By saving the INI file back to the IEMS server the user has simply saved a backup copy of the configuration changes for later use. The tool will save up to 5 initialization files for each node, deleting the oldest file once the maximum number of files have been saved. By saving the file to the tftp server, this updates the initialization file that the MS2000 node will retrieve should a hard reset occur. It is recommended that whenever configuration changes are made that the user backup the latest settings in an INI file to the tftp server.

The bottom panel on the main screen shows status logs of the activities that the tool is performing. This provides the user with feedback on what actions have been taken and also displays error when they occur.

**MS2020 Maintenance and Configuration Tool**

Device Name: MS2020\_PV  
IP Address: 47.142.89.60  
Device Type: MS2020

**Maintenance**

☒ Burn Flash  
☐ Don't Burn Flash  
Reset

Lock State: unlocked

☒ Graceful Lock  
☐ Forced Lock  
Lock

☐ Backup INI to IEMS Server  
☒ Backup INI to tftp Server  
INI Backup

**General Configuration** | Load Management | Password

IP Address  
SubNet Address  
Default Gateway  
MG Control Protocol  
Software Version  
Megaco Call Agent IP Address  
Is Megaco Call Agent Used  
Number of Conference Ports  
Number of TestTrunk Ports  
Number of Lawful Intercept Ports  
Number of Announcement Ports  
APS IP Address  
Primary Language  
Secondary Language  
Syslog Server IP  
ATM Default Application Type  
Transmission mode

Se

**Status Logs**

Successfully retrieved trusted managers table for node 47.142.89.60  
Successfully retrieved trap destination table for node 47.142.89.60  
Requesting data for table atmPortLoopbackConfigTable  
Successfully retrieved table data

Close

Java Application Window

On the right hand side of the screen there are a series of tab selected panels for other configuration and maintenance functions that the user can perform.

### **1.6.1 General Configuration**

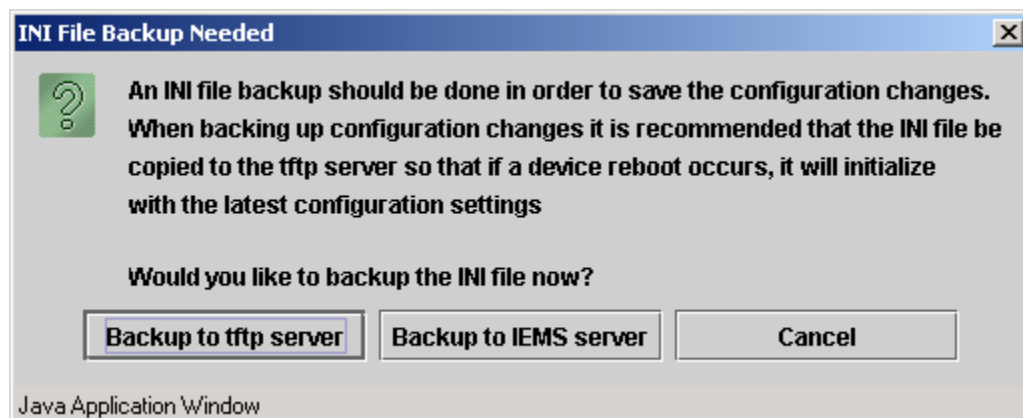
The first tab is the General Configuration tab where the basic setup of the node is performed. (Please reference the NTP for MS2010 and MS2020 for a complete description of the configuration parameters). The configurable fields have either a pulldown menu for the configuration options or a tooltip displaying the syntax and range of the field. Once the user makes the appropriate changes to the fields they can send the changes to the node by selecting the “SET” button.

| General Configuration            |                                                        | Load Management | Password Management | SNMP Setup | Atm Configuration |
|----------------------------------|--------------------------------------------------------|-----------------|---------------------|------------|-------------------|
| IP Address                       | <input type="text" value="172.17.40.221"/>             |                 |                     |            |                   |
| SubNet Address                   | <input type="text" value="255.255.248.0"/>             |                 |                     |            |                   |
| Default Gateway                  | <input type="text" value="172.17.40.1"/>               |                 |                     |            |                   |
| MG Control Protocol              | <input type="text" value="controlProtocol-MEGACO(2)"/> |                 |                     |            |                   |
| Software Version                 | <input type="text" value="4.40.9.40"/>                 |                 |                     |            |                   |
| Megaco Call Agent IP Address     | <input type="text" value="172.17.40.68"/>              |                 |                     |            |                   |
| Is Megaco Call Agent Used        | <input type="text" value="yes(1)"/>                    |                 |                     |            |                   |
| Number of Conference Ports       | <input type="text" value="100"/>                       |                 |                     |            |                   |
| Number of TestTrunk Ports        | <input type="text" value="100"/>                       |                 |                     |            |                   |
| Number of Lawful Intercept Ports | <input type="text" value="100"/>                       |                 |                     |            |                   |
| Number of Announcement Ports     | <input type="text" value="180"/>                       |                 |                     |            |                   |
| APS IP Address                   | <input type="text" value="47.142.89.70"/>              |                 |                     |            |                   |
| Primary Language                 | <input type="text" value="isoLangEnglish(2)"/>         |                 |                     |            |                   |
| Secondary Language               | <input type="text" value="isoLangEnglish(2)"/>         |                 |                     |            |                   |
| Syslog Server IP                 | <input type="text" value="47.142.89.27"/>              |                 |                     |            |                   |
| ATM Default Application Type     | <input type="text" value="aal2-i-366-2(2)"/>           |                 |                     |            |                   |
| Transmission mode                | <input type="text" value="sonet(1)"/>                  |                 |                     |            |                   |

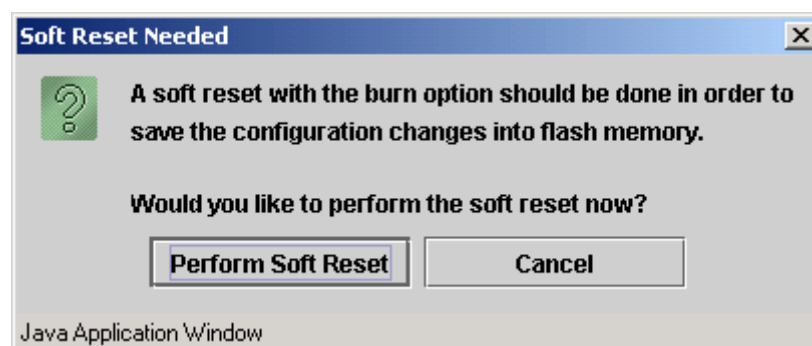
Should the user have entered in invalid data they will be prompted with a warning displaying which data is at issue. Below is an example of this.



Once corrected the user can again attempt to change the data. If successful, then the user will be prompted to save the configuration changes made by backing up the INI file. The user is given the option to either backup to just the IEMS node or to the tftp server.



Once the INI backup has been done the user will be prompted to perform a soft reset on the node in order to burn the configuration changes that were just made into flash.



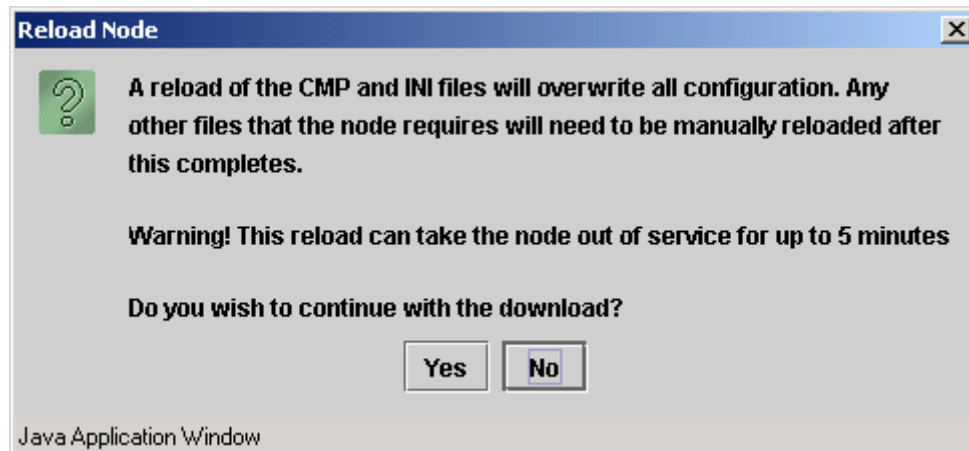
### 1.6.2 Load Management

The MS2000 Configuration and Maintenance tool provides a way for the user to download some of the file types used by the device. The files displayed that can be downloaded must be located on the IEMS server in the /data/loads/audiocodes directory.

The screenshot shows the 'Load Management' tab of the MS2000 Configuration and Maintenance tool. The interface includes a navigation bar with tabs for 'al Configuration', 'Load Management', 'Password Management', 'SNMP Setup', and 'Atrn Configuration'. Below the navigation bar, there are four distinct sections for selecting files to send to the node:

- Section 1:** A heading 'To reload the node select the "CMP" load and "INI" initialization files to send to the node'. It contains two dropdown menus: 'MS2010.cmp' (labeled 'CMP File') and '2004-11-01\_21:35:53.Board.ini' (labeled 'INI File'). A 'Send Files' button is to the right.
- Section 2:** A heading 'Select a "INI" initialization file to send to the node'. It contains a dropdown menu with '2004-11-01\_21:35:53.Board.ini' (labeled 'INI File') and a 'Send File' button.
- Section 3:** A heading 'Select a "DAT" call progress tones file to send to the node'. It contains a dropdown menu with 'usa\_cpt.dat' (labeled 'DAT File') and a 'Send File' button.
- Section 4:** A heading 'Select a "VXML" file to send to the node'. It contains a dropdown menu with 'testtrunk.xml' (labeled 'VXML File') and a 'Send File' button.

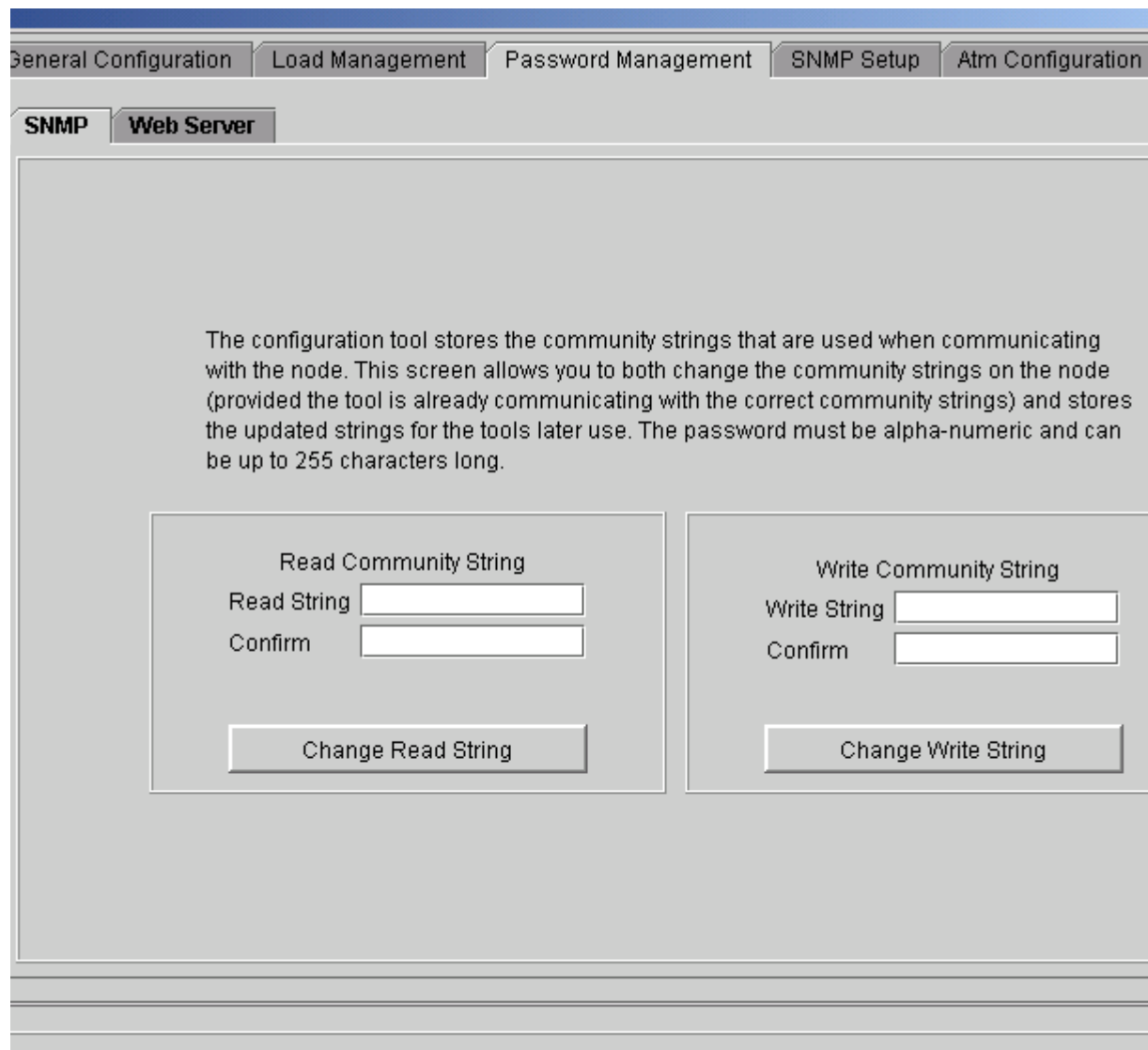
The tool provides the user with a way to remotely reload the device by downloading a CMP load file and an INI initialization file. The following display is shown when a user selects this option:



Similarly, the tool also provides the ability to download other node specific files such as a previously saved INI file (located on the IEMS server in the /data/loads/audiocodes/< node ip>/ directory).

### 1.6.3 Password Management

This panel allows the user to change the passwords on the node. The tool supports changing the SNMP read and write community strings as well as the node's web server username and password. Both of these panels have descriptions of the passwords and what they are used for.



The configuration tool stores the community strings that are used when communicating with the node. This screen allows you to both change the community strings on the node (provided the tool is already communicating with the correct community strings) and stores the updated strings for the tools later use. The password must be alpha-numeric and can be up to 255 characters long.

| SNMP                                                                                                                                                                                                                                                                                                                                                                                                | Web Server                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The configuration tool stores the community strings that are used when communicating with the node. This screen allows you to both change the community strings on the node (provided the tool is already communicating with the correct community strings) and stores the updated strings for the tools later use. The password must be alpha-numeric and can be up to 255 characters long.</p> |                                                                                                                                                                      |
| <p>Read Community String</p> <p>Read String <input type="text"/></p> <p>Confirm <input type="text"/></p> <p><input type="button" value="Change Read String"/></p>                                                                                                                                                                                                                                   | <p>Write Community String</p> <p>Write String <input type="text"/></p> <p>Confirm <input type="text"/></p> <p><input type="button" value="Change Write String"/></p> |

### 1.6.4 SNMP Setup

This panel allows the user to manage the Trusted Managers table and the Trap Destination Table. The node can handle up to 5 entries in each of these tables. Each of these panels has a description of the table and its use.

#### 1.6.4.1 Trusted Managers

A trusted manager is an Element Manager (EM) from which the node accepts SNMP requests. By default, if there are no trusted managers defined then the



node accepts requests from any manager that provides a valid SNMP community string.

Once a single trusted manager is configured, requests from any IP address not in the trusted managers table will be rejected. Because of this the first IP address added to the trusted managers table should be the IP address of the server where this Configuration Tool is running. If it is not then the tool will no longer be able to communicate with the device.

#### **1.6.4.2 Trap Destinations**

The Trap Destination table defines where the node should send it's SNMP traps. Most of the traps originating from the node are alarm related. The node is capable of routing these traps to multiple destinations should the user want the traps logged by different trap collection systems. Only five trap destinations may be defined.

General Configuration Load Management Password Management SNMP Setup Atm Configuration

Trap Destinations Trusted Managers

The Trap Destination table defines where the node should send it's SNMP traps. Most of the traps originating from the node are alarm related. The node is capable of routing these traps to multiple destinations should the user require the traps logged by different trap collection systems. Only five trap destinations may be defined.

|   | Trap Destinations | Port |
|---|-------------------|------|
| 1 | 47.142.89.73      | 162  |
| 2 |                   |      |
| 3 |                   |      |
| 4 |                   |      |
| 5 |                   |      |

Add Delete Refresh

### 1.6.5 ATM Configuration

This tab selection will only appear for MS2020 ATM devices. The number of tables displayed for configuration varies depending on if the MS2020 application type (AAL1 or AAL2). The panels provide both table edit, add, and delete buttons where applicable.

Please refer to the MS2020 NTP for explanation of the various fields in the tables.

General Configuration

Load Management

Password Management

SNMP Setup

Atm Configuration

Atm Port Table

Remote GW Table

AAL2 PVC Table

Svc Profile Table

Port Loopback Table

Service Connection Table

| Port #   | Admin State | Admin Address | Operational State | Operational Addr                         |
|----------|-------------|---------------|-------------------|------------------------------------------|
| port0(0) | unlocked(2) |               | enabled(1)        | 47525450530000f0000000000000908f04aab300 |

◀

Edit Entry

Refresh Table

## 1.7 Glossary



# SN08 Feature Deltas

*Product = IEMS*

## **A00007785--MFT Backend Security Services Integration into IEMS**

### *Functional Description*

#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Introduction**

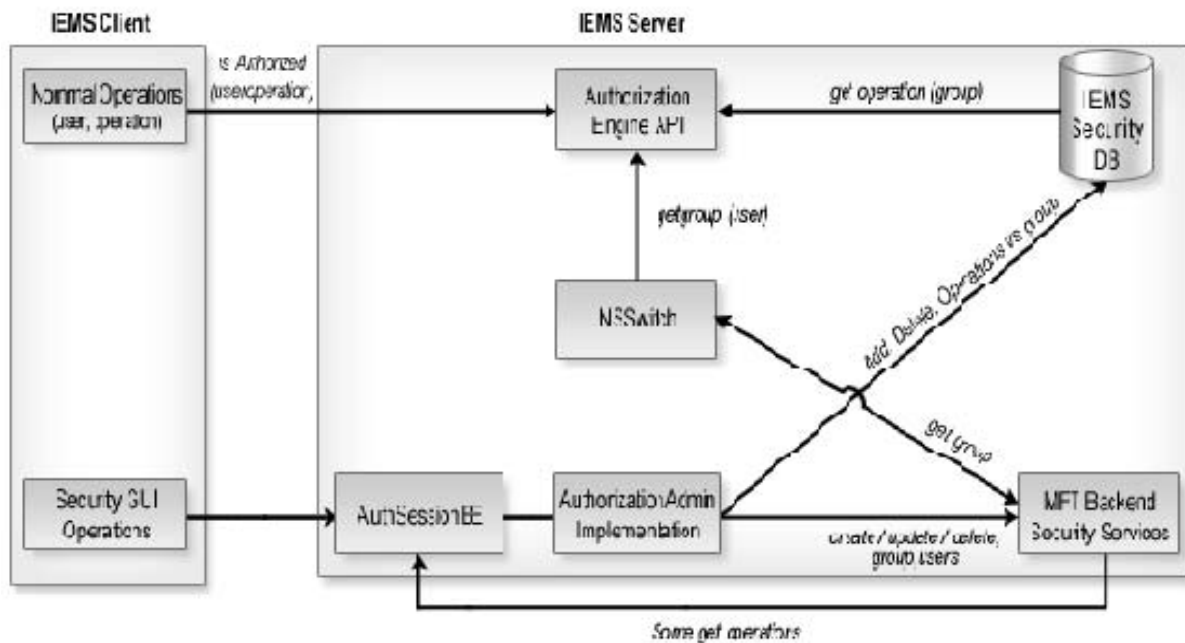
SN07 IEMS application maintains all the user and group related information in IEMS database. In SN08 the centralized Security Service is provided by MFT backend Security Services. The MFT backend Security Services will be maintaining all the user and group related information, **information that is stored in NSSwitch PASSWORD (including SHADOW) DB and GROUP DB.** This document covers the changes required for the integration of MFT backend Security Services into IEMS.

#### **1.3 Acronyms Used**

IEMS - Integrated Element Management System

MFTBSS - Management Framework Technologies Backend Security Services

## 1.4 Overview of MFTBSS Integration



In the above diagram the Security GUI related operations will be split into the following two types,

- create, update and delete users (or) groups
- add or delete operations for a group

The create, update and delete users (or) groups will be performed using MFT API's and add or delete operations for a group using our security framework. In the create group case, we have to first add the Group using MFT API's and if the group add success then we add the group related operations using our security framework. We assumed that, the MFT Backend server should be in the **High Availability** mode on a redundant IEMS cluster, **that is, if the local MFT Backend server's DB is not responding the MFT APIs will automatically fail over to use the other MFT Backend server's DB on the inactive unit.** In case of MFT API calls fails to respond, we will log the MFT failure information.

### 1.4.1 Location of IEMS Server logs:

/opt/nortel/iems/current/logs/secout\*.txt.

Since IEMS Server has log rotation, the name of the file starts with secout.

Sample log would be as below.

“Problem in communicating with MFT Server.Unable to proceed SecurityAdmin operations.”

Similar error messages will be shown in the requesting client. Users will be able to use only the emergency user account, to login into IEMS without the MFT backend Security Services.

## 1.5 Changes

### 1.5.1 Client Side Changes

#### 1.5.1.1 Changes in the Add User Wizard

In the second screen of the Add User Wizard, we can provide the account expiry as an absolute date field, whereas the earlier approach was to enter the number of days from the date of user creation. **Note that this account expiry GUI will be hidden until MFT provides the actual account expiry support.** The password expiry day field, 'The password expires every', now indicates how often (number of days) the user password will expire and not how soon the next password expiry will occur. The password expiry change will take effect after the next password expiry **or the next password change.**

In the Advanced Properties screen which is invoked by clicking on the “Advanced” button in the 3<sup>rd</sup> screen of Add User Wizard, the following fields are present during user addition.

**Note:** Starting SN08, all usernames must be 8 characters or less and must consist of lowercase letters or numeric digits only.

### 1.5.2 Additional User Attributes

- 1 UID: This will have the “AUTO GENERATED” since numerical uid's will be auto-generated for all users. This field will display a read-only UID value for already created accounts.
- 2 GID: The primary GID is given as a selectable drop down menu (ComboBox). The default primary GID selected will be “succssn” **for** all the users added during user addition. The administrator can change the primary Group name which is selected by default.
- 3 GECOS: Administrator can enter any information in this field, for example the actual full name of the user.
- 4 LoginShell: Administrator are given the following options to select for each user created. They are given below.

- no-access: Users created with this shell, do not have permission to invoke a shell in the system. No-access accounts are mainly for GUI-only user accounts. The actual value of LoginShell in this case is /usr/bin/nash.
  - restricted: Users created with this shell, has command line access to the systems. The actual value of LoginShell in this case is /usr/bin/rash.
- 5 Home Directory: The home directory for each user varies according to the Login Shell selected for each user.
- no-access: /export/home/tmp
  - restricted: /export/home/<username> The <username> is the login name of the created user.
- 6 MIN: This is the minimum number of days required between password changes. The default will be (0) days.
- 7 Password Expiry Date: This field is a read only field which will indicate the absolute date on which the current password for the user expires.
- 8 LastChange: This field show the absolute date on which the password was most recently changed.

**Note:** Account Expiry support is removed from IEMS Security Client GUI. This feature will be enabled after MFT Security Server provides support for Account Expiry

### 1.5.3 Add Group Wizard

In the group add wizard, the administrator has the provision to manually provide a GID for the newly created group. If a value is not provided in the GID field, IEMS will pick a value from the range **specified** in the configuration file.

#### 1.5.3.1 Access permissions to IEMS Security Client GUI

**Only** members of the “secadm” group have access to IEMS Security Client GUI. This applies to JWS Client and the HTML Client. SN07 users who are present in emsadm group will be automatically be provisioned in secadm group in SN08 during the upgrade process.

**Note:** Starting SN08, all group names must be 8 characters or less and must consist of lowercase letters or numeric digits only.

## 1.6 Server Side Configurable parameters

### 1.6.1 User ID configuration:

The users in MFT BSS are identified by a unique numerical identifier which is generated by IEMS and MFT. This is achieved by providing a UID range in the following configuration file.

```
/opt/nortel/iems/current/conf/NmsProcessesBE.conf
```

The configurable user ID range is highlighted in bold.

```
#java com.adventnet.security.authentication.SecurityProcess
PROCESS com.adventnet.security.authentication.SecurityProcess
ARGS SecurityServerPort 7777 maximum_allowed_login_failed_count 0
userIdRange 10001-12000 groupIdRange 12001-14000
```

The default UID range is 10001-12000.

The above can be changed by the user. When IEMS Server starts up, this value will be read by the IEMS Server. If a user changes the user id range, then IEMS Server must be restarted for the changes to take effect. During each useradd operation from the IEMS Security GUI, a value from the provided range will be automatically selected by IEMS Server and provided to MFT for the user. If the generated user id is exhausted, the user will receive a failure message indicating security database is full. The numerical UID for each user will be generated only by IEMS Server. It cannot be provided by the secadm user. The list of UID's which are freed up as a result of user deletions will be available for enumeration after the enumeration process reaches the upper bound and re-enters the lower bound for finding out free slots.

**Note:** At most 1000 user accounts can be provisioned and managed by IEMS Server. IEMS Server does not support more than 1000 user accounts.

### 1.6.2 Group ID configuration:

The groups in MFT Security Services are identified by a numerical group identifier. The range for the generated group identifier can be provided in the following configuration file in IEMS.

```
/opt/nortel/iems/current/conf/NmsProcessesBE.conf
```

The configurable group ID range is highlighted in bold.

```
#java com.adventnet.security.authentication.SecurityProcess
```



```
PROCESS com.adventnet.security.authentication.SecurityProcess
ARGS SecurityServerPort 7777 maximum_allowed_login_failed_count 0
userIdRange 10001-12000 groupIdRange 12001-14000
```

The default GID range can be changed by the user. When IEMS Server starts, this range is read by the IEMS Server. If a user changes the group Id range, then IEMS Server must be restarted for the changes to take effect. During each group add operation, IEMS Server picks up an identifier for the group which is added from the IEMS Security Client GUI from the provided range. If the range is exhausted, then the user will receive a failure message indicating group ID range is exhausted. The secadm user can provide a numerical GID.

### 1.6.3 Password Attributes Support.

The following are the attributes supported by MFT Backend Security Server.

- sp\_max - Maximum number of days a password is valid. Password expiration is disabled if sp\_max is set to -1. **It is settable on a per user basis.**
- sp\_min - Minimum number of days required between password changes. The restriction is lifted if sp\_min is set to 0. **It is settable on a per user basis.**
- sp\_warn - Maximum number of days before the password expiry, the user will be warned. It is supported only as a global configuration, which means that warning value can be set only at the MFT Security Services level common for all users in MFT Security database. Please refer to MFT Security Services documentation on how to change this global parameter via an MFT-provided CLI interface.
- sp\_expire - Absolute date (number of days since 1/1/1970) after which the account is disabled. **It is settable on a per user basis.** Account expiry is disabled if sp\_expire is set to -1.

**Note:** sp\_inact –Maximum number of days of inactivity allowed for a user. It is not supported by MFT Security Services.

## 1.7 Migration:

Security Data migration is actually performed in SN08 as a three-part operation. They are given below.

- 1 Data Extraction from IEMS database
- 2 Data Import into MFT Security Services
- 3 Data Clean up in the IEMS database

### 1.7.1 Data Extraction.

This step is performed as part of the installation process. After the installation of MFT & IEMS binaries, this script will be invoked. This will identify the list of users, groups, and the user group relationship. After identifying the information this process will export all the identified data as an XML file in the following location. The script will take the location of the export xml file as an argument. After successful data extraction, the data import will be called by the combo load script which will import data into MFT Security Services.

After the above step, IEMS will be started in the backward compatible mode, with all user and group information in the IEMS DB. During this time the IEMS Security Client cannot be started both in the JWS Client and the Web Client. After the stability of MFT Security Services is ensured, then the clean up script will be called

The following data will be exported to MFT Security Services.

#### 1.7.1.1 List of Data to be exported.

- 1 User with only groups in IEMS DB
- 2 Users with only succssn group and Solaris groups
- 3 Users with IEMS groups and Solaris groups
- 4 Emergency user is NOT migrated
- 5 IEMS groups
- 6 Solaris groups (non-reserved) containing above listed users
- 7 Migration of user-group associations involving above listed users
- 8 Ability to login via IEMS central account during upgrade (07 backward compatibility mode)

When groups created in IEMS are exported, new GID's will be generated for each group exported to MFT Security Services. Each of the GID will be enumerated from the range provided from the configuration file given below.

```
/opt/nortel/iems/current/conf/NmsProcessessBE.conf
```

If any group ID is already present in MFT then user has to manually provision the GID for that group. Groups that are imported from Solaris, due to the user group relationship in IEMS, will have the same GID in the XML file which is exported by IEMS.

### 1.7.2 Notes

- 1 During data export process, all usernames/groupnames whose length (no of characters in username/groupname) exceeds 8 characters, will be dropped after generating a security log. Their corresponding user-->group relationship will also be dropped. After each drop a security log will be generated along with all the details of the user / group which are dropped. The admin user can take corrective measures with the input data from the logs.
- 2 During data export process all usernames/groupname will be changed to their corresponding lowercase characters. This change will be reflected in their corresponding user-->group relationship also.
- 3 During data export process all users who are present in emsadm group will be automatically be added to secadm group.
- 4 In SN08, a new authorization group, secadm, is introduced. Members of the secadm group can perform Security Administration functions such as:
  - Adding/Deleting/Users.
  - Adding/Deleting/Modifying Groups
  - Modifying user profiles
  - Modifying IEMS system security settings

## 1.8 Data Import into MFT Security Services.

After data is successfully exported from IEMS database and an XML file created as a result of successful export operation, the combo load script will invoke, the data import script provided by the MFT. Combo load script/MFT team will take care of importing the data successfully into MFT Server.

IEMS Server assumes that all data is successfully exported to MFT when the clean up script is called.

## 1.9 Data Clean up in the IEMS database

During data export all the above given users/groups/user-->group relationship present in the IEMS database is exported to the MFT Security Services through an XML file. After this step, the exported data will be redundant in IEMS database. So the clean up script is provided to clean up IEMS database of the redundant information. When this script is called, it will clean up the user, group & user group relationship except the emergency user account details from the IEMS database.

All the information given in the **(List of Data to be exported)** section will be cleaned up by the provided clean up script.

**Note:** IEMS Security Client GUI services will not be available when IEMS Server is started in the backward compatible mode. Existing IEMS users will be able to use IEMS Client GUI with the existing account and password information.

But the IEMS Security Client GUI cannot be invoked when the IEMS Server is running in the backward compatible [SN07] mode.

The following message will be shown to the user who invokes the IEMS Security Client when the server is running in backward compatible mode.

*“IEMS is in Upgrade Mode. Cannot allow SecurityAdmin operations”*

### 1.9.1 Emergency User Account:

IEMS Server provides its users with a special account called the emergency user account. This account has all administrative privileges for the IEMS Server, including security administration. The details of this account are maintained by the IEMS Server. When emergency user logs in and if MFT Security Server is available providing service, emergency user [iemsadm] will be able to use IEMS Security GUI interface. If MFT Security Services is not running, then if IEMS Security GUI is invoked, the error message provided by MFT will be displayed to the user.

UserName: iemsadm

Default Password : public

Since the details of this user account are maintained by IEMS Server, this account can be used when the MFT backend Security Service is not available. The administrator should not change the group association of this user. The password may be changed for this account.

### 1.9.2 Password Complexity:

When a user sets/changes his password, the following rules need to be followed. There are 4 classes of characters that are allowed in a password. They are listed below.

- Lowercase characters
- Uppercase characters
- Numeric characters
- Special characters.

It is recommended that the password complexity rule requires 3 out of 4 of the above classes of characters to be present in any password. The password complexity rules are configurable in the IEMS Server.

The provision for configuration is provided in a configuration file present in the following location.

`/opt/nortel/iems/current/defaultUserAttribute.prop`

In addition to the character set restrictions above, the password cannot be the same as the user name or the existing password, and must be at least 6 characters long by default and at most 256 characters long by default.

The following variables are used to configure the password complexity.

- `PASSWD_MIN_LENGTH=6`
- `PASSWD_MAX_LENGTH=256`
- `LOWERCASE_COUNT=1`
- `UPPERCASE_COUNT=1`
- `SPECIAL_CHAR_COUNT=0`
- `NUMBER_COUNT=1`
- `SPECIAL_CHARS=~!@#%&*( )_-+=[]{} \\\|;:'",<.>/?`

`PASSWD_MIN_LENGTH=6` - specifies that the password should have a minimum of 6 characters.

`PASSWD_MAX_LENGTH=256` - specifies that the password can have a maximum of 256 characters.

`LOWERCASE_COUNT=1` - specifies that the password should have atleast one lowercase character.

`UPPERCASE_COUNT=1` - specifies that the password should have atleast one uppercase character.

`SPECIAL_CHAR_COUNT=0` - specifies that password need not have a special character.

`NUMBER_COUNT=1` - specifies that the password should have atleast one of the numeric characters.

`SPECIAL_CHARS=~!@#%&*( )_-+=[]{} \\\|;:'",<.>/?`

When the password is scanned for special characters, each of the above characters is considered as a special character.

In the above sample the lowercase, uppercase & numeric characters are expected out of the 4(lowercase,uppercase,numeric & special characters).

**Note:** When one of these variables is changed the IEMS JWS Client should be restarted for the changes to take effect.

### 1.10 HTML Client Side:

Since HTML Client provides only minimal support for Security & User administration, Group, Operation provisioning is not provided in the HTML Client. In the HTML Client GUI the administrator will have the options given in Additional User Attributes section above in this document.

### 1.11 References

1. DID for 'MFT Backend security integration'

***Product = MG 9000***

## **A00005561--MG9K Internet Protocol Security** ***Functional Description***

### 1.1 Applicable Solution(s)

UA-AAL1

### 1.2 Description

This feature implements IP security and user authentication capabilities on the MG9K. There are two broad goals, first is to ensure that all users, local and remote, are validated before access is granted to a MG9K node. Secondly, all IP traffic between the MG9K and a remote peer (Element Manager or Gateway Controller) will be authenticated. These goals will be accomplished by authenticating user through a RADIUS client/server network. IP traffic will be protected with IP Security suites. As a result of this feature all peers connecting to the MG9K will also need to enable IP Security unless an explicit bypass policy is in place. Notably, the Element Manager and the Gateway Controller are affected and are the only devices that currently have to implement IPSec. Other devices that access the MG9K will do so with other secure protocols such as SSL, or SFT. See the following figure. The MG9K Security parameters can be configured from the LCI at initial commissioning or from the Element Manager.

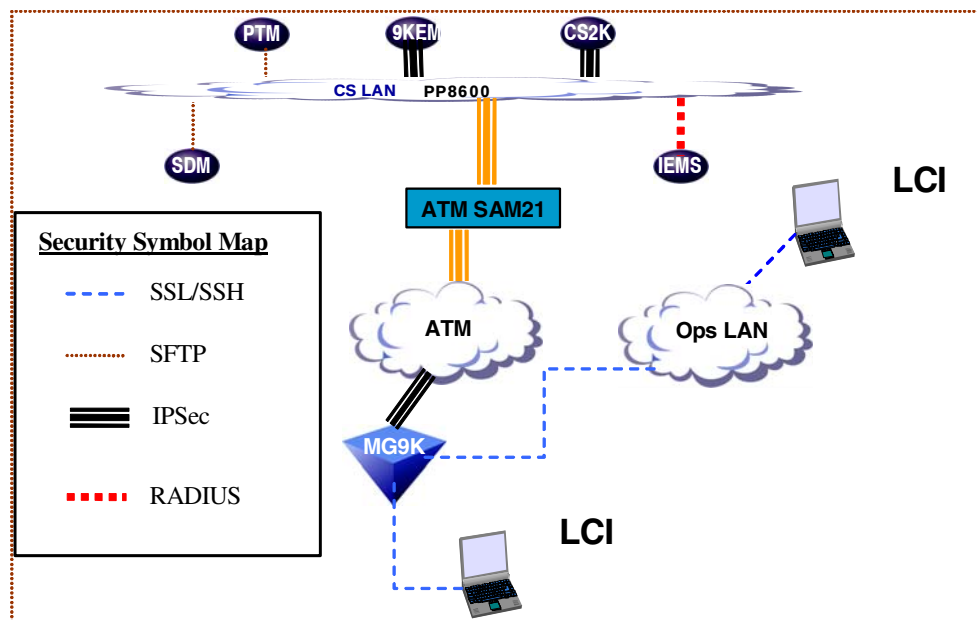


**Figure 11 IP Security Network**

The security features are enabled when the MG9K node is commissioned via the Local Craft Interface (LCI). One of the first steps is to configure the shared keys between the MG9K and its Element Manager and the key shared with GWC if known. Shared keys are protected in three ways by the MG9K. The key, of size TBD, is protected from being displayed on the LCI and EM. The same key has to be entered twice before it is accepted by the GUI, and it is stored in an encrypted format. The key is also never transmitted insecurely over the network.

The Local Craft Interface and the Element Manager are used to enable and configure MG9K security features. Configuration is done on a per-network element basis. There is no flow thru of the security options. Therefore careful coordination is required when security is enabled on codependent devices.

Below are sample LCI Security configuration screen shots. The Element Manager interfaces will be discussed in a separate document.

## 1.2.1 RADIUS Configuration

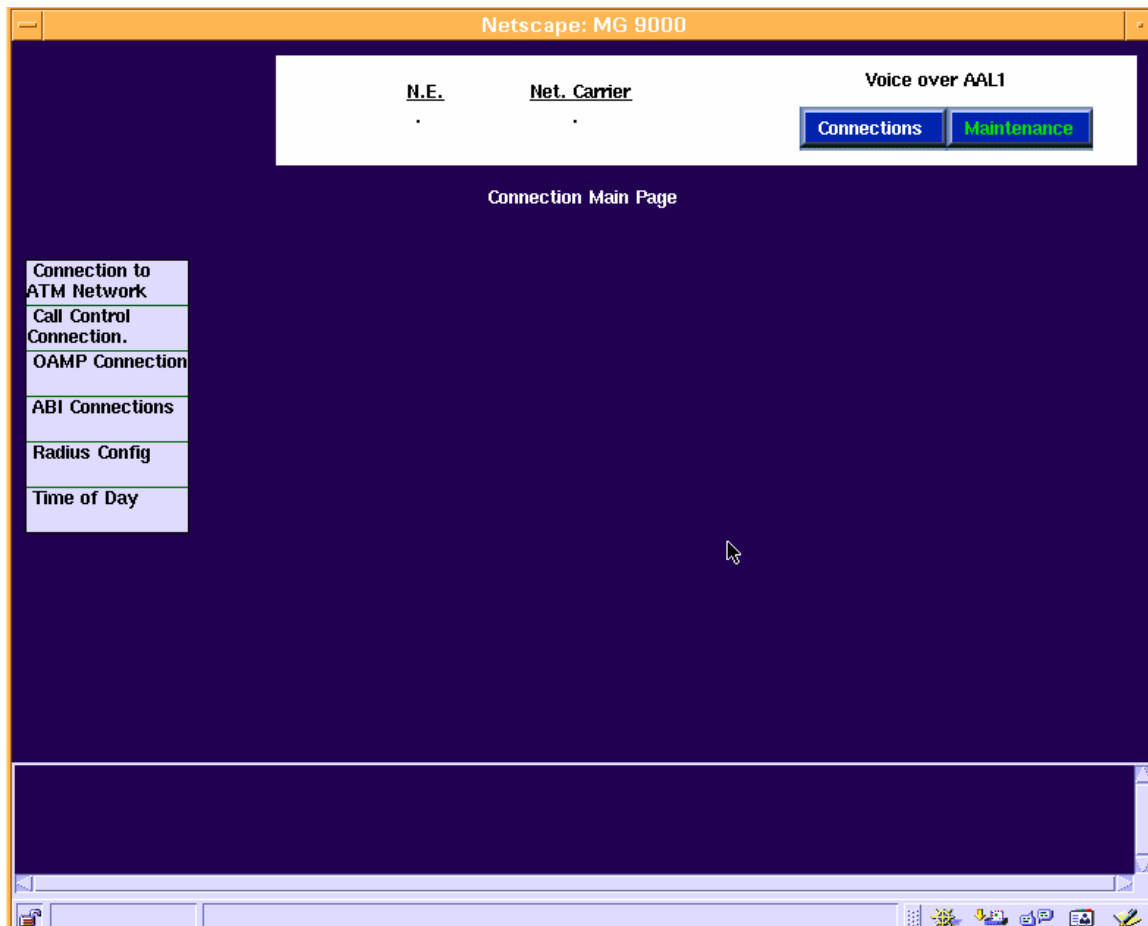


Figure 12 RADIUS Configuration



Netscape: MG 9000

N.E.      Net. Carrier      Voice over AAL1

Connections   Maintenance

RADIUS Configuration

Primary IEMS Address  

Secondary IEMS Address  

Primary IEMS Shared Key  

Secondary IEMS Shared Key  

Submit   Query

Figure 13 RADIUS Parameter set

## 1.2.2 IP Security Configuration

Netscape: MG 9000

N.E. Net. Carrier

Voice over AAL1

Connections Maintenance

Frame #1 Shelf #3 Select:

select a shelf view

frame #1 shelf #3

FRAME

SIC DS1 16pt DS1 16pt LC LC DCC DCC ITP ITP ITX ITX DS1 16pt DS1 16pt

IPSec Configuration

Peer IP Address

Lifetime

Shared Key

☒ Enable Security?

Submit Query

Figure 14 IP Security Parameter set

Table 1 Configuration Summary

|   | Action                                                        | Description | Expected Results                                                                                           |
|---|---------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------|
| 1 | Craft person logs on to MG9K Node with default Admin password |             | User authenticated locally on MG9K. (No access to RADIUS server). Access permitted if password is correct. |

|   |                                    |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                        |
|---|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | Set Security parameters            | <ol style="list-style-type: none"> <li>1 Enable Security</li> <li>2 Set Element Manager's Pre-shared Key</li> <li>3 Set IP addresses of RADIUS Servers</li> <li>4 Set GWC Preshared Key if known</li> <li>5 Change Default Admin password if desired.</li> </ol> |                                                                                                                                                                                                                        |
| 3 | Continue normal MG9K commissioning |                                                                                                                                                                                                                                                                  | <p>When the WAN interface becomes operational, links to the EM and GWC will be secured with IPSec. (Secure link establishment continues until success)</p> <p>MG9K sends a cold start trap to trigger EM discover.</p> |
| 4 | VMG Provisioning                   |                                                                                                                                                                                                                                                                  | EM to set GWC-GW pre-shared key                                                                                                                                                                                        |

### 1.2.3 Alarms, Logs, and Statistics

#### 1.2.3.1 Security Alarms (displayed at the EM and the LCI)

- Non-responsive RADIUS Server
- Expired Links to Security Peers
- Replayed Packet threshold
- Packet Discard threshold

#### 1.2.3.2 Security events logs (accessible at the EM)

- IKE negotiation errors
  - Key mismatch
  - Proposal errors
  - Time out
- IP packet authentication failures
- Packet discard
- Replayed packets

**1.2.3.3 Security statistics**

Number of Packets

- Transmitted
- Received
- Discarded

**1.3 2.3 Applicable customer facing sections**

Fault Management:

Not Applicable \_\_\_\_\_

Logs \_\_\_\_\_X\_\_\_\_\_

Alarms \_\_\_\_\_X\_\_\_\_\_

Configuration:

Not Applicable \_\_\_\_\_

Data Schema/MIBs \_\_\_\_\_X\_\_\_\_\_

User Interface \_\_\_\_\_

GUI \_\_\_\_\_

Element Management \_\_\_\_\_X\_\_\_\_\_

Local Craft Interface \_\_\_\_\_X\_\_\_\_\_

Security \_\_\_\_\_X\_\_\_\_\_

Service Order \_\_\_\_\_X\_\_\_\_\_

SOC \_\_\_\_\_

Office Parameters \_\_\_\_\_

Upgrades impact \_\_\_\_\_X\_\_\_\_\_

Accounting \_\_\_\_\_

Not Applicable \_\_\_\_\_

Billing changes \_\_\_\_\_

Performance \_\_\_\_\_

Not Applicable \_\_\_\_\_

Operational Measurements \_\_\_\_\_

Performance Measurements     X    

## 1.4 Hardware Requirements or Dependencies

None

## 1.5 Software Requirements or Dependencies

IP Security on the MG9K runs in concert with security enabled on the Element Manager and GWC.

## 1.6 Limitations and restrictions

None

## 1.7 Interactions

None

## 1.8 Glossary

| Term     | Description |
|----------|-------------|
| New term | Definition  |

***Product = MG 9000***

## **A00005646--IPSEC with MG9000 Element Manager**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

UA-AAL1

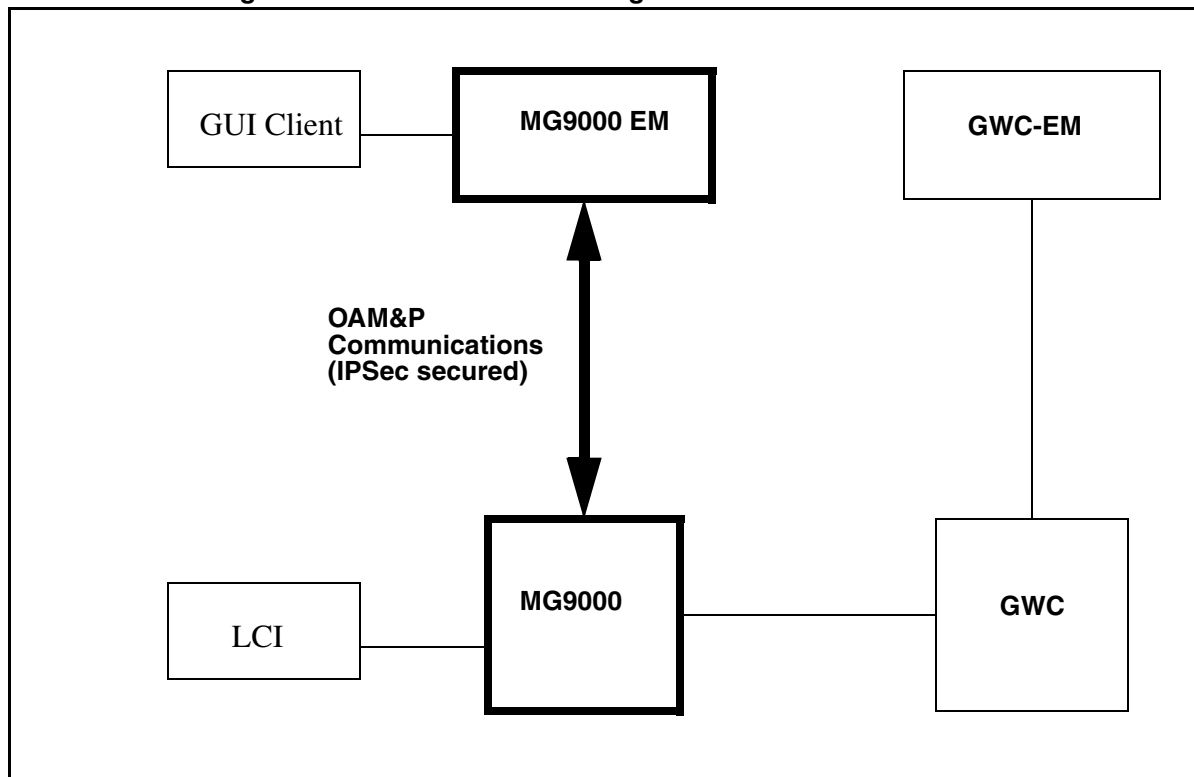
#### **1.2 Description**

This feature implements IPsec for MG9000 Element Manager to MG9000 Line Gateway OAMP communications. The craftsperson will be able to independently manage IPsec parameters for all OAM&P communications to and from MG9000 network elements. This feature will enable/disable/modify IPsec on the OAM&P messaging channel from the MG9000 EM to an MG9000. Encryption (Confidentiality) may not be enabled in this release as it is not supported by the MG9000 Line Gateway.

The MG9K Element Manager will be used to manage IPsec security associations on the server-side portion of the OAM&P communications. The

MG9000's LCI will be used to manage IPsec security associations on the gateway-side of the OAM&P communications. See Figure 1.

**Figure 15 Desired Behavior Diagram**



For securing the OAM&P communications channel on the MG9000EM, a new **Security View** will be made available from the MG9000 EM subnet. This GUI will manage the IPsec (and Internet Key Exchange) configuration file(s) that are present in the SSPFS common platform. Parameters in these files are used to setup security associations, keys, and protection mechanisms. Enforcement of IPsec policies will be system-wide and per-socket as provided by the Solaris IPsec implementation. The craftsman will not be limited to securing the EM to GW connection, but will be able to manage all network connectivity in and out of the MG9000 Element Manager Server.

Also the **Office Wide Defaults View** is changed to support IPsec. This will enable the customer to configure one set of IPsec parameters and have them applied to all, or a subset of, the provisioned MG9000s.

This feature does not affect security on the MG9000 Element Manager Mid-Tier or client machines. All security views in the MG9000EM will only be accessible from EMSADM login class.

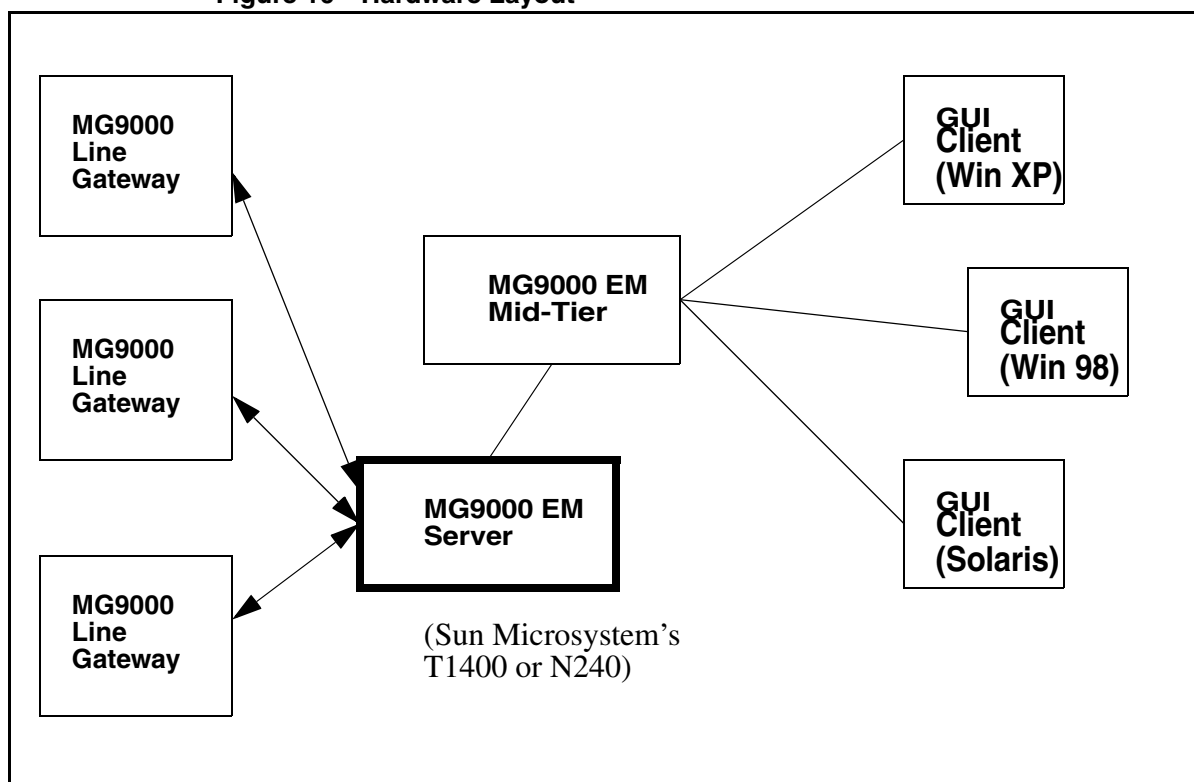
For proper operation of IPsec, all security parameters provisioned for an MG9000 Network Element in the Element Manager **MUST** also be

provisioned in the corresponding MG9000 Line Gateway. **IF THE PARAMETERS DO NOT MATCH, COMMUNICATIONS BETWEEN THE GATEWAY AND ELEMENT MANAGER WILL NOT BE POSSIBLE.**

### 1.3 Hardware Requirements or Dependencies

No new hardware is being introduced by this feature. Existing Sun Microsystems T1400 and N240 hardware used as MG9000 EM server platform will be used.

Figure 16 Hardware Layout



### 1.4 Software Requirements or Dependencies

SN008 release or later of the MG9000EM application will support IPsec.

Software loads in the MG9000 Line Gateway will be SN008 release or later.

### 1.5 Limitations and restrictions

#### 1.5.1 Security

For proper operation of IPsec, all security parameters provisioned for an MG9000 Network Element in the Element Manager **MUST** also be

provisioned in the corresponding MG9000 Line Gateway. **IF THE PARAMETERS DO NOT MATCH, COMMUNICATIONS BETWEEN THE GATEWAY AND ELEMENT MANAGER WILL NOT BE POSSIBLE.**

### 1.5.2 IPsec Precedence Order

If the IPsec configuration contains multiple policy entries, for example, they are assumed to be listed in the order in which they are to be applied. In cases of multiple entries matching the outbound and inbound datagram, the first match will be taken. The system will reorder the policy entry, that is, add the new entry before the old entry, only when:

- The level of protection is “stronger” than the old level of protection. Currently, strength is defined as:

AH and ESP > ESP > AH

Entries with both AH and ESP present in the policy entry protection are ordered after all the entries with AH and ESP and before any AH-only and ESP-only entries.

- If the new entry has bypass as action, bypass has the highest precedence. It can be added in any order, and the system will still match all the bypass entries before matching any other entries.

In all other cases the order specified by the user is not modified, that is, newer entries are added at the end of all the old entries.

A new entry is considered duplicate of the old entry if an old entry matches the same traffic pattern as the new entry.

### 1.5.3 IP Addresses

No IPv6 128 bit format IP addresses will be supported, only IPv4 (xxx.xxx.xxx.xxx) format 32 bit addresses will be supported.

## 1.6 Interactions

No interactions between IPsec and existing features will be seen by the craftsman.

## 1.7 Applicable customer facing sections

Fault Management

Logs \_\_X\_\_

Alarms \_\_X\_\_

Configuration



|                                                 |         |
|-------------------------------------------------|---------|
| Data Schema                                     | __N/A__ |
| User Interface                                  | __X__   |
| Element Management                              | __N/A__ |
| Security                                        | __X__   |
| Service Order                                   | __N/A__ |
| Office Parameters                               | __N/A__ |
| Accounting (includes AMA billing)               | __N/A__ |
| Performance (includes operational measurements) | __N/A__ |

## 1.8 Glossary

| Term  | Description              |
|-------|--------------------------|
| GWC   | Gateway Controller       |
| GUI   | Graphical User Interface |
| IPSec | IP Security              |

## 2: Fault Management for A00005646

### 2.1 Fault management strategy

The standard MG9k EM Fault Management strategy will apply to the faults for MG9kEM IPSec and Overload Controls. Alarms will be displayed by the MG9K EM Alarm Browser, logged in NT standard format to the SSPFS CUST logs and forwarded to northbound OSS.

In support of the MG9K EM - MG9K IPSec connection, there will be new faults added to indicate threshold crossing and link issues.

For the MG9k EM Overload Controls feature there will not be any new faults added. However, existing faults for the DCC which indicate threshold crossing and overload detection will now also apply to the ITP and ABI.

### 2.2 Fault management tools and utilities

TBD (IPSEC)

Alarm Browser - Reports alarms from registered events. When an alarm is generated, it is displayed in the Alarm Browser along with the date, time, the NE Id, the generating resource information, the severity and the probable cause. Highlighting the alarm displays the description of the alarm in the text box at the bottom of the Alarm Browser.

Log Adaptor - Generates logs from registered events. The log names and numbers are predetermined and are matched with the incoming event. A log with the corresponding name and number which contains the date, time, physical location, severity and any other pertinent information is generated and placed into a separate file.

## 2.3 Logs

### 2.3.1 IPsec syslog messages

The Solaris implementation of IPsec automatically sends all failure logs to syslog /var/adm/messages. We do not have control over this. However when the servlet makes any changes to the IPsec security rules, the wrapper scripts will output any attempted changes to /var/log/securitylog.

The Solaris IPsec itself does not seem to generate any failure messages because security could be compromised, however IKE does seem to generate failure messages to syslog.

Sample IKE failure message would look like this.

```
messages.0:Mar 25 15:40:04 wnc1s01h /usr/lib/inet/in.iked: [ID
313954 daemon.notice] IKE_DELETE_PAYLOAD_RECEIVED:
20040325204004: Source addr:47.142.217.23 Destination
addr:47.142.217.22 SPI:0x0100005d350a7d6c0100006b743037d4
Description:Received delete notification
```

All other possible failure messages that could get generated to syslog is shown below for IKE.

```
IKE_AH_IP_FRAGMENT
IKE_AH_SA_LOOKUP_FAILURE
IKE_AH_SEQUENCE_NUMBER_FAILURE
IKE_AH_ICV_FAILURE
IKE_ESP_SEQUENCE_NUMBER_OVERFLOW
IKE_ESP_IP_FRAGMENT
IKE_ESP_SA_LOOKUP_FAILURE,
IKE_ESP_SEQUENCE_NUMBER_FAILURE
IKE_ESP_ICV_FAILURE
IKE_INVALID_COOKIE
IKE_INVALID_ISAKMP_VERSION
IKE_INVALID_EXCHANGE_TYPE
IKE_INVALID_FLAGS
```

IKE\_INVALID\_MESSAGE\_ID  
IKE\_INVALID\_NEXT\_PAYLOAD  
IKE\_INVALID\_RESERVED\_FIELD  
IKE\_INVALID\_DOI  
IKE\_INVALID\_SITUATION  
IKE\_INVALID\_PROPOSAL  
IKE\_INVALID\_SPI  
IKE\_INVALID\_TRANSFORM  
IKE\_INVALID\_ATTRIBUTES  
IKE\_INVALID\_KEY\_INFORMATION  
IKE\_INVALID\_ID\_INFORMATION  
IKE\_INVALID\_CERTIFICATE  
IKE\_INVALID\_CERTIFICATE\_TYPE  
IKE\_INVALID\_CERTIFICATE\_AUTHORITY  
IKE\_INVALID\_HASH\_INFORMATION  
IKE\_INVALID\_HASH\_VALUE  
IKE\_INVALID\_SIGNATURE\_INFORMATION  
IKE\_INVALID\_SIGNATURE\_VALUE  
IKE\_INVALID\_PROTOCOL\_ID  
IKE\_INVALID\_MESSAGE\_TYPE  
IKE\_CERTIFICATE\_TYPE\_UNSUPPORTED  
IKE\_CERTIFICATE\_UNAVAILABLE  
IKE\_NOTIFICATION\_PAYLOAD\_RECEIVED  
IKE\_DELETE\_PAYLOAD\_RECEIVED  
IKE\_UNEQUAL\_PAYLOAD\_LENGTHS  
IKE\_BAD\_PROPOSAL\_SYNTAX  
IKE\_RETRY\_LIMIT\_REACHED

### 2.3.2 ITP/ABI Overload Controls.

The behavior for the logs for the ITP/ABI Overload Controls will be exactly the same as that implemented for the DCC Card in SN06.2. Please refer to the document titled Fault Management - MG9k EM Overload Controls (A00002007) for more details regarding these logs.

These are new alarms that will be generated by the MG9000.

- Unable to communicate with RADIUS Server
- Secure link Down w GWC
- Packet Discard (depends on the threshold set)
- Overload Controls. The alarms for the ABI and ITP Overload Controls are exactly same as those documented for the DCC Card in 6.2. The only difference being that these alarms will now also apply to the ABI & ITP Card as well as the DCC Card. Please refer to the document titled Fault Management - MG9k EM Overload Controls (A00002007) for more details regarding these alarms.

The following logs will be thresholds in the MG9000. When the threshold is crossed an alarm will be generated

**1. Logging Event**

- Sequence\_Number\_Overflow
- Life\_Time\_Expired, Type = SoftlHard

**2. Security Policy Database**

- SAD\_Discard\_Policy:- Direction (in/outbound)
- SAD\_Lookup\_Fail, info needed:- Direction (in/out bound):- Sub-info field invalid SPI, Replayed packet

**3. IKE**

- IKE\_Main\_Mode-Failed, Mismatched PSK
- IKE\_Quick\_Mode-Failed, Proposal mismatch, NULL ESP & authentication = null, en/decryption failures
- IKE\_Packet Discarded, decryption errors, Auth errors

**4. IPsec Security Association**

- SA\_Decryption\_Error
- SA\_Authentication\_Error

## **2.4 Related documentation**

1. Fault Management - MG9kEM Overload Controls (A0002007) Bobby Robinson (SN06.2)

## **3: Configuration for A00005646**

## 3.1 Hardware and Software Requirements

SN08 or later software load for both the MG9000 and Element manager.

## 3.2 Initial Configuration

### 3.2.1 Security

From a high-level here are the steps to enable security on the OAM&P and call control links.

1. Load both MG9000 and MG9000 Element Manager with required software.
2. When commissioning the MG9000, thru the LCI, the craftsperson will enable security on the management link to the Element Manager.
3. The craftsperson will then use a web browser and connect to the MG9000 Element Manager server machine. (Not the Mid-Tier machine) After logging in, the craftsperson will enable security on communications with the MG9000 IP address.
4. Cold start from MG9000 or manual discovery from Element Manager.
5. This will complete securing the OAM&P link.
6. From SESM, enable security on the Gateway Controller.
7. From the SLOA GUI, provision a VMG. Enable security on the GW Controller Config tab.
8. This will complete securing the Call Control link.

#### 3.2.1.1 MG9000

The LCI's IPSec and IKE security parameters must match the parameters provisioned through the SSPFS security servlet.

VMG IKE configuration parameters that are provisioned, via the Element Manager's SLOA GUI, must match the corresponding IKE parameters on the GWC.

#### 3.2.1.2 MG9000 Element Manager

IPSec and IKE configuration parameters that are provisioned, via the SSPFS security servlet, must match the corresponding IPSec and IKE parameters on the MG9000, provisioned via the LCI.

### 3.2.2 MG9kEM SN008 Installation

If a user is upgrading from SN06.2 to SN008, the steps to upgrade are the same as they would be for SN06.2 to SN07.

If the user is upgrading from SN07 to SN008 - an additional step will be added to prompt the user to backup the table space for SN07.

As of SN008 the MG9kEM will continue to use the same tablespace as the previous release - with alters applied. Therefore in order to be able to roll back a MG9kEM release to SN07 from SN008 (if necessary)- the table space must be backed up prior to starting the SN008 MG9kEM.

### 3.3 Office/Subnet parameters (OP/SP) (CM & SESM)

Not applicable

## 3.4 Upgrade Impact

### 3.4.1 Dump and Restore

If the user is upgrading from SN06.2 to SN008 - the steps for upgrade are the same as they would be for SN06.2 to SN07.

If the user is upgrading from SN07 to SN008, things change. As of SN008, we no longer will be running multiple versions of the EM. The EM will now use ONE tablespace from SN07 forward - with alters applied to support each new release. This means that the data from that tablespace for SN07 must be backed up prior to starting up the SN008 product. The script to backup the table space, mg9kem\_db\_backup.sh, and a mechanism to invoke this script will be provided.

If it is necessary to rollback to SN07, the use of the script mg9kem\_db\_restore.sh must be employed to restore the tablespace to its previous SN07 database schema and data set.

For SN06.2 to SN008 upgrades - the mechanism for exporting from SN06.2 and importing to SN008 will still be required. (See CN document for A00003074 which documents these steps.)

For SN07 to SN008 - no data export or import is necessary. The SN008 will attach to the existing SN07 tablespace and recover and use the network elements and data directly from that space.

### 3.4.2 Element Management Major Upgrade

If upgrading from SN06.2 directly to SN008 - the upgrade steps are exactly the same as they would be for SN06.2 to SN07.

If upgrading from SN07 to SN008, one modification to the way upgrades work is that the user is no longer required to move from one MG9kEM version to another if upgrading a MG9k from SN07 to SN008. The SN008 MG9kEM suite can handle discover and management of a MG9k Gateway running an SN07 load.

For SN07 to SN008, the steps will be install the SN008 package, backup the SN07 tablespace, start the SN008 MG9kEM. No data transfer steps are required.

One break in the way the MG9kEM can be run is that once SN008 has been started - the user cannot go back to using the SN07 Element Manager without restoring the previous database. It is not allowed to have SN07 MG9kEM and SN008 EM running at the same time, or to switch back and forth.

The Major upgrade from SN07 to SN008 is intended to be very similar in steps to that of a MR Upgrade.

### 3.4.3 Element Management MR Upgrade

The same steps as were done to support an SN07 MR Upgrade will apply to SN008.

## 3.5 Data schema (DS) (CM, MIBS, RDB)

The NORTEL-UEMG-PERFMON-MIB will be modified so the simple names of the items for Thresholds and Overload will be modified to no longer reference the DCC.

New Mib for the VMG provisioning of IP Sec: TBD

## 3.6 OSS Changes

In previous releases the northbound interfaces were required to change the prefix for their event channels and fault manager entries. In SN06.2 the prefix was Subnet\_62. With SN07 the entry changed to Subnet\_7.

As of SN08, there will NO LONGER be the need to change this prefix in the northbound interfaces. As of SN08 - the MG9kEM will henceforth use Subnet\_7 as its prefix.

Example ORB entry changes:

SN06.2

EventChannel = "Subnet\_62.ec.Oss"

FaultServiceManger = "Subnet\_62.Service.FaultServiceManager"

SN07

EventChannel = "Subnet\_7.ecc.Oss"

FaultServiceManager = "Subnet\_7.Services.FaultServiceManager"

SN08

EventChannel = "**Subnet\_7**.ecc.Oss"

FaultServiceManager = "**Subnet\_7**.Services.FaultServiceManager"

The reason we can now do this is that SN07 and SN08 will NEVER be running at the same time. When SN08 is deployed - it will also use the same prefix (Subnet\_7). This is because at any given time only ONE instance of these (SN07, SN08) - may be running on a server.

### 3.7 External Interface Changes

With SN07 the TL1 Adaptor for SN07 was required to change its connecting port to 2363. This port will not be required to change for SN08 and will remain at 2363.

In SN07, the EM's SNMP listening port was modified to be 8002. This will not change for SN08. The SNMP port will be 8002.

### 3.8 MG9000 Element Management

#### 3.8.1 New/modified GUIs

From the current SLOA GUI, the craftsperson will be able to enable or disable IPSec and IKE on the call control channel from the MG9000's ITP to gateway controller.

The craftsperson will have the option of using Office Wide Defaults for the VMG security parameters. The defaults will be managed from, oddly enough, the current Office Wide Defaults GUI.

A new HTML security web page is available for the craftsperson to use to secure the MG9000 Element Manager server machine. Using the interface, secure communication with the MG9000 is possible.

In regards to the addition of ABI/ITP Overload Controls, the same Overload Threshold Pane that is now in existence for the DCC Cards will be applied to the ITP/ABI Cards. The user may access this via the existing Manage Thresholds functionality.

#### 3.8.2 GUI information

##### 3.8.2.1 GUI name: Office Wide Defaults

Office Wide Defaults

##### 3.8.2.1.1 Functional description

This GUI will be used to define default security parameters that may be used during VMG provisioned. These parameters will be used in securing the call control link between the VMG and the gateway controller.

Added to the Office Wide Defaults GUI will be a section for Security. This section will have three parameters:



1. Security OFF, ON
2. IKE preshared key
3. IKE time to live

### 3.8.2.1.2 GUI usage and implications

Office Wide defaults should be assigned first before provisioning VMGs.

### 3.8.2.1.3 GUI fields

The following table lists the security fields for Office Wide Defaults GUI.

**Table 1 GUI field descriptions**

| Field            | New or Changed | Subfield | Entry                | Explanation and action                                                     | Associated MIB entry |
|------------------|----------------|----------|----------------------|----------------------------------------------------------------------------|----------------------|
| Security         | New            | No       | OFF, ON              | Default = OFF<br><br>Indicates whether or not security is enabled.         | TBD                  |
| IKE Preshare key | New            | No       | 26 digit HEX string? | Preshared key used in the IKE establishment of a secure call control link. | TBD                  |
| IKE Time To Live | New            | No       | Non-negative integer | How long the currently established security session will last?             | TBD                  |

### 3.8.2.1.4 Usage example

The following example shows sample datafill for the Office Wide Defaults GUI:

*Screenshot of the Office Wide Defaults GUI with IPSec parameters shown to be provided later.*

### 3.8.2.1.5 GUI release history update

The following information was added:

Security section added to Office Wide Defaults GUI.

### 3.8.2.1.6 Supplementary information

None

### 3.8.2.1.7 CLUI Interface

Not applicable

### 3.8.2.2 GUI name: SLOA

Switched Line Services for MG9000

#### 3.8.2.2.1 Functional description

This GUI will be used to define security parameters to be used in securing the call control link between the VMG and the gateway controller.

Added to the GW Controller Config tab will be a section for Security. This section will have three parameters:

1. Security OFF, ON or OfficeWide Default
2. IKE preshared key
3. IKE time to live

#### 3.8.2.2.2 GUI usage and implications

GUIs must be used in the following sequence:

Optional: Office Wide defaults should be assigned first before provisioning VMGs.

#### 3.8.2.2.3 GUI fields

The following table lists the security fields for SLOA GUI on the GW Controller Config tab.

**Table 2 GUI field descriptions**

| Field            | New or Changed | Subfield | Entry                        | Explanation and action                                                                                                                                                                        | Associated MIB entry |
|------------------|----------------|----------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Security         | New            | No       | OFF, ON, OfficeWide Defaults | Default = OFF<br><br>Indicates whether or not security is enabled. Option is to use the office wide defaults.<br><br>If OfficeWide Defaults are selected the remaining fields are grayed out. | TBD                  |
| IKE Preshare key | New            | No       | 26 digit HEX string?         | Preshared key used in the IKE establishment of a secure call control link.                                                                                                                    | TBD                  |

**Table 2 GUI field descriptions**

| Field            | New or Changed | Subfield | Entry                | Explanation and action                                         | Associated MIB entry |
|------------------|----------------|----------|----------------------|----------------------------------------------------------------|----------------------|
| IKE Time To Live | New            | No       | Non-negative integer | How long the currently established security session will last? | TBD                  |

**3.8.2.2.4 Usage example**

The following example shows sample datafill for the SLOA GUI:

*Screenshot of SLOA GUI with IPSec parameters shown to be provided later.*

**3.8.2.2.5 GUI release history update**

The following information was added:

Security section added to GW Controller Config tab.

**3.8.2.2.6 Supplementary information**

None

**3.8.2.2.7 CLUI Interface**

Not applicable

**3.8.2.3 GUI name: SSPFS Security**

SSPFS Security Interface

**3.8.2.3.1 Functional description**

This HTML webpage will be used to define security parameters to secure communications into and out from this SSPFS Machine. This includes MG9000 Element Manager to MG9000 OAM&P communications.

The craftsperson will be presented with a number of tables representing currently provisioned security parameters. Options to add and delete parameters are available. Adding parameters will be performed using HTML forms.

**3.8.2.3.2 GUI usage and implications**

Primary usage of this interface is to secure the OAM&P communications channel between the MG9000 and Element manager.

This interface provides for securing all communications and not just Element Manager communications. Care must be taken when provisioning or deleting the security parameters, so as not to effect other essential communications.

**3.8.2.3.3 GUI fields**

The following table lists the security fields for SSPFS Security Interface.

**Table 3 GUI field descriptions**

| Field | New or Changed | Subfield | Entry | Explanation and action | Associated MIB entry |
|-------|----------------|----------|-------|------------------------|----------------------|
| TBD   | TBD            | TBD      | TBD   | TBD                    | TBD                  |

**3.8.2.3.4 Usage example**

The following example shows sample datafill for the SSPFS Security Interface.:

*Screenshot of the SSPFS Security Interface with IPSec parameters shown to be provided later.*

**3.8.2.3.5 GUI release history update**

The following information was added:

Initial availability.

**3.8.2.3.6 Supplementary information**

None

**3.8.2.3.7 CLUI Interface**

Not applicable

**3.9 Command interface changes**

TBD

**3.10 Security****3.10.1 Network configuration**

No changes to the network are necessary to support the IPSec implementation.

**3.10.2 Key management****3.10.2.1 VMG IKE Preshared key**

VMG IKE preshared keys will be input by the user when provisioning a VMG. The key will be stored encrypted in the Oracle database. The will be sent the the MG9000 encrypted and stored in the MIB encrypted.

**3.10.2.2 SSPFS IKE Preshared key**

The SSPFS IKE preshared key be input by the user in the SSPFS Security Servlet. This key is secured by the use of secure http from the browser to the server. *Solaris stores all keys XXXXX.*

**3.10.3 Protocol**

IPSec is being used on the Solaris machine.

### 3.10.4 Authentication

Succession login will be used for SSPFS Security Servlet.

## 3.11 Configuration Walkthrough

### 3.11.1 OAM&P Security

From a high-level here are the steps to enable security on the OAM&P links.

1. Load both MG9000 and MG9000 Element Manager with required software.
2. When commissioning the MG9000, thru the LCI, the craftsperson will enable security on the management link to the Element Manager.
3. The craftsperson will then use a web browser and connect to the MG9000 Element Manager server machine. (Not the Mid-Tier machine) After logging in, the craftsperson will enable security on communications with the MG9000 IP address.
4. Cold start from MG9000 or manual discovery from Element Manager.
5. This will complete securing the OAM&P link.

### 3.11.2 VMG Security

From a high-level here are the steps to enable security on the call control links.

1. From SESM, enable security on the Gateway Controller.
2. From the SLOA GUI, provision a VMG. Enable security on the GW Controller Config tab.
3. This will complete securing the Call Control link.

***Product = MG 9000***

## **A00006450--TL1 Line Test Interface for MG9K Lines**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

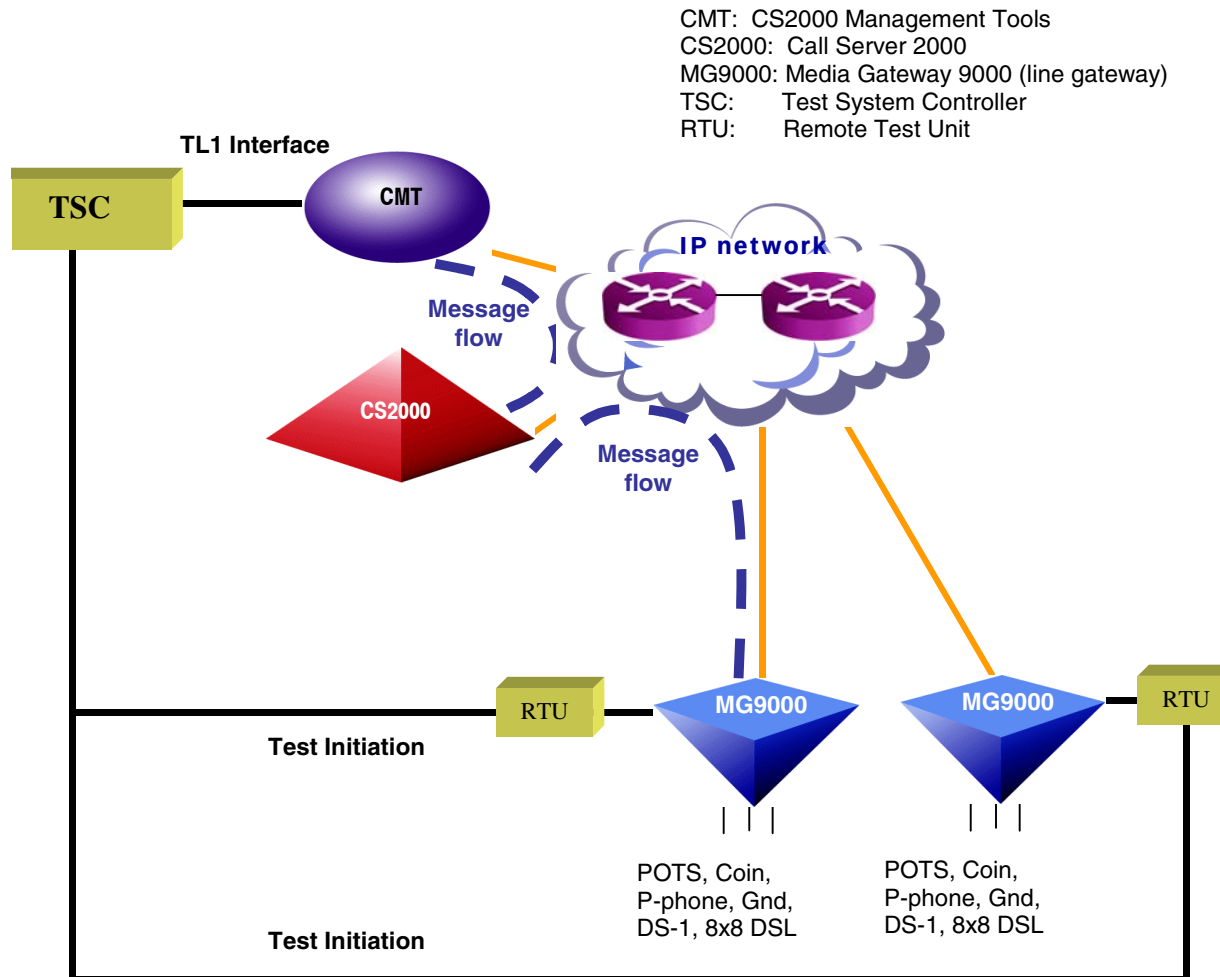
UA-AAL1

#### **1.2 Description**

As Nortel Networks rolls out the carrier next generation networks, customers require the new network to support line testing from different test OSS vendors. An open-line test access interface is needed to allow test OSS vendors

to operate line test access relays. This feature introduces a TL1 interface in the CS2M that provides a common point of access for MG9K line test. TL1 provides an accepted, standards-based interface for this purpose. This feature adds a standards-based command set as an overlay to pre-existing line test functionality on the MG9K.

### 1.2.1 Overview



Succession Networks MG9000 line gateway supports POTS, coin, P-phone, ground start, 8x8 POTS and ADSL and DS-1 circuits. Line test access is via MTA (Metallic Test Access) matrix built in the gateway. Each gateway has eight (8) test access ports available; each of which supports 2-wire (one tip-ring pair) test access. Test directions supported by the circuits are:

- Test in (towards the circuit).
- Test out (towards subscriber loop).

- Test bridged configuration.

Although the high impedance isolation is not provided by the MTA in test bridged configurations, it is believed that nearly all currently available test heads have such isolation built in them. The MTA is designed to support both narrowband and wideband line test, provided the configuration meets Nortel Networks' guide lines.

A MG9000 node can have multiple frames which can house up to four (4) shelves each.

Each shelf has multiple cards serving subscribers. Each card has multiple circuits which each support a subscriber loop. In an MG9000 node, any test access port can reach any loop for testing. A maximum of two concurrent line test access connections can be established on each shelf. One concurrent line test connection can be established per card.

### 1.2.2 Open Line Test Interface Coverage

The following will be supported in SN08:

- Line test access of MG9000 lines.
- Line testing on all Succession Networks supported POTS lines, 8x8 POTS & ADSL lines on MG9000;
- Both narrowband and wideband line test wherever applicable; although the test access ports only support 2-wire test access

### 1.2.3 Communication and Interface Protocols

The Test System Controller (TSC) communicates with the CMT (Call server Management Tools) for line test access request. CMT is connected to a secured IP network. The communication between TSC and CMT is via the SSH (Secured SHell). Details on the configuration of SSH and OSSGate usage can be found in the OSSGate User's Guide (NTP# NE10004-512).

Once logged in to the OSSGate, the user will need to change modes to enable the TL1 interface.

From the OSSGate prompt, the user will enter ^B (control-B)

```
>^B <enter>
?
```

A question-mark will be displayed indicating the user is now in control mode. To change to TL1 mode, enter:

```
? mode tl1 <enter>
```

The user will see a message:

```
mode is TL1
>
```

OSSGate is now ready to forward TL1 commands to the TL1 server for processing.

### 1.2.4 User Authorization

Each TL1 command is assigned to one or more user authorization groups. For an OSSGate login user to have permission to execute a TL1 command, the user must belong to an authorization group associated with the command. The following table provides a mapping of TL1 commands to the required group membership of the user running them.

| TL1 Command     | Permitted Authorization Groups |
|-----------------|--------------------------------|
| CONN-SLACC-MET  | Inmtc, Inadm, Inrw             |
| CHG-SLACC-DIR   | Inmtc, Inadm, Inrw             |
| CHG-SLACC-BW    | Inmtc, Inadm, Inrw             |
| REPT-STAT       | Inmtc, Inadm, Inrw             |
| DISC-SLACC      | Inmtc, Inadm, Inrw             |
| RTRV-SLACC-INFO | Inmtc, Inadm, Inrw, Inro       |

Members of “linemtc, Inadm, and Inrw ” have permission to run all TL1 line test commands. The “Inro” authorization group restricts users to query functions only via the RTRV-SLACC-INFO command.

Users can be assigned to different authorization groups with the “usermod” command from the UNIX command line on the CMT server. Only the root user is permitted to run this command. See document: NN10276-500 “ATM/IP Configuration Management” for details

### 1.2.5 Line Test Access Functionality

#### 1.2.5.1 TL1 Interface Behavior and Dependencies

- 1 Users are required to login to the OSSGate on the CMT via the SSH protocol using a user ID and password.
- 2 The same user ID and password can be used to login more than one TL1 session.



- 3 The MG9000 maintains an inactivity timeout for line test connections of 180 seconds. If the timeout expires, the TL1 user's existing test access connection will be disconnected and further commands will fail until a new test connection is established. The user login session will not be impacted by this timeout.
- 4 The OSSGate application maintains an inactivity timeout of 5 minutes (300 seconds). If this timeout expires, the TL1 user will be logged out of the system.
- 5 Each TL1 login session can have multiple active test connections. The maximum number of test connections of each TL1 login user will be determined during the implementation.
- 6 There will not be unsolicited messages sent to the user. One TL1 request can expect one TL1 response.
- 7 Directory numbers **must** be specified in their fully qualified form (FQDN) for commands that operate on test access relays. It is optional *only* for the RTRV-SLACC-INFO.

### 1.2.6 SN08 : TL1 Line Test Access Command Summary

| Command Code    | Description                                                                                            |
|-----------------|--------------------------------------------------------------------------------------------------------|
| CONN-SLACC-MET  | Connect the subscriber loop on the test bus.                                                           |
| CHG-SLACC-DIR   | Set the test direction to IN (towards the line circuit), OUT (towards the subscriber loop) or BRIDGED. |
| CHG-SLACC-BW    | Change the test access band between narrowband access and wideband access.                             |
| REPT-STAT       | Reset the 180 second inactivity timer in the system.                                                   |
| DISC-SLACC      | Reset all the test access relays to their default state.                                               |
| RTRV-SLACC-INFO | Retrieve a subscribers' line information.                                                              |

**Note:** Transaction Language 1 (TL1) is the line test access protocol used for this interface. It is based on the Telcordia specifications GR-831-CORE and GR-834-CORE. The following sections describe the commands and syntax supported by this interface.

### 1.2.7 TL1 Syntax Rules:

The following are the TL1 syntax rules enforced by this implementation:

- All TL1 fields are delimited by “.” characters.
- The first 5 fields are mandatory - even if blank. This includes Command code, Target Id, Access Id, Correlation Tag, and General Block.
- If a specific field allows white-space, then it must be enclosed by double quotes “” if the white-space is to be preserved, otherwise it is ignored.

- Each field may consist of one or more parameters separated by white-space or optional comma. This implementation uses commas to delimit parameters within a given field.

These components will each be discussed in turn.

### 1.2.8 Command Code - (mandatory)

This is the actual command name to be executed and is typically defined in several parts:

<TL1Verb>-<Modifier1>-<modifier2>

A dash “-” character is used to delimit these components.

For this feature, the following command codes are supported:

- CONN-SLACC-MET
- CHG-SLACC-DIR
- CHG-SLACC-BW
- RTRV-SLACC-INFO
- REPT-STAT
- DISC-SLACC

Valid characters for this field are: letters, digits, or hyphen “-”. Any other characters found in this field will cause the operation to fail. This field is **not** case sensitive.

#### 1.2.8.1 Target Identifier (TID) - (mandatory)

As per the TL1 specification (GR-831), this field can consist of up to 20 characters and must be letters, digits, or hyphens. In this implementation, *it is used to define the address format* of the request and must be set to one of the following values:

- DN
- LEN

Although this field is mandatory, certain commands require that it be left empty. This field is **not** case sensitive.

#### 1.2.8.2 Access Identifier Block - (mandatory)

This field can consist of one or more parameters. The parser mainly checks for illegal white-space in unquoted parameters.

In this implementation, this field is used to specify the DN or LEN to be tested and is **not** case sensitive.

**1.2.8.3 Correlation Tag (CTAG) - (mandatory)**

This field can have a maximum size of 6 alphanumeric characters. This is a mandatory field for all commands. This field **is** case sensitive.

**1.2.8.4 General Block - (mandatory)**

This field is not used in this implementation. However, it is still mandatory and must be specified as an empty field.

**1.2.8.5 Payload Block - (optional)**

The payload block contains user-defined data and can consist of zero or more fields. Each Field may contain one or more data elements separated by commas.

Parameters within each field can be specified as either *Positional* or *Name-defined*

- **Positional parameters** have a fixed number of components. Empty components are specified by omitting the data, but inserting the delimiter in its place to show the data as missing. The rules are basically the same as that used when using CSV. All positional components must be specified even if the data is not present.
- **Named-defined** parameters specify their components using a NAME=VALUE approach. The order of components is not enforced and can be omitted if desired.

**Important Note:** For this feature, all commands defined contain either zero or one parameter in the payload block. Only Name-defined parameters are used and contain a variable number of components (depending on the command). All tag names and enumerated values are case insensitive. All other values are treated as case sensitive.

**1.2.9 TL1 Responses**

There are two types of TL1 response message formats used in this feature: (note that spaces are represented by the ^ (caret) character).

**1.2.9.1 Typical response containing header and optional parameter fields****Success Response:**

```
<cr> <lf> <lf>
^^^<af>^<date>^<time> <cr> <lf>
M^^<ctag>^<cs> <cr> <lf>
^^^["<optional comma-delimited parameters>"]
<cr> <lf>;
```

where:

<af> : address format

<lf> : line feed

<cr> : carriage return

<cs> : command state (COMPLD == success, DENY == error)

### Error Message Format:

```
<cr><lf><lf>
^^^<af>^<date>^<time> <cr><lf>
M^^<ctag>^DENY <cr><lf>
^^^<TL1 ERROR CODE><cr><lf>
^^^ [<optional comma-delimited error parameters>] <cr><lf>
^^^/*<GR-834 error code description>*/<cr><lf>
^^^/*<System-specific error description>*/<cr><lf>
;
```

### Error Message Example:

```
> CONN-SLACC-MET:DN:1418420217:CTAG2::TAP=2,BW=NB,DIR=O,sz=1;
```

```
DN 04-06-17 14:13:51
M CTAG2 DENY
IPMS
DN=1418420217,TYPE="SINGLE PARTY LINE",LEN="UAIP 00 2 02
17",OPTIONS=DGT,GW_NAME=UAIP000-0-2,EP_NAME=tp/02/17,GW_NAME=UAIP000-0-
2,NE_NUM=2,LF=UE9000MG,LS=IDL,CLLI=COMPACT3 ,BW=NB,DIR=O,sz=1
/* PARAMETER MISSING */
/* Missing command parameter "FA". */
;
```

### 1.2.9.2 Acknowledgement

This response type is used by the application to construct TL1 acknowledgements to user commands. This type of TL1 response contains no data. It is used to simply ACK specific queries. In this implementation, it is returned as a response to the REPT-STAT command.

```
OK^<CTAG><cr><lf>
```

```
<
```

```
> rept-stat::8420217:ctag2;
```

```
OK ctag2
```

```
<
```

### 1.2.10 Concurrent TL1 Operations

In SN08, the TL1 Interface for MG9K line test restricts the number of concurrent TL1 commands to 5. Although the number of TL1 login users may exceed this value, the TL1 server will limit the number of TL1 commands that can execute simultaneously on the CS2M. When all resources are busy, a

response similar to the following will be returned to indicate that resource exhaustion has (temporarily) occurred.

```
DNLEN 04-10-13 09:51:49
M UNKNWN DENY
 ESPG
/* SOFTWARE PROGRAM */
/* Error creating command instance for command "TL1Transaction"
pool.ResourceUnavailableException: The maximum number of concurrent
instances of this command has been reached, please try later. */
;
```

This problem typically occurs when more than 5 TL1 OSS clients are simultaneously logged in and executing commands at the same time. Normally this does not occur with TL1 login users entering commands manually.

*To avoid this condition, it is recommended that the number of TL1 user logins does not exceed the concurrent operations threshold (5).*

### 1.2.11 Connect Subscriber Loop on the Test Bus (CONN-SLACC-MET)

The command CONN-SLACC-MET connects the subscriber loop on the test bus. The input, output and the behavior of this command are described in the following sections.

#### 1.2.11.1 Input Fields

- Syntax:

```
CONN-SLACC-MET: <af>: <DN | LEN>: <ctag>: :TAP=<tap>, BW=<bw>, DIR=<dir>, FA=<fa>, SZ=<sz>;
```

| Connect a subscriber line on the test bus (CONN-SLACC-MET) | Description                                                          |
|------------------------------------------------------------|----------------------------------------------------------------------|
| Input:                                                     |                                                                      |
| AF (Address Format) (Mandatory input)                      | For DN access, enter <b>DN</b> .<br>For LEN access, enter <b>LEN</b> |
| DN, LEN (Mandatory input)                                  |                                                                      |

| Connect a subscriber line on the test bus (CONN-SLACC-MET) | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DN format (# of digits)                                    | <p>If DN is entered, only numerical digits (0-9) are valid input.</p> <p>Min # of digits: 1<br/>Max # of digits: 30</p> <p>In order to support both North American and international DN format, the TL1 command parser will not reject the number of digits within MIN and MAX above. If the number of digits is invalid to the call server, it should be rejected by the call server.</p>                                                                                                                                                                                                                                                                                                                                   |
| LEN format                                                 | <p>This is the traditional Line Equipment Number stored in CS2K Core. If LEN is entered, alphanumeric character values (0-9, A-Z, a-z) are valid input. The TL1 server converts all characters to upper case before processing the command.</p> <p>LEN format in call server will be used, i.e. SITE name + LEN number<br/>For example: CARY 000 1 01 12</p> <p>CARY is the physical location where the line is originating.</p> <p>000: physical frame number in Cary<br/>1: shelf number<br/>01: slot number<br/>12: circuit number<br/>leading zero (0) is required.</p> <p>For Multiple Appearance Directory Number (MADN), line test access is via LEN only.</p> <p>Note: LENs must be enclosed in double quotes ""</p> |
| CTAG (correlation tag) (Mandatory input)                   | Correlation tag (max 6 ASCII characters)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| TAP (Test Access Port) (0-999) (Mandatory input)           | <p>Test access port ID</p> <p>For MG9000, it is 1 to 8.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| BW (Access Bandwidth) (Mandatory input)                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| Connect a subscriber line on the test bus (CONN-SLACC-MET)                                                                                                                                                                                                                                                                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NB                                                                                                                                                                                                                                                                                                                                              | <p>Narrowband.</p> <p>For MG9000 POTS and SAA card, there is only one test access path. NB or WB will result in the test access on the same path, i.e., no difference.</p> <p>For the 8x8 ADSL card on MG9000, NB line test access allows for the narrowband test access. The test access point is between the POTS circuit card and LPF (Low Pass Filter), when the test direction is OUT (towards the equipment side or subscriber loop side), the test head sees the subscriber loop through LPF. This test access does not cut off the ADSL service.</p> |
| WB                                                                                                                                                                                                                                                                                                                                              | <p>Wideband</p> <p>Currently is for the 8x8 ADSL card on MG9000 wideband access. The test access is at the subscriber loop side of the splitter. It cuts off both POTS and ADSL services.</p> <p>In Phase 1.1, the WB connection option will not be rejected, unless it is an ADSL circuit.</p>                                                                                                                                                                                                                                                              |
| DIR (Initial test DIRection) (Mandatory input)                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| O (OUT)                                                                                                                                                                                                                                                                                                                                         | For lookout towards the subscriber loop. It is also called Equipment side.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| B (BRIDGED)                                                                                                                                                                                                                                                                                                                                     | Tap the test pair from the test head to the subscriber line. High impedance isolation is not provided.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| I (IN)                                                                                                                                                                                                                                                                                                                                          | For look in towards the circuit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| FA (Forced access flag) (Mandatory input)                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>Flag=1, if the line state is CPB or CPD, set the connection up and in BRIDGED mode. Do not allow the user to change the test direction.</p> <p>Flag=2, if the line state is CPB or CPD, reject the connection state.</p> <p>See the table below for the detailed description of the behavior of the forced access flag and seize fields.</p> | <p>Flag=1</p> <p>Flag=2</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| <b>Connect a subscriber line on the test bus (CONN-SLACC-MET)</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SZ (SeiZe)</b><br><b>(Mandatory input)</b>                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 1                                                                 | <p>Seize the line</p> <p>This mode allows the test head to perform the loop testing. However, it does not allow the test head to draw dial tone test. The POTS circuit will not supply the dial tone.</p> <p>In this mode, the voice service is in out-of-service state. The call server will route the caller to this line for a treatment, e.g. supply busy tone or an announcement</p>                                                                                               |
| 2                                                                 | <p>Do not seize the line.</p> <p>This mode allows the test head to perform not only the loop testing, but draw dial tone test when the test direction is in either bridged state or in state.</p> <p>In this mode, the voice service on the line will behave as follows:</p> <p>The line remains in service. The caller to this line will get the normal ring back tone. Since the called party is under test, the loop is cut off. The called party will not hear the ringing tone</p> |

- MG9000 Responses to TL1 Force and Seize Parameters



| Request Parameters |       |           | MG9000 Response                 |        |              |        |                                                                                               |
|--------------------|-------|-----------|---------------------------------|--------|--------------|--------|-----------------------------------------------------------------------------------------------|
|                    |       |           | Line is in an Active Call State |        | Line is Idle |        |                                                                                               |
| Seize              | Force | Direction | Connection                      | Seized | Connection   | Seized | Notes                                                                                         |
| No                 | No    | Split-In  | Request Rejected<br>(None)      | N/A    | None         | No     | Disruptive test directions (split-in and split-out) are only allowed when the line is seized. |
|                    |       | Split-Out |                                 |        | None         |        |                                                                                               |
|                    |       | Bridged   |                                 |        | Bridged      |        |                                                                                               |
|                    | Yes   | Split-In  | None                            | No     | None         |        |                                                                                               |
|                    |       | Split-Out | None                            |        | None         |        |                                                                                               |
|                    |       | Bridged   | Bridged                         |        | Bridged      |        |                                                                                               |
| Yes                | No    | Split-In  | Request Rejected                | N/A    | Split-In     | Yes    |                                                                                               |
|                    |       | Split-Out |                                 |        | Split-Out    |        |                                                                                               |
|                    |       | Bridged   |                                 |        | Bridged      |        |                                                                                               |
|                    | Yes   | Split-In  | Bridged                         | No     | Split-In     |        |                                                                                               |
|                    |       | Split-Out | Bridged                         |        | Split-Out    |        |                                                                                               |
|                    |       | Bridged   | Bridged                         |        | Bridged      |        |                                                                                               |

This table is valid for CONNSLACC-MET commands. In cases where the initial connection has been made, this table is also valid for CHG\_SLACC\_DIR commands.

When the MG9000 seizes a line for testing, the line state at the call server becomes SB.

For the purposes of this table, the call state column headings map to the following call server states:

- Active Call States: CPB, CPD.
- Idle States: IDL, INB, MB, PLO, LO.

Regarding Line States not supported by this feature—DEL, LMB, NEQ, SB<sup>1</sup>: The TL1 interface implementation in SESM checks for these call server line states. For lines in these states, connection requests are not forwarded to the MG9000.

TL1 parameter mapping to SNMP MTA request entries:

- 
1. Testing is not supported if SB is the initial state. This does not apply to lines that have gone SB because the MG9000 has seized them for testing.

- The SEIZE parameter maps directly.
- FORCE=Yes in TL1 maps to FORCE=Normal in SNMP.
- FORCE=No in TL1 is new. It will map to the new value ForceDont (6) in SNMP.

The following is a description of the line status and behavior during the line testing:

| State | Action                                                                                                                                                                                        | No Seize                                               | Seize                                                  |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| CPB   | The CS2K/MG9K must give the test system an indication that it has accessed a line that is in an active call. If desired, the test system can test the line in a non-disruptive bridged state. | Must allow bridged connections.                        | Must allow split-in, split-out and bridge connections. |
|       | The CS2K/MG9K must not allow a disruptive test action on a line involved in an active call.                                                                                                   | Must not affect the line state.                        | Must set the line to an Out of Service state.          |
| CPD   | The CS2K/MG9K must give the test system an indication that it has accessed a line that is in an active call. If desired, the test system can test the line in a non-disruptive bridged state. | Must allow split-in, split-out and bridge connections. | Must allow split-in, split-out and bridge connections. |
|       | The CS2K/MG9K must not allow a disruptive test action on a line involved in an active call.                                                                                                   | Must not affect the line state.                        | Must set the line to an Out of Service state.          |
| DEL   | The CS2K/MG9K will not support testing a line in the DEL state.                                                                                                                               |                                                        |                                                        |
| IDL   | The CS2K/MG9K must allow testing a line in the IDL state. This includes testing with a non-disruptive bridged connection and testing with disruptive split connections.                       | Must allow split-in, split-out and bridge connections. | Must allow split-in, split-out and bridge connections. |
|       |                                                                                                                                                                                               | Must not affect the line state.                        | Must set the line to an Out of Service state.          |
| INB   | The CS2K/MG9K must allow testing a line in the INB state. This includes testing with a non-disruptive bridged connection and testing with disruptive split connections.                       | Must allow split-in, split-out and bridge connections. | Must allow split-in, split-out and bridge connections. |
|       |                                                                                                                                                                                               | Must not affect the line state.                        | Must set the line to an Out of Service state.          |
| LMB   | The CS2K/MG9K will not support testing a line in the LMB state.                                                                                                                               |                                                        |                                                        |

| State | Action                                                                                                                                           | No Seize                                               | Seize                                                  |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| LO    | The CS2K/MG9K must allow testing a line in the LO state. This includes both non-disruptive bridged connections and disruptive split connections. | Must allow split-in, split-out and bridge connections. | Must allow split-in, split-out and bridge connections. |
|       |                                                                                                                                                  | Must not affect the line state.                        | Must set the line to an Out of Service state.          |

|            |                                                                                                                                                   |                                                                                               |                                                                                                             |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>MB</b>  | The CS2K/MG9K must allow testing a line in the MB state. This includes both non-disruptive bridged connection and disruptive split connections.   | Must allow split-in, split-out and bridge connections.<br><br>Must not affect the line state. | Must allow split-in, split-out and bridge connections.<br><br>Must set the line to an Out of Service state. |
| <b>NEQ</b> | The CS2K/MG9K will not support testing a line in the NEQ state.                                                                                   | Must allow split-in, split-out and bridge connections.<br><br>Must not affect the line state. | Must allow split-in, split-out and bridge connections.<br><br>Must set the line to an Out of Service state. |
| <b>PLO</b> | The CS2K/MG9K must allow testing a line in the PLO state. This includes both non-disruptive bridged connections and disruptive split connections. | Must allow split-in, split-out and bridge connections.<br><br>Must not affect the line state. | Must allow split-in, split-out and bridge connections.<br><br>Must set the line to an Out of Service state. |
| <b>SB</b>  | The CS2K/MG9K will not support testing a line in the SB state.                                                                                    |                                                                                               |                                                                                                             |

### 1.2.11.2 Input format and examples

#### Syntax:

```
CONN-SLACC-MET:<af>:<DN or LEN>:<ctag>::
TAP=<tap>, BW=<bw>, DIR=<dir>, FA=<fa>, SZ=<sz>;
```

- Example 1 (access via DN):

```
CONN-SLACC-MET:DN:4166213000:CTAG1:: TAP=1, BW=NB, DIR=O, FA=1, SZ=2;
```

- Example 2 (access via LEN):

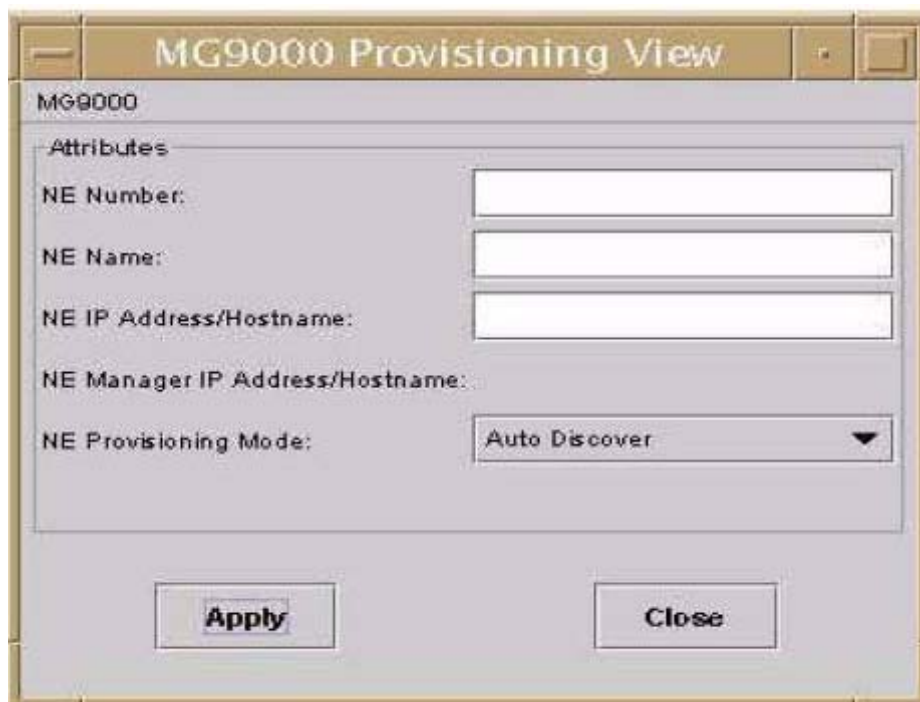
```
CONN-SLACC-MET:LEN:"CARY 000 1 01 12":CTAG1::TAP=1, BW=NB, DIR=O, FA=1, SZ=2;
```

Within a parameter field, when there is more than one field, a comma ‘,’ is placed between the two adjacent fields as separator. There must not be space before and after the comma.

### 1.2.11.3 Output Fields

|                                                                       |                    |
|-----------------------------------------------------------------------|--------------------|
| <b>Connect a subscriber line on the test bus<br/>(CONN-SLACC-MET)</b> | <b>Description</b> |
| <b>Output:</b>                                                        |                    |
| <b>CTAG</b>                                                           | Correlation tag    |

|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CS (Command Status)                                            | COMPLD: command is executed successfully.<br>DENY: command is executed unsuccessfully.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ACTUALDIR (The actual connection direction) (In, Out, Bridged) | MG9000: I (IN), O (OUT), B (BRIDGED)<br><br>Note: This parameter is populated only if the actual test direction set by the MG9K is different than requested.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| NE Number                                                      | The NE NUMBER is a numeric digit defined for each MG9000 node. This ID is unique to all MG9000 nodes associated with the same call server. It is limited to 3 digits. It is not enforced to make sure that it is in sequential order. For example, if the NE NUMBER for the first installed MG9000 node is defined as 0, the NE NUMBER of the next installed MG9000 node does not have to be 1, as long as it is not 0 (it has to be unique). This NE NUMBER is displayed with label: <b>NE Number</b> with the MG9000 node name ( <b>NE Name</b> ) (See the following screen shot)<br><br>It is required for the subsequent command request, NE Number and Tap are the mandatory input parameters for the commands after the test connection is set up. |
| GW_NAME (NE name)                                              | Gateway name defined for MG9000.<br><br>Notes This is the same as the NE name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| CS2000 CLLI                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| LS (Line State)                                                | The Line state before the test access request.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| LEN (Equipment Number)                                         | Line Equipment Number (Site name and equipment number)<br><br>e.g. CARY 000 1 01 09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| TYPE (Line Type) (POTS, ISDN, P-phone, etc.)                   | The Line Type as specified by the QDN/QLEN command                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| LF (Line Frame type)                                           | For MG9000 return UE9000MG.<br><br>This field is populated with the gateway type defined in the CMT database.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| LCC (Line Class Code)                                          | Line class code of the line as defined in the call server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| CARDCODE                                                       | Line card type as defined in the CS2000<br><br>Examples: GWLPOT, RDTLSG, 6X21AC...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



The image shows a software window titled "MG9000 Provisioning View". Inside the window, there is a section labeled "MG9000" followed by a sub-section "Attributes". Under "Attributes", there are five labels with corresponding input fields: "NE Number:", "NE Name:", "NE IP Address/Hostname:", "NE Manager IP Address/Hostname:", and "NE Provisioning Mode:". The "NE Provisioning Mode:" field is a dropdown menu currently showing "Auto Discover". At the bottom of the window, there are two buttons: "Apply" and "Close".

**Warning:**

If the test connection is in the bridged or in state, Nortel recommends that the test controller may only execute passive commands, i.e., those which do not require applying voltage, current, or tones to the loop or line card (such as AC/DC voltage measurements) to subscriber test functions. For example, do not perform the 12 metallic loop test function. The reason is that MG9000 POTS card has a hazard voltage protection feature to protect the POTS circuit from foreign voltage. If the voltage applied on the line in BRIDGED (or IN state) is above the hazardous voltage threshold, the subscriber line will be cut off. This may cut off an active call.

**1.2.11.4 Output Format and Examples**

- Syntax:

```
<cr> <lf> <lf>
^^^<af>^<date>^<time> <cr> <lf>
M^^<ctag>^<cs> <cr> <lf>
^^^"ACTUALDIR=<dir>"
<cr> <lf>;
```

- Example:

```
DN 03-12-12 03:23:43
M CTAG2 COMPLD
```

”ACTUALDIR= B”Syntax:

- Example:

DN 03-12-12 03:23:43

M CTAG2 COMPLD;

See Tables 1 and 2 for TL1 Error mapping for the TL1 server and MG9K

### 1.2.11.5 Dependencies

This command must be rejected, if a connection has already been setup for the same session.

### 1.2.12 Change Test Direction – CHG-SLACC-DIR

Command CHG-SLACC-DIR allows a user to set the test direction to IN, OUT and BRIDGED. IN means connect the tip-ring test pair to the circuit on a line card. OUT means connect the tip-ring test pair to a subscriber loop. BRIDGED means connect the tip-ring test pair to the line. In the BRIDGED state, the high impedance isolation is not provided by the MTA at test bridged configuration for the Nortel product. This command is valid if CONN-SLACC-MET was executed successfully. The input, output and the behavior of this command are described in the following sections.

#### 1.2.12.1 Input Fields

| Change test access direction (CHG-SLACC-DIR) | Description                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input                                        |                                                                                                                                                                                                                                                                                                                                                                                       |
| AF (Address Format) (Mandatory input)        | For DN access, enter <b>DN</b> .<br>For LEN access, enter <b>LEN</b>                                                                                                                                                                                                                                                                                                                  |
| DN, LEN (Mandatory input)                    |                                                                                                                                                                                                                                                                                                                                                                                       |
| DN format (# of digits)                      | If DN is entered, only numerical digits (0-9) are valid input.<br><br>Min # of digits: 1<br>Max # of digits: 30<br><br>In order to support both North American and international DN format, the TL1 command parser should not reject the number of digits within MIN and MAX above. If the number of digits are invalid to the call server, it should be rejected by the call server. |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LEN format                             | <p>This is the traditional Line Equipment Number stored in the CS2K Core. If LEN is entered, alphanumeric character values (0-9, A-Z, a-z) are valid input. The TL1 server converts all characters to upper case before processing the command.</p> <p>The LEN format in the call server will be used, i.e. SITE name + LEN number<br/>For example: CARY 000 1 01 12</p> <p>CARY is the physical location where the line originates.</p> <p>000: physical frame number in Cary<br/>1: shelf number<br/>01: slot number<br/>12: circuit number<br/>leading zero (0) is required.</p> <p>For the Multiple Appearance Directory Number (MADN), line test access is via LEN only.</p> <p>Note: LENs must be enclosed in double quotes ""</p> |
| CTAG (Mandatory input)                 | Correlation tag (max 6 ASCII characters)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| DIR (Test direction) (Mandatory input) | <p>The test direction change will be rejected, if, for example, the line is in the CPB (Call Processing Busy) state, the test direction is in the BRIDGED state. Changing the test direction to OUT or IN will be rejected, since cut-off of the subscribers' conversation is not allowed.</p> <p>If the test access direction change is rejected, the response must not produce an error message. It should response with COMPLD and with no error message. This behavior is consistent with the current no-test trunk interface behavior. And Access Care does not expect an error message, if the desired test access direction cannot be changed.</p>                                                                                |
| O (OUT)                                | <p>Toward the subscriber loop.</p> <p>If the line is busy and the original state is BRIDGED, changing the line test direction to OUT is not allowed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| B (BRIDGED)                            | Tap the test pair from the test head to the subscriber line. High impedance isolation is not provided.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| I (IN)                                 | <p>Toward the line circuit.</p> <p>If the line is busy and the original state is BRIDGED, changing the line test direction to IN is not allowed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### 1.2.12.2 Input Format and Examples

- Syntax:

**CHG-SLACC-DIR** : : <DN> | <LEN> : <ctag> : : DIR = <dir> ;

- Example:

**CHG-SLACC-DIR** : : 4166213000 : CTAG2 : : DIR = I ;

### 1.2.12.3 Output Fields

| Change test access direction<br>(CHG-SLACC-DIR) | Description                                                                                                                                                  |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output                                          |                                                                                                                                                              |
| CS (Command Status)                             | COMPLD: command is executed successfully.<br>DENY: command is executed unsuccessfully.                                                                       |
| CTAG                                            | Correlation tag                                                                                                                                              |
| ACTUALDIR (The actual connection direction)     | MG9000: I (IN), O (OUT), B (BRIDGED)<br><br>Note: This parameter is populated only if the actual test direction set by the MG9K is different than requested. |

### 1.2.12.4 Output Format and Examples

#### Syntax:

```
<cr> <lf> <lf>
^^^<af>^<date>^<time> <cr> <lf>
M^^<ctag>^<cs> <cr> <lf>
^^^"ACTUALDIR=<dir>"
<cr> <lf>;
```

#### Examples:

```
DN 03-12-12 03:23:43
M CTAG2 COMPLD
"ACTUALDIR= B"
```

```
DN 03-12-12 03:23:43
M CTAG2 COMPLD
```

#### Syntax:

```
<cr><lf><lf>
^^^<af>^<date>^<time> <cr><lf>
M^^<ctag>^DENY <cr><lf>
^^^<TL1 ERROR CODE><cr><lf>
^^^[''<optional comma-delimited error parameters>"]<cr><lf>
^^^/*<TL1 error description><cr><lf>*/
^^^/*<System-specific error description>*/<cr><lf>
```



;

See Tables 1 and 2 for TL1 Error mapping for the TL1 server and MG9K

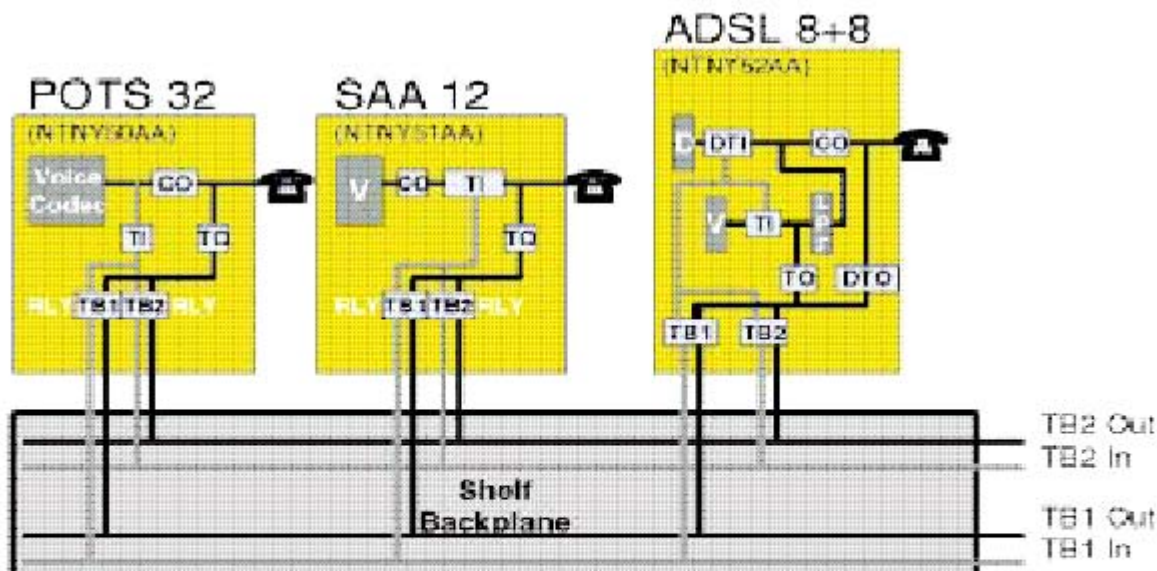
#### 1.2.12.5 Dependencies

This command is valid only

- After the successful execution of CONN-SLACC-MET.
- The line is not BUSY

### 1.2.13 Change Test Access Bandwidth – CHG-SLACC-BW

Command CHG-SLACC-BW allows for changing the test access between narrowband access and wideband access. In MG9000, the POTS and SAA cards have only one physical test access. It supports wideband testing. CHG-SLACC-BW will not physically change the test access relays. The 8x8 ADSL card has different test access. If the narrowband test access is requested, the test access point will be between the voice circuit and LPF (Low Pass Filter). In this case, the voice service will be cutoff and the ADSL service will still be available to the customer. If the wideband test access is requested, the cutoff relay is on the customer loop side. Both the voice and the ADSL service will be cutoff. The CHG-SLACC-BW command is independent from the current test direction. For example, if the current test direction is narrowband OUT, CHG-SLACC-BW will set the test access to wideband OUT and vise-versa. This logic applies to test direction IN and BRIDGED as well. If the line is voice busy during the initial test access, the test direction will be set to BRIDGED. CHG-SLACC-BW is allowed to switch between wideband BRIDGED and narrowband BRIDGED. However, changing CHG-SLACC-DIR to IN or OUT is not allowed in both cases.



Legend:

TI - test in

TO - test out

DTQ - data test out

CO - cut off

LPF - low pass filter

TB1 - Puts card's MTA bus on shelf test bus 1

TB2 - Puts card's MTA bus on shelf test bus 2

DTI - Combination cut off and data test in. When operated, cuts loop off from ADSL chip set, and connects the ADSL chipset to the test-in bus.

### 1.2.13.1 Input Fields

| Change test access direction<br>(CHG-SLACC-BW) | Description                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Input</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                      |
| AF (Address Format)<br>(Mandatory input)       | For DN access, enter <b>DN</b> .<br>For LEN access, enter <b>LEN</b>                                                                                                                                                                                                                                                                                                                 |
| DN, LEN (Mandatory input)                      |                                                                                                                                                                                                                                                                                                                                                                                      |
| DN format (# of digits)                        | If DN is entered, only numerical digits (0-9) are valid input.<br><br>Min # of digits: 1<br>Max # of digits: 30<br><br>In order to support both North American and international DN format, the TL1 command parser should not reject the number of digits within MIN and MAX above. If the number of digits is invalid to the call server, it should be rejected by the call server. |

|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LEN format                              | <p>This is the traditional Line Equipment Number stored in the CS2K Core. If LEN is entered, alphanumeric character values (0-9, A-Z, a-z) are valid input. The TL1 server converts all characters to upper case before processing the command.</p> <p>The LEN format in the call server will be used, i.e. SITE name + LEN number<br/>For example: CARY 000 1 01 12</p> <p>CARY is the physical location where the line originates.</p> <p>000: physical frame number in Cary<br/>1: shelf number<br/>01: slot number<br/>12: circuit number<br/>leading zero (0) is required.</p> <p>For Multiple Appearance Directory Number (MADN), line test access via LEN only.</p> <p>Note: LENs must be enclosed in double quotes ""</p> |
| CTAG (Mandatory input)                  | Correlation tag (max 6 ASCII characters)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| BW (Access Bandwidth) (Mandatory input) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| NB                                      | <p>Narrowband.</p> <p>For the MG9000 POTS and SAA card, there is only one test access path. NB or WB will result in the test access on the same path, i.e., no difference.</p> <p>For the 8x8 ADSL card on MG9000, NB line test access allows for the narrowband test access. The test access point is between the POTS circuit card and LPF (Low Pass Filter), when the test direction is OUT (subscriber loop side), the test head sees the subscriber loop through LPF. This test access does not cut off the ADSL service.</p>                                                                                                                                                                                                |
| WB                                      | <p>Wideband</p> <p>Currently this is for the 8x8 ADSL card on MG9000 wideband access. The test access is at the subscriber loop side of the splitter. It cuts off both the POTS and ADSL services.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

### 1.2.13.2 Input Format and Examples

#### Syntax:

**CHG-SLACC-BW** : : <DN> | <LEN> : <ctag> : : BW=<bw> ;

#### Example:

**CHG-SLACC-BW**::4166213000:CTAG3::BW=NB;

#### Output Fields

| Change test access direction (CHG-SLACC-BW) | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CTAG                                        | Correlation tag                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CS (Command Status)                         | COMPLD: command is executed successfully.<br>DENY: command is executed unsuccessfully.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| BW (Access Bandwidth)                       | N for Narrowband.<br>W for Wideband.<br><br>Note:<br><br>For the MG9000 POTS and SAA card, there is only one test access path. NB or WB will result in the test access on the same path, i.e., no difference.<br><br>For the 8x8 ADSL card on MG9000, NB line test access allows for the narrowband test access. The test access point is between the POTS circuit card and LPF (Low Pass Filter), when the test direction is OUT (towards the equipment side or the subscriber loop side), the test head sees the subscriber loop through LPF. This test access does not cut off the ADSL service.<br><br>Currently this is for the 8x8 ADSL card on MG9000 wideband access. The test access is at the subscriber loop side of the splitter. It cuts off both POTS and ADSL services. |

### 1.2.13.3 Output Format and Examples

#### Syntax:

```
<cr> <lf> <lf>
^^^<af>^<date>^<time> <cr> <lf>
M^^<ctag>^<cs>
<cr> <lf>;
```

#### Example :

```
DN 03-12-12 03:23:43
M CTAG2 COMPLD
;
```

### 1.2.13.4 Error Response

#### Syntax:

```
<cr><lf><lf>
^^^<af>^<date>^<time> <cr><lf>
```

```

M^^<ctag>^DENY <cr><lf>
^^^<TL1 ERROR CODE><cr><lf>
^^^["<optional quoted,comma-delimited error parameters>"]<cr><lf>
^^^/*<TL1 error description><cr><lf>*/
^^^/*<System-specific error description>*/<cr><lf>

```

See Tables 1 & 2 for TL1 Error mapping for the TL1 server and MG9K

### 1.2.13.5 Dependencies

This command is valid after the successful execution of CONN-SLACC-MET.

## 1.2.14 Report Status – REPT-STAT

Command REPT-STAT is used for refreshing the 180-second access disconnect timer kept by the gateway. If the gateway does not receive a valid command within the timeout period, it disconnects test access from the subscriber circuit that was specified in the initial CONN-SLACC-MET command.

### 1.2.14.1 Input Fields

| Report status (used for timeout refresh) (REPT-STAT) | Description                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Input</b>                                         |                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>AF (Address Format)</b><br>(Mandatory input)      | For DN access, enter <b>DN</b> .<br>For LEN access, enter <b>LEN</b>                                                                                                                                                                                                                                                                                                                 |
| <b>DN, LEN, EPI</b><br>(Mandatory input)             |                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>DN format (# of digits)</b>                       | If DN is entered, only numerical digits (0-9) are valid input.<br><br>Min # of digits: 1<br>Max # of digits: 30<br><br>In order to support both North American and international DN format, the TL1 command parser should not reject the number of digits within MIN and MAX above. If the number of digits is invalid to the call server, it should be rejected by the call server. |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LEN format             | <p>This is the traditional Line Equipment Number stored in the CS2K Core. If LEN is entered, alphanumeric character values (0-9, A-Z, a-z) are valid input. The TL1 server converts all characters to upper case before processing the command.</p> <p>The LEN format in the call server will be used, i.e. SITE name + LEN number<br/>For example: CARY 000 1 01 12</p> <p>CARY is the physical location where the line originates.</p> <p>000: physical frame number in Cary<br/>1: shelf number<br/>01: slot number<br/>12: circuit number<br/>leading zero (0) is required.</p> <p>For Multiple Appearance Directory Number (MADN), line test access is via LEN only.</p> <p>Note: LENs must be enclosed in double quotes ""</p> |
| CTAG (Mandatory input) | Correlation tag (max 6 ASCII characters)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

### 1.2.14.2 Input Format and Examples

#### Syntax:

**REPT-STAT** : : <DN> | <LEN> : <ctag> ; ;

#### Example:

**REPT-STAT**::4166213000:CTAG4;;

### 1.2.14.3 Output Fields

| Report status (used for timeout refresh) (REPT-STAT) | Description     |
|------------------------------------------------------|-----------------|
| Output                                               |                 |
| OK                                                   |                 |
| CTAG                                                 | Correlation tag |

### 1.2.14.4 Output Format and Examples

#### Syntax:

OK <ctag> <cr> <lf>

<

#### Example:

OK CTAG2 <cr><lf>

<

### 1.2.14.5 Error Response:

#### Syntax:

```
<cr><lf><lf>
^^^<af>^<date>^<time> <cr><lf>
M^^<ctag>^DENY <cr><lf>
^^^<TL1 ERROR CODE><cr><lf>
^^^["<optional comma-delimited error parameters>"]<cr><lf>
^^^/*<TL1 error description><cr><lf>*/
^^^/*<System-specific error description>*/<cr><lf>
```

See Tables 1 and 2 for TL1 Error mapping for the TL1 server and MG9K

### 1.2.14.6 Dependencies

This command is valid after the successful execution of CONN-SLACC-MET.

## 1.2.15 Disconnect the Test Connection – DISC-SLACC

The command DISC-SLACC disconnects the test connection. This command restores the circuit under test to its through state and opens all TAP connections to that access point. The input, output and the behavior of this command are described in the following sections.

### 1.2.15.0.1 Input Fields

| Disconnect a subscriber line from the test bus (DISC-SLACC) | Description                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Input</b>                                                |                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>AF (Address Format) (Mandatory input)</b>                | DN access, enter DN.<br>For LEN access, enter LEN                                                                                                                                                                                                                                                                                                                                    |
| <b>DN, LEN (Mandatory input)</b>                            |                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>DN format (# of digits)</b>                              | If DN is entered, only numerical digits (0-9) are valid input.<br><br>Min # of digits: 1<br>Max # of digits: 30<br><br>In order to support both North American and international DN format, the TL1 command parser should not reject the number of digits within MIN and MAX above. If the number of digits is invalid to the call server, it should be rejected by the call server. |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LEN format             | <p>This is the traditional Line Equipment Number stored in CS2K Core. If LEN is entered, alphanumeric character values (0-9, A-Z, a-z) are valid input. The TL1 server converts all characters to upper case before processing the command.</p> <p>LEN format in call server will be used, i.e. SITE name + LEN number<br/>For example: CARY 000 1 01 12</p> <p>CARY is the physical location where the line originates.</p> <p>000: physical frame number in Cary<br/>1: shelf number<br/>01: slot number<br/>12: circuit number<br/>leading zero (0) is required.</p> <p>For Multiple Appearance Directory Number (MADN), line test access via LEN only.</p> <p>Note: LENs must be enclosed in double quotes ""</p> |
| CTAG (Mandatory input) | Correlation tag (max 6 ASCII characters)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### 1.2.15.1 Input Format and Examples

#### Syntax:

**DISC-SLACC** : : <DN> | <LEN> : <ctag> ; ;

#### Example:

**DISC-SLACC** : : 4166213000 : CTAG4 : ;

### 1.2.15.2 Output Fields

| Disconnect a subscriber line from the test bus (DISC-SLACC) | Description                               |
|-------------------------------------------------------------|-------------------------------------------|
|                                                             |                                           |
| <b>Output</b>                                               |                                           |
| CTAG                                                        | Correlation tag                           |
| CS (Command Status)                                         | Phase 1.1                                 |
|                                                             | COMPLD: command is executed successfully. |
|                                                             | DENY: command is executed unsuccessfully. |
|                                                             | Phase 1.1                                 |

### 1.2.15.3 1Output Format and Examples

#### Syntax:

<cr> <lf> <lf>

^^^<af>^<date>^<time> <cr> <lf>



```
M^^<ctag>^<cs> <cr> <lf>
<cr> <lf>;
```

#### Example:

```
DN 03-12-12 03:23:43
M CTAG4 COMPLD
;
```

### 1.2.15.4 Error Response:

#### Syntax:

```
<cr><lf><lf>
^^^<af>^<date>^<time> <cr><lf>
M^^<ctag>^DENY <cr><lf>
^^^<TL1 ERROR CODE><cr><lf>
^^^["<optional comma-delimited error parameters>"]<cr><lf>
^^^/*<TL1 error description><cr><lf>
^^^<System-specific error description>*/<cr><lf>
```

See Tables 1 and 2 for TL1 Error mapping for the TL1 server and MG9K

## 1.2.16 Retrieve Line Information – RTRV-SLACC-INFO

Command RTRV-SLACC-INFO queries the CS2000 to obtain information related to a line. This command does not operate the test access relays, such as the ones in MG9000 MTA and line circuit. It can be executed without a connection up. The input, output and the behavior of this command are described in the following sections.

### 1.2.16.1 Input Fields

| Query line info (RTRV-SLACC-INFO)               | Description                                                          |
|-------------------------------------------------|----------------------------------------------------------------------|
| <b>Input:</b>                                   |                                                                      |
| <b>AF (Address Format)</b><br>(Mandatory input) | For DN access, enter <b>DN</b> .<br>For LEN access, enter <b>LEN</b> |
| <b>DN, LEN (Mandatory input)</b>                |                                                                      |

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DN format (# of digits)                     | <p>If DN is entered, only numerical digits (0-9) are valid input.</p> <p>Min # of digits: 1<br/>Max # of digits: 30</p> <p>In order to support both North American and international DN format, the TL1 command parser should not reject the number of digits within MIN and MAX above. If the number of digits are invalid to the call server, it should be rejected by the call server.</p>                                                                                                                                                                                                                                                             |
| LEN format                                  | <p>If LEN is entered, alphanumeric character values (0-9, A-Z, a-z) are valid input. The TL1 server converts all characters to upper case before processing the command.</p> <p>The LEN format in the call server will be used, i.e. SITE name + LEN number<br/>For example: CARY 000 1 01 12</p> <p>CARY is the physical location where the line originates</p> <p>000: physical frame number in Cary<br/>1: shelf number<br/>01: slot number<br/>12: circuit number<br/>leading zero (0) is required.</p> <p>For Multiple Appearance Directory Number (MADN), line test access via LEN only.</p> <p>Note: LENs must be enclosed in double quotes ""</p> |
| CTAG (correlation tag)<br>(Mandatory input) | Correlation tag (max 6 ASCII characters)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

### 1.2.16.2 Input Format and Examples

#### Syntax:

RTRV-SLACC-INFO:<af>:<DN|LEN>:<ctag>;

#### Example 1 (access via DN):

RTRV-SLACC-INFO:DN:4166213000:CTAG6;

#### Example 2 (access via LEN):

RTRV-SLACC-INFO:LEN:"CARY 000 1 01 12":CTAG6;

### 1.2.16.3 Output Fields

| Query line info (RTRV-SLACC-INFO) | Description                                                                                       |
|-----------------------------------|---------------------------------------------------------------------------------------------------|
| Output:                           |                                                                                                   |
| CTAG                              | Correlation tag                                                                                   |
| CS (Command Status)               | <p>COMPLD: command is executed successfully.</p> <p>DENY: command is executed unsuccessfully.</p> |

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NE Number</b>              | <p>The NE Number is a numeric digit defined for each MG9000 node. This ID is unique to all MG9000 nodes associated with the same call server. It is limited to 3 digits. It is not enforced to make sure that it is in sequential order. For example, if the NE Number for the first installed MG9000 node is defined as 0, the NE Number of the next installed MG9000 node does not have to be 1, as long as it is not 0 (it has to be unique). This NE Number is displayed with label: <b>NE Number</b> with the MG9000 node name (<b>NE Name</b>) (See the following screen shot).</p> <p>It is required that for the subsequent command request, NE Number and Tap are the mandatory input parameters for the commands after the test connection is setup.</p> |
| <b>GW_NAME (NE name)</b>      | <p>Gateway name defined for the MG9000.</p> <p>Note: This is the same as the NE name.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>CLLI</b>                   | CS2000 CLLI code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>LS (Line State)</b>        | Line status before the test access request.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>LEN (Equipment Number)</b> | <p>Line Equipment Number (Site name and equipment number)</p> <p>e.g. CARY 000 1 01 09</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>TYPE (Line Type)</b>       | <p>Line Type as specified by the QDN/QLen command</p> <p>Examples: POYS, ISDN, P-phone...</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>LF (Line Frame type)</b>   | <p>For MG9000 return UE9000MG</p> <p>This field is populated with the gateway type defined in the CMT database.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>CARDCODE</b>               | <p>Line card type as defined in the CS2000</p> <p>Examples: GWLPOT, RDTLSG, 6X21AC...</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>EP_NAME</b>                | End Point name on the gateway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>OPTIONS</b>                | Line options on Call Server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

### 1.2.16.4 Output Format and Examples

#### Syntax:

```
<cr> <lf> <lf>
^^^<af>^<date>^<time> <cr> <lf>
M^^<ctag>^<cs> <cr> <lf>
```

```
^^^DN=<FQDN>,TYPE=<LineType>,LCC=<Line Class Code>,CARDCODE=<card code>,
LEN=<LEN>,GW_NAME=<gatewayName>,EP_NAME=<endpointName>,
OPTIONS=<options>,CLLI=<CS2000CLLI>,CLLI=<CS2K CLLI>,NE_NUM=<ne number>,LF=<frame
Type>,NE_NAME=<ne name>,LS=<line state><cr> <lf>;
```

### 1.2.16.5 Output Example:

```
DN 04-06-30 20:25:40
M CTAG5 COMPLD
 "DN=1418400207,TYPE="SINGLE PARTY LINE",LCC=IBN,CARDCODE=GWLPO7,LEN="UAIP 00 0 02
07",GW_NAME=UAIP000-0-0, EP_NAME=tp/02/07, OPTIONS=DGT, CLLI=COMPACT3,
NE_NUM=1,LF=UE9000MG,LS=IDL"
;
```

### 1.2.16.6 Error Response:

#### Syntax:

```
<cr><lf><lf>
^^^<af>^<date>^<time> <cr><lf>
M^^<ctag>^DENY <cr><lf>
^^^<TL1 ERROR CODE><cr><lf>
^^^["<optional comma-delimited error parameters>"]<cr><lf>
^^^/*<TL1 error description><cr><lf>*/
^^^/*<System-specific error description>*/<cr><lf>
```

See Tables 1 and 2 for TL1 Error mapping for the TL1 server and MG9K

### 1.2.16.7 Dependencies

This command has no dependencies and can be executed at any time. The input DN or LEN can be the same as the DN or LEN of the active connection, but it is not required

### 1.2.16.8 Error code listings

The following tables list the TL1 error codes and descriptions generated by the TL1 Server and the MG9K.

**Table 4 TL1 Error Codes - TL1 Server**

| TL1 Error Code | TL1 Category | TL1 Error Text | Description |
|----------------|--------------|----------------|-------------|
|                |              |                |             |

|      |          |                                 |                                                                                                                                                                                                                                                                                                                                                |
|------|----------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ESPG | EQUIPAGE | SOFTWARE PROGRAM                | <p>An error occurred in the application software while processing a request.</p> <p>All accumulated line information up to the point of error will be displayed.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure.</p>                                                                     |
| ICNV | INPUT    | COMMAND NOT VALID               | <p>The command code entered is invalid for this interface.</p>                                                                                                                                                                                                                                                                                 |
| IDNV | INPUT    | DATA NOT VALID                  | <p>One of the input fields contains invalid data.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure.</p>                                                                                                                                                                                    |
| IIAC | INPUT    | INVALID ACCESS IDENTIFIER (AID) | <p>An invalid DN or LEN has been found in the access identifier field of the request message.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure.</p>                                                                                                                                        |
| IICM | INPUT    | INVALID COMMAND                 | <p>The command entered is missing required fields.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure.</p>                                                                                                                                                                                   |
| IICT | INPUT    | INVALID CORRELATION TAG         | <p>The correlation tag entered violates the one of the following constraints:</p> <ul style="list-style-type: none"> <li>-must be non-null</li> <li>-must be alpha-numeric</li> <li>-must be between 1-6 characters in length</li> </ul> <p>A comment line will be displayed in the TL1 response message indicating the source of failure.</p> |
| IISP | INPUT    | INVALID SYNTAX OR PUNCTUATION   | <p>Missing or invalid command terminator.</p>                                                                                                                                                                                                                                                                                                  |

|      |       |                                      |                                                                                                                                                                                                                                                                                                      |
|------|-------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IITA | INPUT | INVALID TARGET IDENTIFIER            | <p>An invalid address format has been found in the target identifier field of the request message.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure.</p>                                                                                         |
| IPMS | INPUT | PARAMETER, MISSING                   | <p>A required parameter has not been specified in the command entered.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure.</p>                                                                                                                     |
| IPNC | INPUT | PARAMETER NOT CONSISTENT             | <p>An entered parameter has both Positional and Named components. As per GR-831 syntax rules, a parameter components must be of the same type.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure.</p>                                             |
| IPNV | INPUT | PARAMETER NOT VALID                  | <p>An illegal parameter tag or value has been found in the command string.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure</p>                                                                                                                  |
| ISPC | INPUT | SYNTAX PUNCTUATION                   | <p>A syntax error has been detected in the command string. An example would be a missing "around a quoted string.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure</p>                                                                           |
| ITSN | INPUT | INVALID/INACTIVE TEST SESSION NUMBER | <p>The test session for the DN or LEN entered does not exist. Either there has been no test session established yet, or the test session has been terminated due to an inactivity time-out.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure</p> |

|      |        |                            |                                                                                                                                                                                                                                                                                                                                                                                       |
|------|--------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCSN | STATUS | INVALID COMMAND SEQUENCE   | <p>A TL1 command has been entered for which a required requisite command has not yet been executed. For example, CHG-SLACC-DIR cannot be executed successfully until CONN-SLACC-MET has been run to establish a test session.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure</p>                                                |
| SDBE | STATUS | INTERNAL DATA BASE ERROR   | <p>An internal database error has been detected during command execution.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure</p>                                                                                                                                                                                                    |
| SNVS | STATUS | NOT IN VALID STATE         | <p>The target circuit is not in a state valid for line test.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure</p>                                                                                                                                                                                                                 |
| SROF | STATUS | REQUESTED OPERATION FAILED | <p>This is a general error indicating that the request could not be processed successfully.</p> <p>A comment line will be displayed in the TL1 response message indicating the source of failure.</p>                                                                                                                                                                                 |
| SRQN | STATUS | INVALID REQUEST            | <p>The operation cannot be performed on the specified target. Possible reasons are:</p> <ul style="list-style-type: none"> <li>-Unsupported gateway type</li> <li>-NLT option on line (no line test)</li> <li>-line is specified by DN and is member of a MADN group.</li> </ul> <p>A comment line will be displayed in the TL1 response message indicating the source of failure</p> |

| TL1 ErrorCode | TL1 Error Text | MG9K Error Text (user-visible) | MG9K Error Description |
|---------------|----------------|--------------------------------|------------------------|
|---------------|----------------|--------------------------------|------------------------|

|      |                             |                                                                                 |                                                                                                                                                                                                                                                 |
|------|-----------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RCBY | CIRCUIT BUSY                | "Line Busy, Try Again Later"                                                    | The MG sends this if the line appears to be in a call.                                                                                                                                                                                          |
| SNVS | NOT IN VALID STATE          | "Line can't be accessed. Check Line at Gateway Manager."                        | The MG sends this if the linecard has been pulled, the line circuit is busy, or otherwise inaccessible.                                                                                                                                         |
| ENEQ | NOT EQUIPPED                | "Gateway Not Equipped for This Request. Check Gateway Manager"                  | The MG sends this when the required equipment is missing. Currently for MTA access, this may never be returned by the MG9000. It might be a good return code if the EM finds that there is not a corresponding tap provisioned for the request. |
| RANB | ACCESS NETWORK BUSY         | "A Gateway Test Resource is Busy. Try Again Later."                             | This is returned when internal resources are all in use, such as verticals and shelf test buses, or if there is another test on the same linecard (there is only one test bus per line card)                                                    |
| SROF | REQUESTED OPERATION FAILED  | "Problem with a Gateway Test Resource. Check Gateway Manager"                   | The MG sends this when there is nothing wrong with the request, but there is something wrong with required equipment on the MG9000. Could not find a better match in the list.                                                                  |
| EFON | FEATURE OPTION NOT PROVIDED | "The request or one of its requested options is not supported."                 | For example, request for full-split would return not_supported.                                                                                                                                                                                 |
| SRQN | INVALID REQUEST             | "Invalid Request. Check MTAPT and line exists, and for conflicting parameters." | MG sends this for scenarios such as conflicting parameters, e.g., a test-out connection requested when seize is false (test-out interferes with call-p, so the line must be seized for test-out).                                               |
| SABT | ABORTED                     | "Test session abandoned, connection dropped. Check Test System."                | Line test session inactivity time-out expired on the gateway.                                                                                                                                                                                   |



|      |                            |                                                                                                                      |                                                                                    |
|------|----------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| SABT | ABORTED                    | "The gateway encountered a problem. Try Again. If problem recurs, check line and test Resources at Gateway Manager." | Line test session terminated by the gateway due to a maintenance event or failure. |
| SROF | REQUESTED OPERATION FAILED | "Try Again. If problem recurs, check line and test Resources at Gateway Manager."                                    | Miscellaneous internal system error.                                               |
| SROF | REQUESTED OPERATION FAILED | "Try Again. If problem recurs, check line and test Resources at Gateway Manager."                                    | Miscellaneous internal system error.                                               |
| SROF | REQUESTED OPERATION FAILED | "Try Again. If problem recurs, check line and test Resources at Gateway Manager."                                    | Miscellaneous internal system error.                                               |

### 1.3 Hardware Requirements or Dependencies

There are no hardware dependencies introduced by this feature.

### 1.4 Software Requirements or Dependencies

There are no new software requirements introduced by this feature.

### 1.5 Limitations and restrictions

As stated earlier, directory numbers must be specified in their fully qualified form (FQDN) for test commands that manipulate test connections on the MG9K. This includes the following commands:

- CONN-SLACC-MET
- CHG-SLACC-DIR
- CHG-SLACC-BW
- REPT-STAT

Since RTRV-SLACC-INFO has no dependencies and only queries the call server, FQDN is optional for this command.

### 1.6 Upgrade Dependencies

This feature introduces a dependency in the upgrade sequence of the Access Care system with the rest of the Succession components.

When upgrading from releases prior to SN07 to SN07 and greater, it is required that Access Care be upgraded **ONLY** after the CMT, MG9K-EM and MG9K upgrades are complete. Failing to do so will disable Line test capabilities between Access care and the MG9K.

## 1.7 Interactions

There are no new interactions visible to the user introduced by this feature.

## 1.8 Applicable customer facing sections

### Fault Management

Logs ☐ N/A ☐

Alarms ☐ N/A ☐

### Configuration

Data Schema ☐ N/A ☐

User Interface ☐ N/A ☐

Element Management ☐ N/A ☐

Security ☐ N/A ☐

Service Order ☐ N/A ☐

Office Parameters ☐ N/A ☐

Upgrade considerations ☐ X ☐

Accounting (includes AMA billing) ☐ N/A ☐

Performance (includes operational measurements) ☐ N/A ☐

## 1.9 Glossary

| Term   | Explanation                       |
|--------|-----------------------------------|
| CMT    | Call server Management Tools      |
| CPB    | Call Processing Busy              |
| CS2000 | Call Server 2000                  |
| GW     | GateWay                           |
| LPF    | Low Pass Filter                   |
| MG9000 | Media Gateway 9000 (line gateway) |
| MTA    | Metallic Test Access              |

| Term | Explanation                         |
|------|-------------------------------------|
| MTAP | Metallic Test Access Port on MG9000 |
| MTM  | Metallic Test access Module         |
| NE   | Network Element                     |
| CMT  |                                     |
| RMM  | Remote Maintenance Module           |
| RTU  | Remote Test Unit                    |
| SSH  | Secure Shell                        |
| TL1  | Transaction Language 1              |
| TSC  | Test System Controller              |
| UPC  | User Privilege Code                 |

## 1.10 References

- 1 Telcordia GR-834-CORE, “Network Maintenance: Access and Testing Messages”, Chapter 6, “TSC-RTU NE Interface”
- 2 Refer to Telcordia GR-834-CORE Appendix A-G for conventions, error codes etc.
- 3 Telcordia GR-831-CORE

## 2: Configuration for A00006450

This feature impacts upgrades/downgrades only.

### 2.1 Hardware and Software Requirements

### 2.2 Initial Configuration

### 2.3 Office/Subnet parameters (OP/SP) (CM & SESM)

### 2.4 Upgrade Considerations

This feature introduces a dependency in the upgrade sequence of the Access Care system with the rest of the Succession components.

When upgrading **from** releases prior to SN07 **to** SN07 and greater, it is required that Access Care be upgraded **ONLY after the CMT, MG9K-EM and MG9K** upgrades are complete. Failing to do so will disable Line test capabilities between Access care and the MG9K.

**2.4.1 Dump and Restore (CM)**

N/A

**2.4.2 Element Management Upgrade**

There are no changes to the upgrade sequence for element managers.

**2.4.3 Downgrade impact**

If network downgrade is performed from a release higher than SN07 to a release lower than SN07, then Access Care MUST be downgraded FIRST to allow line tests to function correctly.

**2.5 Data schema (DS) (CM, MIBS, RDB)****2.6 Service Orders (SO) (CM & SESM)****2.7 Software optionality control (SOC)****2.8 Element Management****2.9 User interface changes****2.10 OSSGate Interface Changes****2.11 Security****2.12 Configuration Walkthrough**

***Product = MG 9000***

**A00006894--InterNodal Emergency Stand Alone (ESA) for MG9K*****Functional Description*****1.1 Applicable Solution(s)**

UA-AAL1

**1.2 Description**

InterNodal ESA provides the ability to make calls while in ESA between MG9K nodes. In doing so, the Telcos also provide the ability to provision a

“Community of Interest” (COI), which defines which MG9K nodes can make ESA calls between one another. Calls cannot be made between the two communities, only within a given community. If an MG9K does not have access to a LAN Switch, it will operate in the pre-SN08 manner of routing calls between VMGs within a single MG9K node. Also, although a Community of Interest is defined, each node must be in ESA for it to participate in the community. Nodes are not forced to enter ESA.

### **1.2.1 Hardware Requirements or Dependencies**

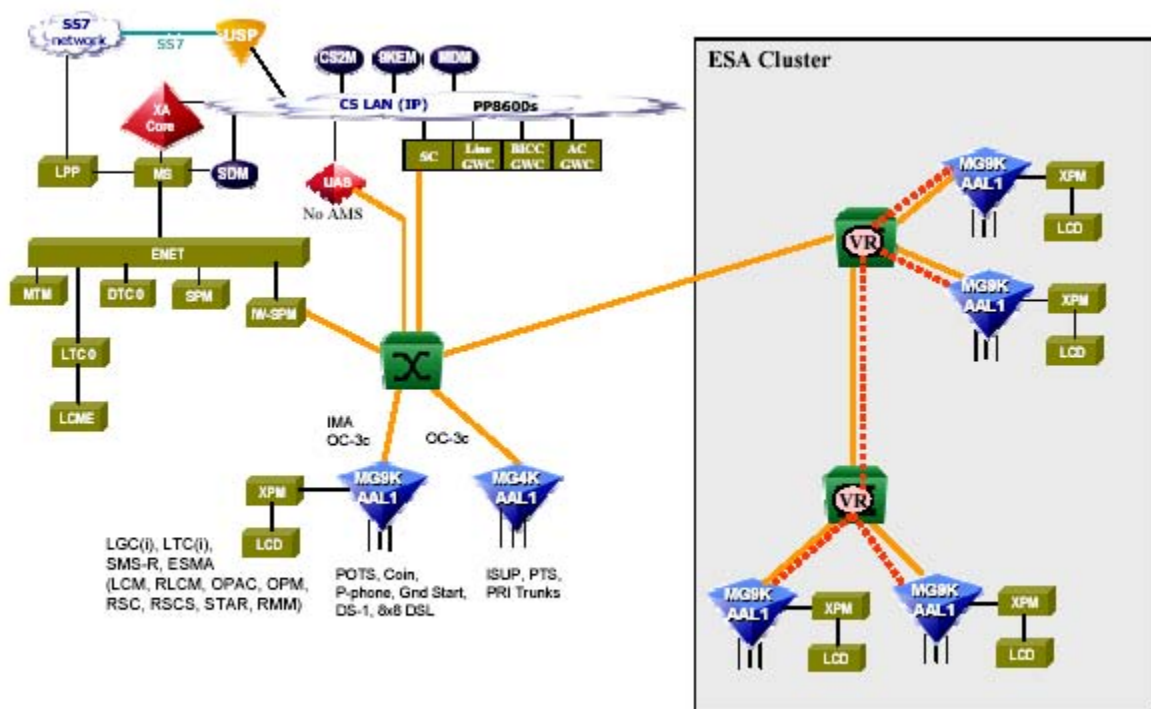
This feature applies to all supported hardware platforms, per the SN08 Succession server platform foundation software specification. No new hardware is required. A MG9K node in a community must have access to a LAN Switch (i.e. Passport 15000 or equivalent) in order for InterNodal ESA calls to complete.

### **1.2.2 Passport 15000 Configuration**

The inter-MG9000 communication will be provided by the Passport 15000 switch, using the Virtual Router capability to route the IP-based ESA traffic between MG9K gateways.

To deploy this feature in the field, the existing Passport 15000 switches must be configured to support it. This configuration/provisioning consists of: provisioning the Passport 15000 software component and the required engineering to configure the Passports in the field.

A typical deployment scenario for this feature is a collapsed office (“a remote”), which typically consists of a single Passport 15000 switch connecting a group of MG9K gateways to a set of PNNI links back to the CS2000 site. If necessary, the collapsed office can use several Passport 15000 switches.



Each MG9K will now have a separate Vcc to connect to the Passport 15000 Virtual Router; RFC 1483 llc-snap IP encapsulation.

A list of possible deployment scenarios are:

- MG9000 connected to 4pOC3 FP card with ipRoutes > 0
- MG9000 connected to 16pOC3 FP card with ipRoutes > 0
  - Configured based on the tables defined in the Configuration section.
- MG9000 connected to 16pOC3 FP card with ipRoute = 0; either:
  - A hairpin is required that can do IP services. Setup on that hairpin, configuring a simple PVC on the MG9000 port to the hairpin, is described in the Configuration section.
- MG9000 STS-1 connected to 12pDS3 FP cards (which don't support IP)
- MG9000 IMA connected to 4pDS3 FP cards (which don't support IP)
  - For MG9000 on these cards, an IP hairpin is required.
  - PVC is needed between the MG9000 to the hairpin port.

Hairpins can be provisioned on:

- A new pair of 4pOC3 cards.
- Spare pair of 1+1 OC12 or OC3 ports on either 4pOC12 (PQC12) or 4pOC3 (assume ipRoutes > 0)

- Pair 16pOC3 with ipRoutes enabled - there are actually 26 free protected connection entries available when cards are loaded up with the “maximum” of 14 ports.
- Change lp eng arc apc ov to use those 26 connection entries on that APC (pre-SN09 use eggshell command or HCA in SN09 to do this in service)
- Connect port 14 to 15 on both cards
- Provision AtmIf, can theoretically support up to 26 MG9000 with this.

### 1.3 Software Requirements or Dependencies

This ESA activity on the MG9K is dependent upon two additional activities for successful completion:

- InterNodal Emergency Standalone (ESA) Element Manager (A00007415).
- Passport 15000 Support for MG9000 Inter-node ESA.

### 1.4 Limitations and restrictions

- No security will be implemented on the ESA SIP Callp Messaging for SN08.
- InterNodal ESA is designed to support a maximum of 15 MG9K nodes. Each node can support a maximum of 4 ABI pairs on the primary shelf and a maximum of 15 sub-tending shelves for a total of 20 VMGs per node. Each COI must be restricted to containing no more than 170 VMGs.
- A ESA Community of Interest (COI) must have access to a LAN Switch (i.e. Passport 15K or equivalent) in order for InterNodal ESA calls to complete.
- If an MG9K does not have access to a IP router (Passport VR), it will operate in the pre-SN08 manner of routing calls between VMGs within a single MG9K node.
- Although a Community of Interest is defined, each node must be in ESA for it to participate in the community. Nodes are not forced to enter ESA.
- A MG9K node can belong to only one Community of Interest at a time.
- All VMGs in a MG9K node must belong to the Community of Interest.
- All VMGs in a MG9K node can independently enter ESA.
- VMGs configured for ESA as either Basic (North American) or Enhanced will be supported within the same Community of Interest. However, VMGs configured as Basic will not be able to handle MADN, hunt group, or other feature specific behaviors included in the Enhanced feature suite.
- Emergency numbers should be provisioned per MG9K node. It is not recommended to rely on accessibility of remote nodes within the community.
- VMGs configured on non-North American Callserver only support ESA Basic (International). Therefore, InterNodal ESA on international switches will only support VMGs configured for ESA Basic within the Community of Interest.

- InterNodal ESA will be supported for the SLOA (ATM), SLOIP (IP), and SLOG (GigE) solutions in the SN08 time frame.
- InterNodal ESA will be supported for both the SLOA (ATM) and SLOIP (IP) solutions. SLOG will not be supported in the SN08 time frame.

## 1.5 Interactions

None. InterNodal ESA must not inhibit existing ESA functionality. InterNodal ESA must support the Enhanced ESA line services feature set across all nodes in the Community of Interest (COI).

## 1.6 Glossary

| Term  | Description                          |
|-------|--------------------------------------|
| ABI   | Access Bridge Interface              |
| COI   | Community of Interest                |
| ESA   | Emergency Stand Alone                |
| I-ESA | InterNodal ESA                       |
| LAN   | Local Area Network                   |
| MG9K  | Media Gateway 9000                   |
| PVC   | Permanent Virtual Circuit            |
| PVR   | Passport Virtual Router              |
| SLOA  | Switched Lines Over ATM              |
| SLOG  | Switched Lines Over Gigabit-Ethernet |
| SLOIP | Switched Lines Over IP               |
| SVC   | Switched Virtual Circuit             |
| VMG   | Virtual Media Gateway                |
| VR    | Virtual Router                       |

## 2: Configuration

### 2.1 Hardware and Software Requirements

This feature applies to all supported hardware platforms, per the SN08 Succession server platform foundation software specification. No new hardware is required. A MG9K node in a community must have access to a LAN Switch (i.e. Passport 15000 or equivalent) in order for InterNodal ESA calls to complete.



## 2.2 Initial Configuration

The inter-MG9000 communication will be provided by the Passport 15000 switch, using the Virtual Router capability to route the IP-based ESA traffic between MG9K gateways.

To deploy this feature in the field, the existing Passport 15000 switches must be configured to support it. This section covers the following:

- Details of the Passport 15000 software component provisioning.
- Engineering required to configure the Passports in the field.
- List of possible deployment scenarios.

## 2.3 Upgrade Considerations

For the InterNodal ESA feature using a Passport virtual router (PVR), it is expected that the Passport 15000 can be field upgraded to support inter-MG9000 communications.

For a MG9000 connected to Passport 16pOC3 FP cards without IP already enabled for in-band OAM, it can be a service impacting action to enable the PVR on the PP15K.

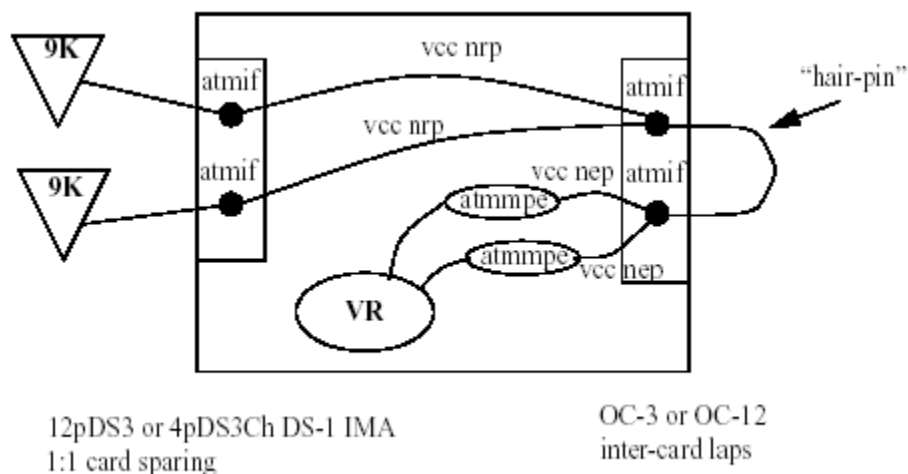
- Turning on IP reduces the card's ATM connection capacity such that only 14 ports can be supported. Fully populated cards would have to have some MG9000s migrated to other cards.
- atmif ca attributes on all ports on the FP need to be re-engineered from 3300 to 2100.
- Both of these changes (turning on IP and atmif ca) are "critical" changes - the former currently causes a dual-FP reboot.

Since an outage can not be allowed during an upgrade of existing field installations, the chosen solution is to put a hairpin on the shelf on a card that already supports IP, or can be IP enabled without service interruption (new hardware).

The MG9000 can have either a DS-1 IMA or an STS-1 interface which terminates on the Passport as a DS-3.

As IP is not supported on the 4pDS3ChIMA card, and carrier grade IP is not supported on the 12pDS3ATM FP card, these cards can only terminate the ATM layer, and an optical "hair-pin" must be used for IP forwarding.

**Figure 1 Electrical interface hair-pin IP connectivity**



This optical hair-pin can be deployed on a pair of cards deployed expressly for this purpose, or it can be deployed on spare ports of an optical pair with spare capacity. For instance, a pair of PQC12 4pOC12 FP cards with only two OC12 trunks will have enough spare ATM connection space and IP routing capacity to support over 100 MG9000 gateways for ESA traffic.

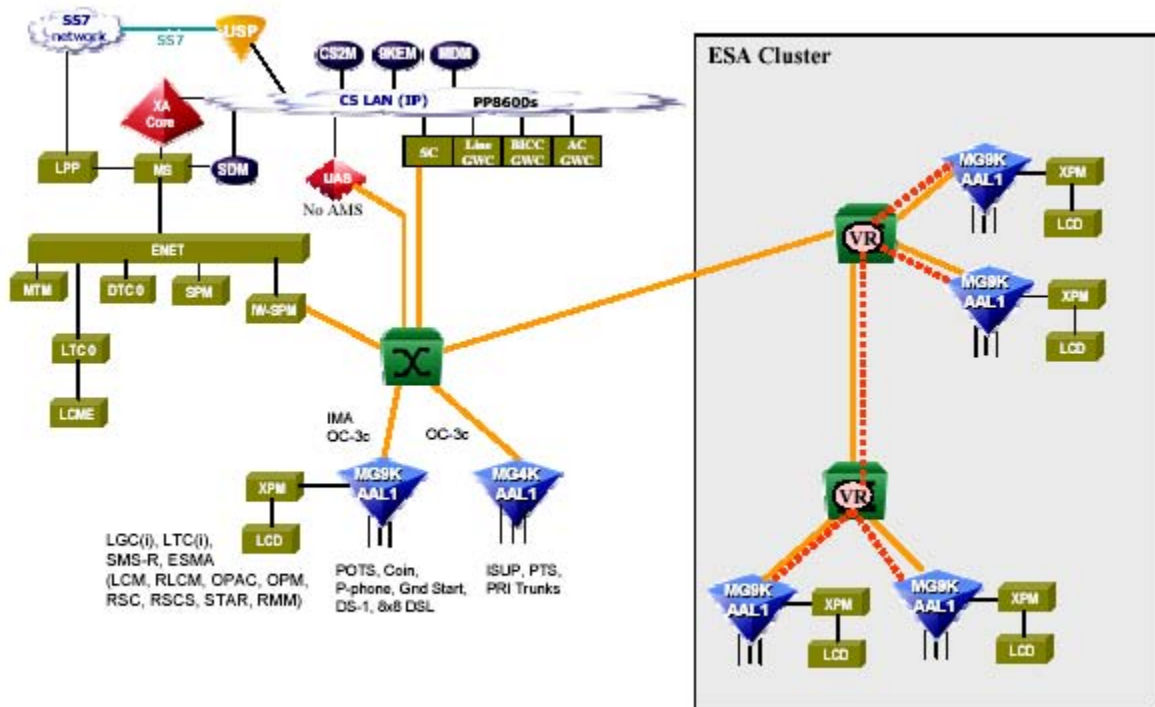
- A spare pair of ports on a card with available space can be used to deploy an IP hairpin that can do IP services.
- A new pair of cards (example: 4pOC3 FP) can be provisioned with an IP hairpin.

## 2.4 Security

No security will be implemented on the ESA SIP Callp Messaging for SN08.

## 2.5 Configuration Walkthrough

A typical deployment scenario for this feature is a collapsed office (“a remote”), which typically consists of a single Passport 15000 switch connecting a group of MG9K gateways to a set of PNNI links back to the CS2000 site. If necessary, the collapsed office can use several Passport 15000 switches.



Each MG9K will now have a separate Vcc to connect to the Passport 15000 Virtual Router; RFC 1483 llc-snap IP encapsulation.

For reference, this chapter contains all the components that are required for adding MG9000 InterNode ESA support to an already commissioned Passport 15000 in the Succession UA-AAL1 Solution. Not all components are required for all configurations. There is a table for each related group of components that must be created or changed. The “type” field means the following:

- **set:** the attribute is pre-engineered by Succession design and is the same for all switches at all sites for all customers.
- **default:** the attribute value is customer defined and/or must be engineered depending on the switch or network configuration.
- **link:** an attribute that is a link to another component.

## 2.5.1 CP and Shelf Commissioning

The following components are to be created or changed when a Passport 15000 shelf is first being commissioned for InterNode ESA.

### 2.5.1.1 Software and Features

The following software packages and lpt for the CP are required. They are not configured by an NP template but as part of the Passport 15000 base IM24-9095.

**Table 1 Software Component Provisionable Attributes**

| Attribute                  | Type    | Value                                                         |
|----------------------------|---------|---------------------------------------------------------------|
| <b>Software</b>            |         |                                                               |
| avList                     | default | ip_CF01XXX, wanDte_CF01XXX<br><i>add if not already there</i> |
| <b>Sw Lpt/CP</b>           |         |                                                               |
| featureList                | set     | ip, mvr<br><i>add if not already there</i>                    |
| <b>Sw Lpt/ATM&lt;n&gt;</b> |         |                                                               |
| featureList                | set     | ip, atmmpe<br><i>add if not already there</i>                 |

### 2.5.1.2 Virtual Router

**Table 2 Virtual Router component provisioning attributes**

| Attribute                                                                                             | Type | Value           |
|-------------------------------------------------------------------------------------------------------|------|-----------------|
| <b>VirtualRouter/ESA</b>                                                                              |      |                 |
| vpnMode                                                                                               | set  | customer        |
| vrp                                                                                                   | set  | lp/0            |
| <b>VirtualRouter/ESA Ip</b>                                                                           |      |                 |
| preConfigFwdPath                                                                                      | set  | enabled         |
| <b>VirtualRouter/ESA Ip Static<sup>a</sup></b>                                                        |      |                 |
| maxEcmpNextHops                                                                                       | set  | 1               |
| <b>VirtualRouter/ESA Ip Static Route/&lt;sub-net&gt;<sup>b</sup> nextHop/&lt;next-hop-address&gt;</b> |      |                 |
| metric                                                                                                | set  | 1               |
| <b>VirtualRouter/ESA Ip Static DiscardRouteEntry/0.0.0.0,0.0.0.0,0</b>                                |      |                 |
| discardRouteEntry                                                                                     | add  | 0.0.0.0,0.0.0.0 |

a. required to route traffic between Passport 15000 in the case where InterNode ESA groups span more than one Passport 15000.

b. <sub-net> is a triplet of the form <address>,<mask>,0

## 2.5.2 FP Cards

To carry the InterNodal ESA IP traffic, the FP cards that are directly connected to the MG9000 or supporting the hairpin connection for MG9000 connected to FP cards that cannot support IP traffic, the following FP level configuration changes must be made.

### 2.5.2.1 4pOC3SmlrATM

**Table 3 4pOC3SmlrAtm Component Provisionable Attributes**

| Attribute Name            | Type | Value |
|---------------------------|------|-------|
| <b>Lp Eng Fcrc Pqc Ov</b> |      |       |
| ipRoutes                  | Set  | 4096  |

### 2.5.2.2 16pOC3SmlrAtm

**Table 4 16pOC3SmlrAtm Component Provisionable Attributes**

| Attribute Name                  | Type    | Value         |
|---------------------------------|---------|---------------|
| <b>Lp Eng Arc Ov</b>            |         |               |
| connectionPoolCapacity          | Default | <num>         |
| protectedConnectionPoolCapacity | Default | 29440 - <num> |
| <b>Lp Eng Fcrc Pqc Ov</b>       |         |               |
| ipRoutes                        | Set     | 4096          |

### 2.5.2.3 4pOC12SmlrATM

**Table 5 4pOC12SmlrAtm (NTHW86 only) Component Provisionable Attributes**

| Attribute Name            | Type | Value |
|---------------------------|------|-------|
| <b>Lp Eng Fcrc Pqc Ov</b> |      |       |
| ipRoutes                  | Set  | 4096  |

### 2.5.2.4 4pDS3ChAtm

No change to the FP configuration to add InterNodal ESA.

### 2.5.2.5 12pDS3Atm

No change to the FP configuration to add InterNodal ESA.

## 2.5.3 Interfaces

### 2.5.3.1 MG9000 OC-3 interface

The following component needs to be provisioned to support a InterNodal ESA IP MG9000 on a 1+1 OC-3 interfaces. Note that since MG9000 does not support ARP, there must be a static ARP entry provisioned into the Passport for each IP “host” on the MG9000.

**Table 6 MG9000 OC-3 interface component configuration**

| Attribute Name                                                              | Type    | Value                          |
|-----------------------------------------------------------------------------|---------|--------------------------------|
| <b>AtmIf Vcc/16.32 Nep</b>                                                  |         |                                |
| applicationName                                                             | Set     | AtmMpe/<n> Ac/1                |
| <b>AtmIf Vcc/16.32 vcd Tm</b>                                               |         |                                |
| atmServiceCategory                                                          | Set     | rtVbr                          |
| txPacketWiseDiscard                                                         | Set     | enabled                        |
| txTrafficDescriptorType                                                     | Set     | 6                              |
| txTrafficDescriptorParameters                                               | Default | 1 12000 2 6000 3 32            |
| <b>AtmMpe/&lt;n&gt;</b>                                                     |         |                                |
| linkToProtocolPort                                                          | Link    | Vr/ESA Pp/9K<n>_ESA            |
| <b>AtmMpe/&lt;n&gt; Ac/1</b>                                                |         |                                |
| atmConnection                                                               | Link    | AtmIf/<n> Vcc/<vpi.vci><br>nep |
| <b>Vr/ESA Pp/9K&lt;n&gt;_ESA</b>                                            |         |                                |
| linkToMedia                                                                 | Link    | AtmMpe/<n>                     |
| <b>Vr/ESA Pp/9K&lt;n&gt;_ESA ipport LogicalInterface/&lt;ESA_IPaddr&gt;</b> |         |                                |
| netMask                                                                     | Set     | 255.255.255.224                |
| <b>Vr/ESA Ip Arp Host/&lt;ESA_IPaddr+m&gt;,0<sup>a</sup></b>                |         |                                |
| pvc                                                                         | Set     | 1                              |

a. ARP entries must be provisioned for the 16 MG9000 ITP IP addresses

### 2.5.3.2 MG9000 DS-1 IMA interface

The following component needs to be provisioned to support MG9000 InterNodal ESA on a DS-1 IMA interface. This consists of a Vcc Network Relay Point (NRP) to a Hairpin ATM Interface.

**Table 7 MG9000 DS-1 IMA interface Component Provisionable Attributes**

| Attribute Name                    | Type    | Value                         |
|-----------------------------------|---------|-------------------------------|
| <b>AtmIf Vcc/16.32 Nrp</b>        |         |                               |
| nextHop                           | Default | AtmIf/<HAI> Vcc/<vpi.vci> Nrp |
| <b>AtmIf Vcc/16.32 Nrp Vcd Tm</b> |         |                               |
| atmServiceCategory                | Set     | rtVbr                         |
| txPacketWiseDiscard               | Set     | enabled                       |
| txTrafficDescriptorType           | Set     | 6                             |
| txTrafficDescriptorParameters     | Default | 1 950 2 380 3 32              |

### 2.5.3.3 MG9000 STS-1/DS3 interface

The following component needs to be provisioned to support MG9000 InterNodal ESA on a DS-3 interface This consists of a Vcc Network Relay Point (NRP) to a Hairpin ATM Interface.

**Table 8 MG9000 STS-1/DS-3 interface Component Provisionable Attributes**

| Attribute Name                    | Type    | Value                         |
|-----------------------------------|---------|-------------------------------|
| <b>AtmIf Vcc/16/32 Nrp</b>        |         |                               |
| nextHop                           | Default | AtmIf/<HAI> Vcc/<vpi.vci> Nrp |
| <b>AtmIf Vcc/16.32 Nrp Vcd Tm</b> |         |                               |
| atmServiceCategory                | Set     | rtVbr                         |
| txPacketWiseDiscard               | Set     | enabled                       |
| txTrafficDescriptorType           | Set     | 6                             |
| txTrafficDescriptorParameters     | Default | 1 ?? 2 ?? 3 32                |

### 2.5.3.4 Hairpin ATM interface

Table 11, “Optical HII interface component configuration.” documents all the components and attributes to be provisioned for the optical Hairpin ATM Interface (HAI) from scratch. Table 12, “MG9000 Vcc and Vr HII component configuration.” covers the Vcc Nrp components required to support one

MG9000. As a single hairpin interface can support many MG9000s, those components will typically be applied several times.

**Table 9 Optical HAI interface component configuration**

| Attribute Name                         | Type    | Value                                                |
|----------------------------------------|---------|------------------------------------------------------|
| <b>Lp Sonet</b>                        |         |                                                      |
| clockingSource                         | Set     | module                                               |
| vendor                                 | Default |                                                      |
| commentText                            | Default |                                                      |
| <b>Laps</b>                            |         |                                                      |
| workingLine                            | Link    | Lp/n Sonet/m                                         |
| protectionLine                         | Link    | Lp/n+1 Sonet/m                                       |
| signalDegradeRatio                     | Default | -8                                                   |
| <b>Laps Sts (OC-12 only)</b>           |         |                                                      |
| concatNumber                           | Set     | 12                                                   |
| <b>Laps Sts AtmCell</b>                |         |                                                      |
| correctSingleBitHeaderErrors           | Set     | On                                                   |
| <b>AtmIf</b>                           |         |                                                      |
| interfaceName                          | Link    | Laps/<n*100+m> Sts/0                                 |
| remoteAtmInterfaceLabel                | Default | EM/<remoteNodeName><br>ATMIF/<remote AtmIf instance> |
| oamSegmentBoundary                     | Set     | No                                                   |
| <b>AtmIf ConnMap Ov (4pOC-12 only)</b> |         |                                                      |
| numVccsForVpiZero                      | Set     | 16384                                                |
| <b>AtmIf Ca<sup>a</sup></b>            |         |                                                      |
| maxVccs                                | Set     | 3250/13000                                           |
| maxAutoSelectedVciForVpiZero           | Set     | 4095/16383                                           |
| minAutoSelectedVciForVpiZero           | Set     | 2048                                                 |
| maxVpcs                                | Set     | 0                                                    |
| maxVpts                                | Set     | 0                                                    |
| bandwidthPool                          | Set     | 1 100 2 0 3 0                                        |



| Attribute Name         | Type | Value    |
|------------------------|------|----------|
| <b>AtmIf Ca rtVbr</b>  |      |          |
| cdvt                   | Set  | 5000     |
| usageParameterControl  | Set  | Disabled |
| <b>AtmIf Ca nrtVbr</b> |      |          |
| cdvt                   | Set  | 5000     |
| usageParameterControl  | Set  | Disabled |

a. values are given for both OC-3 / OC-12

**Table 10 MG9000 Vcc Nrp HAI component configuration.**

| Attribute Name                            | Type    | Value                    |
|-------------------------------------------|---------|--------------------------|
| <b>AtmIf Vcc/0.&lt;vci&gt; Nrp</b>        |         |                          |
| nextHop                                   | Default | AtmIf/<MG> Vcc/16.32 Nrp |
| <b>AtmIf Vcc/0.&lt;vci&gt; Nrp Vcd Tm</b> |         |                          |
| atmServiceCategory                        | Set     | rtVbr                    |
| txPacketWiseDiscard                       | Set     | enabled                  |
| txTrafficDescriptorType                   | Set     | 6                        |
| txTrafficDescriptorParameters             | Default | <sup>a</sup>             |

a. values depend on whether the MG9000 is IMA or DS3

### 2.5.3.5 Hairpin IP interface

Table 11, “Optical HII interface component configuration.” documents all the components and attributes to be provisioned for the optical Hairpin IP Interface (HII) from scratch. Table 12, “MG9000 Vcc and Vr HII component configuration.” covers the Vcc, AtmMpe and Vr components required to support one MG9000. As a single hairpin can support many MG9000,s those components will typically be applied several times.

**Table 11 Optical HII interface component configuration**

| Attribute Name  | Type    | Value  |
|-----------------|---------|--------|
| <b>Lp Sonet</b> |         |        |
| clockingSource  | Set     | module |
| vendor          | Default |        |

| Attribute Name                         | Type    | Value                                                   |
|----------------------------------------|---------|---------------------------------------------------------|
| commentText                            | Default |                                                         |
| <b>Laps</b>                            |         |                                                         |
| workingLine                            | Link    | Lp/n Sonet/m                                            |
| protectionLine                         | Link    | Lp/n+1 Sonet/m                                          |
| signalDegradeRatio                     | Default | -8                                                      |
| <b>Laps Sts (OC-12 only)</b>           |         |                                                         |
| concatNumber                           | Set     | 12                                                      |
| <b>Laps Sts AtmCell</b>                |         |                                                         |
| correctSingleBitHeaderErrors           | Set     | On                                                      |
| <b>AtmIf</b>                           |         |                                                         |
| interfaceName                          | Link    | Laps/<n*100+m> Sts/0                                    |
| remoteAtmInterfaceLabel                | Default | EM/<remoteNodeName><br>ATMIF/<remote AtmIf<br>instance> |
| oamSegmentBoundary                     | Set     | No                                                      |
| <b>AtmIf ConnMap Ov (4pOC-12 only)</b> |         |                                                         |
| numVccsForVpiZero                      | Set     | 16384                                                   |
| <b>AtmIf Ca<sup>a</sup></b>            |         |                                                         |
| maxVccs                                | Set     | 3250/13000                                              |
| maxAutoSelectedVciForVpiZero           | Set     | 4095/16383                                              |
| minAutoSelectedVciForVpiZero           | Set     | 2048                                                    |
| maxVpcs                                | Set     | 0                                                       |
| maxVpts                                | Set     | 0                                                       |
| bandwidthPool                          | Set     | 1 100 2 0 3 0                                           |
| <b>AtmIf Ca rtVbr</b>                  |         |                                                         |
| cdvt                                   | Set     | 5000                                                    |
| usageParameterControl                  | Set     | Disabled                                                |
| <b>AtmIf Ca nrtVbr</b>                 |         |                                                         |
| cdvt                                   | Set     | 5000                                                    |
| usageParameterControl                  | Set     | Disabled                                                |

a. values are given for both OC-3 / OC-12

**Table 12 MG9000 Vcc and Vr Hll component configuration**

| Attribute Name                                                              | Type    | Value                       |
|-----------------------------------------------------------------------------|---------|-----------------------------|
| <b>AtmIf Vcc/0.&lt;vci&gt; Nep</b>                                          |         |                             |
| applicationName                                                             | Set     | AtmMpe/<n> Ac/1             |
| <b>AtmIf Vcc/0.&lt;vci&gt; vcd Tm</b>                                       |         |                             |
| atmServiceCategory                                                          | Set     | rtVbr                       |
| txPacketWiseDiscard                                                         | Set     | enabled                     |
| txTrafficDescriptorType                                                     | Set     | 6                           |
| txTrafficDescriptorParameters                                               | Default | <sup>a</sup>                |
| <b>AtmMpe/&lt;n&gt;</b>                                                     |         |                             |
| linkToProtocolPort                                                          | Link    | Vr/ESA Pp/9K<n>_ESA         |
| <b>AtmMpe/&lt;n&gt; Ac/1</b>                                                |         |                             |
| atmConnection                                                               | Link    | AtmIf/<n> Vcc/<vpi.vci> nep |
| <b>Vr/ESA Pp/9K&lt;n&gt;_ESA</b>                                            |         |                             |
| linkToMedia                                                                 | Link    | AtmMpe/<n>                  |
| <b>Vr/ESA Pp/9K&lt;n&gt;_ESA ipport LogicalInterface/&lt;ESA_IPaddr&gt;</b> |         |                             |
| netMask                                                                     | Set     | 255.255.255.224             |
| <b>Vr/ESA Ip Arp Host/&lt;ESA_IPaddr+m&gt;,0<sup>b</sup></b>                |         |                             |
| <b>AtmMpe/&lt;n&gt;</b>                                                     |         |                             |

a. values depend on whether the MG9000 is IMA or DS3

b. ARP entries must be provisioned for the 16 MG9000 ITP IP addresses

### 2.5.3.6 Passport to Passport interface

If an InterNodal ESA group spans more than one Passport 15000, then there needs to be at least one IP path among all the Passports over PNNI links.

**Table 13 Passport to Passport interface component configuration**

| Attribute Name            | Type | Value |
|---------------------------|------|-------|
| <b>AtmIf Vcc/0.33 Nep</b> |      |       |

| Attribute Name                                                             | Type    | Value                     |
|----------------------------------------------------------------------------|---------|---------------------------|
| applicationName                                                            | Set     | AtmMpe/<n> Ac/1           |
| <b>AtmIf Vcc/0.33 vcd Tm</b>                                               |         |                           |
| atmServiceCategory                                                         | Set     | rtVbr                     |
| txTrafficDescriptorType                                                    | Set     | 6                         |
| txPacketWiseDiscard                                                        | Set     | enabled                   |
| txTrafficDescriptorParameters                                              | Default | 1 12000 2 6000 3 32       |
| <b>AtmMpe/&lt;n&gt;</b>                                                    |         |                           |
| linkToProtocolPort                                                         | Link    | Vr/ESA Pp/<EM><AtmIf>_ESA |
| <b>AtmMpe/&lt;n&gt; Ac/1</b>                                               |         |                           |
| atmConnection                                                              | Link    | AtmIf/<n> Vcc/0.33 nep    |
| <b>Vr/ESA Pp/PP&lt;n&gt;_ESA</b>                                           |         |                           |
| linkToMedia                                                                | Link    | AtmMpe/<n>                |
| <b>Vr/ESA Pp/PP&lt;n&gt;_ESA ipport LogicalInterface/&lt;PP_IPaddr&gt;</b> |         |                           |
| netMask                                                                    | Default | 255.255.255.252           |

***Product = MG 9000***

## **A00006906--SN08 Clock Sync Enhancements**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Description**

This Feature covers the software development on the Succession MG9000 (MG9K) node and specifically on the DCC and ITP cards. The clock sync code on the DCC is used to recover a synchronization signal from a Building Integrated Timing Source (aka. BITS, BITS is North American usage) or a Synchronization Supply Unit (aka SSU, International usage) signal. This signal is forwarded to the MG9K ITP card which uses the signal to synchronize the MG9K node.

Prior to SN08, the MG9K only supports the North American standard timing reference (BITS). This system uses DS-1 interfaces which are incompatible with the international standard 2048kHz interface. Lack of 2048kHz interfaces complicates the introduction of MG9K into international markets.

This feature introduces the capability for the NY45FA GiGE DCC circuit pack to connect to an International standard Synchronization Supply Unit (SSU) using 2048kHz interfaces. The NY45FA can use an SSU or BITS signal as a timing reference.

### 1.3 Hardware Requirements or Dependencies

The new content provided by this feature is only activated if the MG9K NY45FA GiGE card is present in the node. The content of this feature will actually exist in the other DCC loads but will not be activated. Software will determine what behavior (BITS or SSU) to activate based on the PEC code of the DCC hardware along with provisioning information.

### 1.4 Software Requirements or Dependencies

There are no software feature dependencies required by this feature. This feature is stand alone.

### 1.5 Limitations and restrictions

Include only those limitations and restrictions that are visible to any user. Describe the incompatibilities, limitations and restrictions imposed by this feature that may affect the end user.

- This feature will only be activated if the MG9K has a NY45FA GiGE DCC card(s) in the node.
- This feature only supports 2048kHz signal formats that conform to G703 section 13 and 120 ohm (twisted pair) interfaces. This signal is a 2048 kHz signal, i.e. it does not conform to G.704 frame format. Therefore the following is NOT supported
  - 75 ohm load impedance is NOT supported.
  - 2048 kbit/s interface is NOT supported. (G.704 frame format)
- This feature is not backward compatible, i.e. downgrading the DCC to a load previous to SN08 will result in a loss of SSU synchronization since that functionality is not provided by previous software releases.
- GiGE DCC cards will not have the ability to obtain a timing reference from the network interface. Provisioning for network timing will be blocked.

### 1.6 Interactions

In SN08, the MG9K Element Manager (EM) is planning to implement a GUI for the GiGE circuit pack. As part of that GUI is included a Clock sync

interface. The intent of the GUI is to represent all of the information that is currently displayed on the clock sync LCI pages plus the inclusion of the new SSU information. The infrastructure for the data is already in place so the interaction with the Element Manager takes place using standard SNMP Gets and Puts. No functionality changes to the Clock Sync code are expected as a result of this related but independent feature.

## 1.7 Applicable customer facing sections

|                                    |                   |
|------------------------------------|-------------------|
| Functional Description (Mandatory) | <u>  X  </u>      |
| Fault Management                   |                   |
| Not applicable                     | <u>          </u> |
| Logs                               | <u>  X  </u>      |
| Alarms                             | <u>  X  </u>      |
| Configuration                      |                   |
| Not applicable                     | <u>          </u> |
| Data Schema/MIBs                   | <u>  X  </u>      |
| User Interface                     | <u>  X  </u>      |
| GUI                                | <u>  X  </u>      |
| Element Management                 | <u>          </u> |
| Security                           | <u>          </u> |
| Service Order                      | <u>          </u> |
| Office Parameters                  | <u>          </u> |
| SOC                                | <u>          </u> |
| Upgrades impact                    | <u>          </u> |
| Accounting (includes AMA billing)  | <u>          </u> |
| Not Applicable                     | <u>  X  </u>      |
| Billing changes                    | <u>          </u> |
| Performance                        | <u>          </u> |

Not Applicable \_\_\_\_\_X\_\_\_\_\_

Operational Measurements \_\_\_\_\_

Performance Measurement \_\_\_\_\_

## 1.8 Glossary

| Term | Description                                        |
|------|----------------------------------------------------|
| LCI  | Local Craft Interface – A web based user interface |
| SSU  | Synchronization Supply Unit                        |

## 1.9 Alarms

Two new alarms are created that indicate a DAC voltage error:

- "DACV at Rail", Major alarm. This alarm means that the ITP clock circuitry has attempted to acquire sync and has traversed the frequency range to the extreme end of its capture range. When this occurs it typically indicates that the incoming clock reference is not synchronized to a good reference and is out of the MG9K's acceptable frequency range. The corrective action would be to investigate and solve the incoming clock reference frequency.  
If this alarm occurs on the active ITP, and the inactive ITP is not in the same state, then a SWACT will occur.
- "DACV Out of Range", Major alarm. This alarm means that the ITP 's DACV clock circuitry is in an invalid condition and the values are out of range. When this occurs it typically indicates that the ITP DACV circuitry is not functional. In most cases this means the ITP card should be replaced. If a "Lock, Restart Flash Primary "action does not clear this fault then definitely this indicates a faulty ITP card.  
If this alarm occurs on the active ITP and the inactive ITP is not in the same state then a SWACT will occur.

***Product = MG 9000***

## **A00007000--GIGE Network Interface EM Portion**

### ***Functional Description***

#### **1.1 Feature name**

GIGE Network Interface EM Portion

## 1.2 Applicable Solution(s)

UA-AAL1

## 1.3 Description

This document describes the functional description of the new Gigabit Ethernet interface for MG9000. Existing VOIP MG9000 is an ATM based IP network Interface. The GigE interface will provide IP connectivity to the MG9000. A new SuperCore Gigabit Ethernet card (known as SCG) that has four ports (one WAN port, other three subtending ports) is being introduced to support GigE configuration. In SN08, subtending ports are not supported.

### 1.3.1 Display

The user can view the following GigE related parameters:

- 1 Card data (physical attributes, activity status and software load)
- 2 Link data (physical attributes, link attributes)
- 3 Link protection status
- 4 Performance parameters through the Performance Browser:
  - PM/ OM per link
  - RMON per link
  - SMON per VLAN
- 5 GigE card and link alarms through the Alarm Browser.
- 6 Network interface bandwidth data through the Bandwidth Manager:
  - Current ITP voice usage (in bits/second)
  - Current ABI voice usage (in bits/second)
  - Overall network interface utilization (in bits/second)

NOTE: In SN08, only Switched Lines and ABI services are supported.

- 7 Clock synchronization status:
  - Clock status (active/inactive)
  - Chosen reference
  - DAC voltage

### 1.3.2 Provisioning

The user can view and provision the following attributes:

- 1 Card state (administrative and configuration state)
- 2 Link state (administrative and configuration state)



NOTE: the user cannot lock the active WAN port from EM.

**3** Facility loopback (enable/disable)

**4** Frequency and loss rate for Link Integrity Monitoring

**5** Tx RFI and Rx RFI:

Tx RFI and Rx RFI will be ON by default. On disabling, a warning message will be displayed to the user.

**6** SES to generate UAS:

By default, 10 SES will generate 1 UAS. If it is changed to some other value, a warning message will be displayed to the user.

**7** Clock synchronization:

The user can provision the Primary and Alternate clock references and their encoding formats. The available references are DCC BITS, ITX BITS and NETWORK (supported by SCO and SCI cards). GigE does not support the NETWORK reference. Besides supporting SF and ESF encoding formats (as supported by the SCO and SCI cards), GigE also supports SSU format.

**8** Link Reversion:

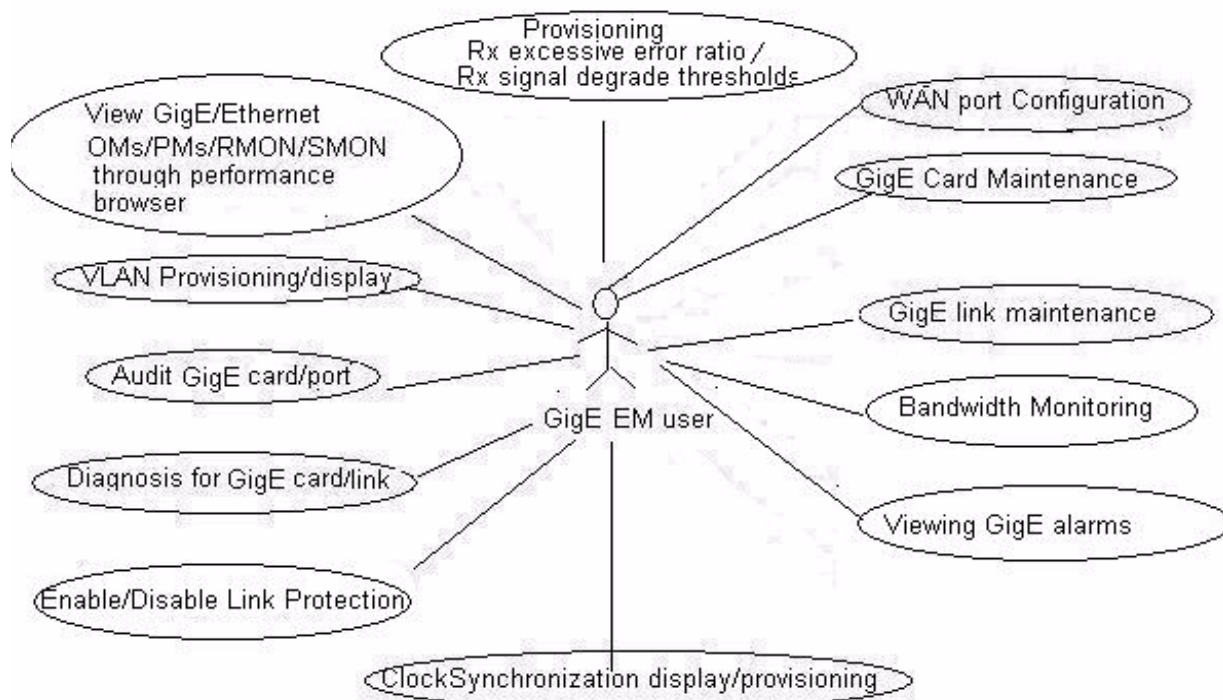
The user needs to specify the preferred and non-preferred link along with the wait to revert time for link reversion.

**9** VLAN data:

The user can view and modify the peak rate and priority for the following VLANs: OAM&P, Bearer, Call Control, 1 for the fixed IP addresses of the active and inactive cards.

**10** Inactive WAN configuration:

The WAN port can be changed for only the inactive SCG card from EM.

**Figure 2 Use Case Diagram**

## 1.4 Hardware Requirements or Dependencies

A new SuperCore card to support the GigE configuration is required.

## 1.5 Software Requirements or Dependencies

The MG9K GIGE load is required to test EM code changes.

## 1.6 Limitations and restrictions

None

## 1.7 Interactions

None

## Glossary

| Term | Description                |
|------|----------------------------|
| ATM  | Asynchronous Transfer Mode |

| Term | Description                       |
|------|-----------------------------------|
| RMON | Remote Network Monitoring         |
| UAS  | Unavailable Second                |
| SSU  | Synchronization Supply Units      |
| SMON | Switched Network Monitoring       |
| SES  | Severely Errored Second           |
| RFI  | Remote Failure Indication         |
| BITS | Building Integrated Timing Supply |
| OM   | Operational Measurement           |
| WAN  | Wide Area Network                 |
| ABI  | Access Bridge Interface           |
| DSL  | Digital Subscriber Line           |
| GigE | Gigabit Ethernet                  |
| PM   | Performance Monitoring            |
| VLAN | Virtual Local Area Network        |
| DCC  | Data Control Card                 |
| ITX  | Internet Telephony Extender       |
| ITP  | Internet Telephony Processor      |
| SCO  | SuperCore OC3                     |
| SCI  | SuperCore DS1 IMA                 |
| SF   | DS1 Super Frame                   |
| ESF  | Extended Super Frame              |
| SSU  | Synchronization Supply Unit       |
| DAC  | Digital to Analogue Converter     |

## 2: MG9000 GIGE Network Interface support from EM

### 2.1 Fault management strategy for A00007000

The standard MG9K EM Fault management strategy will apply to the new faults raised by this feature. Alarms will be displayed by the MG9K EM alarms browser, logged in NT standard format to the SSPFS cust logs and forwarded to the northbound OSS and IEMS.

“A00007000 - GIGE network Interface” feature introduces new faults.

## 2.2 Fault management tools and utilities

The Alarm Browser reports alarms from registered events. When an alarm is generated, it is displayed in the Alarm Browser along with the date and time, the NE Id, the resource (where the alarm was generated), the severity and probable cause. Highlighting the alarm displays the description of the alarm in the text box at the bottom of the Alarm Browser.

The Log Adaptor generates logs from registered events. The log names and numbers are predetermined and are matched with the incoming event. A log with the corresponding name and number which contains the date, time, physical location, severity and any other pertinent information is generated and placed into a separate file.

## 2.3 Logs

### 2.3.1 Formats

The Log Delivery application for this feature generates logs in the Number 2 Switch Control Center (SCC2) format and the NT standard (STD) format.

The log type for GIGE alarms will be ‘GIGE’ and the log ids will start from 301.

#### 2.3.1.1 NTSTD

- **LossOfSignal**

GIGE 301 \*\*\* AUG 31 06:14:43 3409 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 204  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault - Description: Loss of Signal  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **RemoteFailureIndication**

GIGE 302 \*\*\* AUG 31 06:14:43 3410 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 205  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970

- Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault - Description: Remote Failure  
Indication  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF
- **TxF**  
GIGE 303 \*\*\* AUG 31 06:14:43 3411 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 206  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault - Description: Transmit Failure  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF
  - **TEM**  
GIGE 304 \* AUG 31 06:14:43 3412 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 270  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault -  
Description: Temperature threshold exceeded  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF
  - **POW**  
GIGE 305 \* AUG 31 06:14:43 3413 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 271  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault -  
Description: Low Power Indicated  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF
  - **TxSD**  
GIGE 306 \* AUG 31 06:14:43 3413 TBL MG9K NorGigeLinkFault

Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 283  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault -  
Description: Transmit Signal Degraded  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **TxEER**

GIGE 307 \* AUG 31 06:14:43 3413 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 284  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault -  
Description: Transmit Excessive Error Ratio.  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **TBC**

GIGE 308 \* AUG 31 06:14:43 3414 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 272  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault  
Description: Transmit Bias Current  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **LINT**

GIGE 309 \*\* AUG 31 06:14:43 3415 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 273  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970

Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault-Description:Link Initialization  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **OPT**

GIGE 310 \*\*\* AUG 31 06:14:43 3416 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 274  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault -  
Description: Transmit Optical Power  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **OPR**

GIGE 311 \* AUG 31 06:14:43 3417 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 275  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault -  
Description: Receive Optical Power  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **GARP**

GIGE 312 \*\* AUG 31 06:14:43 3418 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 276  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault - Description: GARP failure  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **LKINT**

GIGE 313 \*\* AUG 31 06:14:43 3420 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01

Notification Id: 278  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault -  
Description: Link Integrity Failure  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **AUTONEG**

GIGE 314 \*\* AUG 31 06:14:43 3421 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 279  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault -  
Description: Autonegotiation Failure  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **NONPREFLINK**

GIGE 315 \*\* AUG 31 06:14:43 3422 TBL MG9K NorGigeLinkFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 280  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:39:05 1970  
Component Id: Port.frame0.shelf3.slot10.Gige.Link01  
Specific Problem:norGigeLinkFault -  
Description: Non Preferred Link is active  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

### 2.3.1.2 SCC2

- **Loss of Signal**

\*\*\* GIGE 301 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Link01  
Notification Id: 300  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure



Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault Description: Loss Of Signal  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **Remote Failure Indication**

\*\*\* GIGE 302 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Link01  
Notification Id: 301  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault  
Description: Remote Failure Indication  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **TXF**

\*\*\* GIGE 303 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Link01  
Notification Id: 208  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault  
Description: Transmit Failure  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **TEM**

\*\*\* GIGE 304 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Link01  
Notification Id: 209  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault  
Description: Temperature threshold exceeded  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **POW**

\*\*\* GIGE 305 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Link01  
Notification Id: 210  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault Description: Low Power indicated  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **RxSD**

\*\*\* GIGE 306 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Link01  
Notification Id: 210  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault Description: Transmit Signal

Degraded

Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **RxEED**

\*\*\* GIGE 307 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Link01  
Notification Id: 210  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault  
Description: Transmit Excessive error ratio  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **TBC**

\*\*\* GIGE 308 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 300  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970

Component Id: Port.frame0.shelf3.slot10.OC3.Link01

Specific Problem: NorGigeLinkFault Description: Transmit Bias

Current

Site Flr RPos Bay\_id

FFFF FF FFFF MG9F FFF

- **LINT**

\*\*\* GIGE 309 5915 TBL MG9K NorGigeLineFault

Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01

Notification Id: 300

State: not acknowledged

Category: Communication Alarm

Cause: Communications Subsystem Failure

Time: Jan 01 05:54:38 1970

Component Id: Port.frame0.shelf3.slot10.OC3.Link01

Specific Problem: NorGigeLinkFault Description: Link Initialization

Site Flr RPos Bay\_id

FFFF FF FFFF MG9F FFF

- **OPT**

\*\*\* GIGE 310 5915 TBL MG9K NorGigeLineFault

Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01

Notification Id: 300

State: not acknowledged

Category: Communication Alarm

Cause: Communications Subsystem Failure

Time: Jan 01 05:54:38 1970

Component Id: Port.frame0.shelf3.slot10.OC3.Link01

Specific Problem: NorGigeLinkFault

Description: Transmit Optical Power

Site Flr RPos Bay\_id

FFFF FF FFFF MG9F FFF

- **OPR**

\*\*\* GIGE 311 5915 TBL MG9K NorGigeLineFault

Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01

Notification Id: 300

State: not acknowledged

Category: Communication Alarm

Cause: Communications Subsystem Failure

Time: Jan 01 05:54:38 1970

Component Id: Port.frame0.shelf3.slot10.OC3.Link01

Specific Problem: NorGigeLinkFault

Description: Receive Optical Power

Site Flr RPos Bay\_id

FFFF FF FFFF MG9F FFF

- **GARP**

\*\*\* GIGE 312 5915 TBL MG9K NorGigeLineFault

Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 300  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault Description: GARP Failure  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **LKINT**

\*\*\* GIGE 313 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 300  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault Description: Link Integrity Failure  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **AUTONEG**

\*\*\* GIGE 314 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 300  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault  
Description: Auto negotiation Failure  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

- **NONPREFLINK**

\*\*\* GIGE 315 5915 TBL MG9K NorGigeLineFault  
Location: 406-c406-FrameFFF.Shelf3.Slot10.Port00.Link01  
Notification Id: 300  
State: not acknowledged  
Category: Communication Alarm  
Cause: Communications Subsystem Failure  
Time: Jan 01 05:54:38 1970  
Component Id: Port.frame0.shelf3.slot10.OC3.Link01  
Specific Problem: NorGigeLinkFault

Description: Non Preferred link is active  
Site Flr RPos Bay\_id  
FFFF FF FFFF MG9F FFF

## 2.4 Alarms

The new alarms introduced in this feature are:

### 1 LOS

- Alarm Format: - 301 LOS
- Associated alarm message - Loss of Signal
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an LOS with faultdefinition - clear is received.

### 2 RFI

- Alarm Format: - 302 RFI
- Associated alarm message - Remote Failure Indication
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an RFI with faultdefinition - clear is received.

### 3 TxF

- Alarm Format: - 303 TxF
- Associated alarm message - Transmit Failure
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an TxF with faultdefinition - clear is received.

### 4 TEM

- Alarm Format: - 304 TEM
- Associated alarm message - Temperature Threshold Exceeded
- Severity: Critical
- Cause: Network Problem

- Action: This alarm will be cleared when a TEM with faultdefinition - clear is received.

## **5 POW**

- Alarm Format: - 305 POW
- Associated alarm message - Low power indicated
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an POW with faultdefinition - clear is received.

## **6 RxSD**

- Alarm Format: - 306 RxSD
- Associated alarm message - Receive Signal Degraded
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an POW with faultdefinition - clear is received.

## **7 RxEED**

- Alarm Format: - 307 RxEED
- Associated alarm message - Receive Excessive Error Ratio
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an RxEED with faultdefinition - clear is received.

## **8 TBC**

- Alarm Format: - 308 TBC
- Associated alarm message - Transmit Bias Current
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an TBC with faultdefinition - clear is received.

## **9 LINT**

- Alarm Format: - 309 LINT
- Associated alarm message - Link initialization
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an LINT with faultdefinition - clear is received.

#### **10 OPT**

- Alarm Format: - 310 OPT
- Associated alarm message - Transmit Optical Power
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an OPT with faultdefinition - clear is received.

#### **11 OPR**

- Alarm Format: - 311 OPR
- Associated alarm message - Receive Optical Power
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an OPR with faultdefinition - clear is received.

#### **12 GARP**

- Alarm Format: - 312 GARP
- Associated alarm message - GARP Failure
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an GARP with faultdefinition - clear is received.

#### **13 LKINT**

- Alarm Format - 313 LKINT
- Associated alarm message - Link Integrity Failure

- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an LKINT with faultdefinition - clear is received.

#### **14 AUTONEG**

- Alarm Format: - 314 AUTONEG
- Associated alarm message - Auto Negotiation Failure
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an AUTONEG with faultdefinition - clear is received.

#### **15 NONPREFLINK**

- Alarm Format: - 315 NONPREFLINK
- Associated alarm message - Non Preferred Link is active
- Severity: Critical
- Cause: Network Problem
- Action: This alarm will be cleared when an NONPREFLINK with faultdefinition - clear is received.

### **2.5 Related documentation**

None

## **3: MG9000 GIGE Network Interface support from EM**

### **3.1 Hardware and Software Requirements**

The MG9000 and MG9000 software load that supports GIGE should be available.

### **3.2 Initial Configuration**

The MG9000 should be configured as GIGE from the LCI. The EM user will be able to view the link details once the MG9000 is configured.

### **3.3 Upgrade Considerations**

Since a new SCG card has been added to support this feature in SN08, there will not be any upgrade changes.



## 3.4 Element Management

MG9000 Element manager will be used to manage the GigE MG9000.

The EM user will be able to view the GigE link configuration details, GigE alarms, PMs and OMs. The user will also be able to view and provision clock sync data, link protection data, and VLAN related data for the GigE ports and links. Details are provided in the respective sections

The audit on the administrative status of the GigE cards and links will be done if a mismatch is found. The data audit will be done if mismatch is found in any data provisioned from EM for clock sync, VLAN, thresholds and bandwidth. The MG9000 will be the master in all these cases.

### 3.4.1 New/modified GUIs

Table 1 New or modified GUIs

| GUI name            | NEW, CHANGED, or DELETED |
|---------------------|--------------------------|
| GigECardView        | NEW                      |
| GigEPortView        | NEW                      |
| GigELinkProtection  | NEW                      |
| BandWidthManager    | NEW                      |
| VLAN                | NEW                      |
| Performance Browser | CHANGED                  |
| LinkIntegrityView   | NEW                      |

### 3.4.2 GUI information

#### 3.4.2.1 GUI name: GigeCardView

##### 3.4.2.1.1 Functional description.

Each SCG card has four ports. The card view can be opened from the shelf view. The card view shows totally four ilog graphics for the ports as shown in Figure 2. Clicking on each of them opens the GigePortView.

**Figure 3 Card view**

**MG9000 Actions**

**GigE Port**

3  
2  
1  
0

**Card Attributes**

|                   |                 |
|-------------------|-----------------|
| CLEI Code:        | VAC4SNPAAA      |
| Card Description: | Nortel MG9k G   |
| Hardware Version: | 5 200249        |
| Firmware Version: | 06              |
| Software Version: | 08_0            |
| Serial Number:    | M40093570       |
| Manufacturer:     | Nortel Networks |
| PEC Code:         | NTNY41AA        |

**Status**

|                      |                 |
|----------------------|-----------------|
| Availability Status: | Dependency      |
| Usage Status:        | Idle            |
| Standby Status:      | Providing_Servi |
| Card Alarm Status:   | None            |
| Procedural Status:   | Normal          |
| Control Status:      |                 |

**State**

|                       |          |
|-----------------------|----------|
| Administrative State: | Locked   |
| Configuration State:  | Offline  |
| Operational State:    | Disabled |

**Card**

**GigE Card Alarms**

|           |   |          |   |
|-----------|---|----------|---|
| Critical: | 0 | Minor:   | 0 |
| Major:    | 0 | Warning: | 0 |

**3.4.2.2 GUI name: GigePortView**

The GigePortView will be opened when the user double clicks on the SCG card's port icon in the card view. The port view displays port/link attributes and its provisioning information as shown in Figures 2 and 3.

#### **3.4.2.2.1 Functional description.**

The port/Link attributes are shown in 'Link Details' tab.

The 'Link Controls' tab allows the user to provision link information. Once the WAN ports (active and inactive) are configured from the LCI, the EM user will be able to set any port as the inactive WAN port on the inactive GIGE card. To change the inactive port, the current WAN port should be offlined and the new port should be online. The port can be online in the 'Link Controls' tab.

If the user tries to change the inactive WAN port (i.e. online the new port) without changing the existing WAN port's configuration status to offline, an error message that 'the existing WAN port should be offlined' will be displayed to the user.

If the user tries to change the WAN port on the active card, an error message 'The WAN port is active, port cannot be changed' will be displayed to the user.

The user will be able to change administrative status and configuration status for the port. The EM user will not be able to change the administrative and configuration status of the active WAN port.

The loopback can be set to no loopback or facility loopback. When the user tries to modify the loopback status a warning message that "The card should be locked before modifying the loopback status" will be displayed to the user. If the card is unlocked the loopback status modification will not be successful. The Tx RFI and Rx RFI will be 'ON' by default. When it is enabled, RFI alarms will be raised and receiving an RFI alarms will result in sparing activity. When the RFI is disabled the RFI alarms will not be sent to EM.

The user should specify the number of SES to 1 UAS. It will not be set by default. When the value is changed a warning message that the '<number> of SES set to one UAS' will be displayed to the user.

The Rx excessive error ratio and Rx signal degrade thresholds can be provisioned for each port.

Figure 4 Link details

**GigE Port: NE-405 Frame-0 Shelf-2 Slot-11 Port-0**

MG9000 Actions

**Link Details** **Link Control**

**Port Attributes**

Description:

MAC Address:

Port Type:

Optics Type:

**Link Attributes**

|                                               |                                    |
|-----------------------------------------------|------------------------------------|
| Link Type: <input type="text"/>               | <b>Local Advertised Values</b>     |
| Auto-negotiation: <input type="text"/>        | Duplex: <input type="text"/>       |
| Auto-negotiation Status: <input type="text"/> | Speed: <input type="text"/>        |
| Duplex: <input type="text"/>                  | Pause Tx: <input type="text"/>     |
| Speed: <input type="text"/>                   | Pause Rx: <input type="text"/>     |
| Flow Control: <input type="text"/>            |                                    |
| Pause Admin Mode: <input type="text"/>        | <b>Partner Advertised Values</b>   |
| Pause Rx Override: <input type="text"/>       | Duplex: <input type="text"/>       |
| MTU Size: <input type="text"/>                | Speed: <input type="text"/>        |
| Pass Control: <input type="text"/>            | Flow Control: <input type="text"/> |

**Figure 5 Link Controls information**

GigE Port: NE-405 Frame-0 Shelf-2 Slot-11 Port-0

9000 Actions

Link Details Link Control

**State**

Administrative State:

Configuration State:

Operational State:

Laser State:

**Status**

Loopback:

Tx RFI:

Rx RFI:

**Soak Values**

UAS Count:

SES Percent:

**Threshold Crossings**

Rx EER:

Rx SD:

Apply Refresh Close

#### 3.4.2.2.2 GUI usage and implications

The portview should be opened from the GigE card view.

### 3.4.2.2.3 GUI size

**Table 2 New or modified GUIs**

| Abbreviated GUI name | Minimum instances | Maximum instances | Information on memory |
|----------------------|-------------------|-------------------|-----------------------|
| GigePortView         | 1                 | 8                 |                       |
|                      |                   |                   |                       |

### 3.4.2.2.4 GUI fields

The GUI fields for the GigePortLinkView.

**Table 3 GUI field descriptions**

| Field               | New or Changed | Subfield | Entry | Explanation and action                              | Associated MIB entry        |
|---------------------|----------------|----------|-------|-----------------------------------------------------|-----------------------------|
| sDescription        | New            | -        | -     | Displays the port description                       | ifDesc                      |
| sPhyAddress         | New            | -        | -     | Physical address of the port                        | ifPhysAddress               |
| iPortType           | New            | -        | -     | port type                                           | ifType                      |
| iOpticsType         | New            | -        | -     | optics type                                         | ifMAuTypeListBits           |
| ilinkType           | New            |          |       | Specifies whether the link is network or subtending | nnGLinkConfigNiOrSubtending |
| iAutoNeg            | New            | -        | -     | autonegotiation variable                            | ifMauAutoNegAdminStatus     |
| iDuplex             | New            | -        | -     |                                                     | dot3StatsDuplexStatus       |
| iSpeed              | New            | -        | -     |                                                     | ifHighSpeed                 |
| iMtu                | New            | -        | -     |                                                     | ifMtu                       |
| linkAttrFlowControl | New            | -        | -     | Link attribute's flow control                       | ?                           |
| pauseAdminMode      | New            | -        | -     | Link attribute's pause Tx                           | dot3PauseAdminMode          |
| pauseRxOverride     | New            | -        | -     | Link attribute's pauseRxOverride                    | ?                           |
| mtuSize             | New            | -        | -     | Mtu Size                                            | ifMtuSize                   |

**Table 3 GUI field descriptions**

| <b>Field</b>      | <b>New or Changed</b> | <b>Subfield</b> | <b>Entry</b> | <b>Explanation and action</b>         | <b>Associated MIB entry</b>       |
|-------------------|-----------------------|-----------------|--------------|---------------------------------------|-----------------------------------|
| passControl       | New                   | -               | -            | Link attribute's pass control         | ?                                 |
| locAdvDuplex      | New                   | -               | -            | Local advertised duplex               | ifMauAutoNegCapAdvertisedBits     |
| locAdvSpeed       | New                   | -               | -            | Local advertised speed values         | ifMauAutoNegCapAdvertisedBits     |
| locAdvPauseTx     | New                   | -               | -            | Local advertised Pause Tx             | ifMauAutoNegCapAdvertisedBits     |
| locAdvPauseRx     | New                   | -               | -            | Local advertised Pause Rx             | ifMauAutoNegCapAdvertisedBits     |
| parAdvDuplex      | New                   | -               | -            | Partner advertised duplex             | ifMauAutoNegRemoteFaultAdvertised |
| parAdvFlowControl | New                   | -               | -            | partner advertised flow control       | ifMauAutoNegRemoteFaultAdvertised |
| parAdvSpeed       | New                   | -               | -            | Partner advertised speed              | ifMauAutoNegRemoteFaultAdvertised |
| linkAdminStatus   | New                   | -               | -            | Admin state of the link               | ifAdminStatus                     |
| linkConfigStatus  | New                   | -               | -            | Configuration state of the link       | nnGLinkConfigOnlineStatus         |
| linkOperStatus    | New                   | -               | -            | Operational state of the link         | ifOperStatus                      |
| linkLaserStatus   | New                   | -               | -            | Laser state of the link               | nnGLinkConfigLaserStatus          |
| loopbackState     | New                   | -               | -            | tells whether the loopback is enabled | nnGLinkConfigLoopback             |
| Tx RFI            | New                   | -               | -            | Link State                            | nnGLinkConfigTxRfi                |
| Rx RFI            | New                   | -               | -            | Link State                            | nnGLinkConfigRxRfi                |
| iUasCount         | New                   | -               | -            | UAS count                             | nnGLinkSoakCountUAS               |
| iSESPercent       | New                   | -               | -            | no. of SES for 1 UAS                  | nnGLinkSoakPercentSES             |
| RxEER             | New                   | -               | -            |                                       | nnGLinkFaultConfigAlmDef          |

**Table 3 GUI field descriptions**

| Field | New or Changed | Subfield | Entry | Explanation and action | Associated MIB entry     |
|-------|----------------|----------|-------|------------------------|--------------------------|
| RxSD  | New            | -        | -     |                        | nnGLinkFaultConfigAlmDef |

### 3.4.2.3 GUI name: GigeLinkProtection

#### 3.4.2.3.1 Functional description

The Link Protection Group should be enabled for the link protection to be enabled. The Link protection can be invoked from the shelfview. The user will be able to specify the protection group number, protection group type, working (preferred) link and protected (non-preferred) link. In SN08, only one protection group of type 1:1 is supported. The user can also enable/disable Link Reversion mode. When it is enabled, the working channel is always preferred. The system will swact to it when it is available again. The Wait to Revert time should be specified by the user. By default, the Wait to Revert time is 600 sec. This option will be available only for the active and inactive WAN ports. To switch to the other link, the cards need to be swacted.

**Figure 6 .Link Protection Provisioning**

The screenshot shows a window titled "Link Protection Provisioning View" for the device "MG9000". The window contains the following fields and controls:

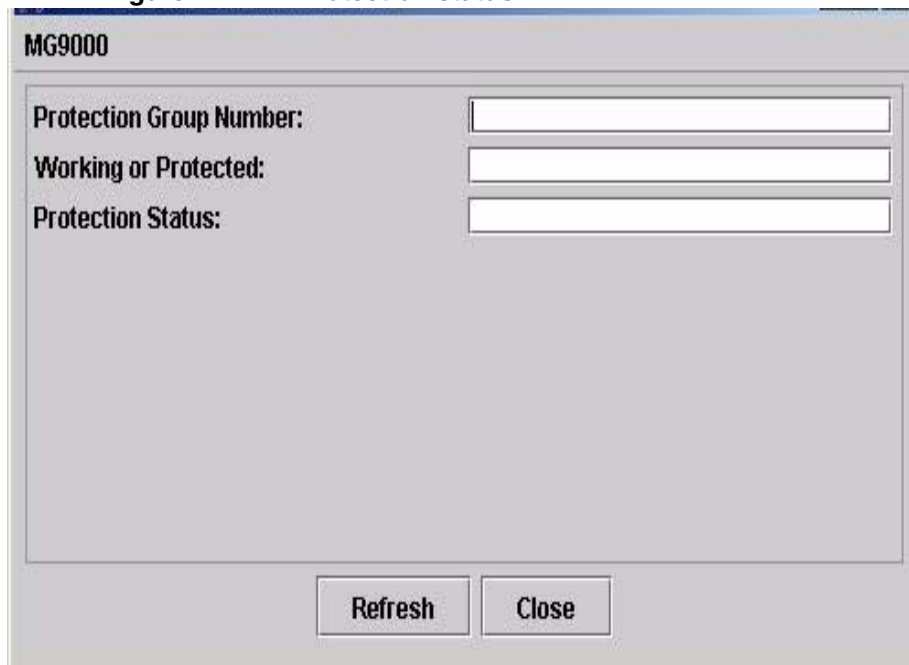
- Protection Group Number:** A text input field.
- Protection Group Type:** A dropdown menu.
- Protection Mode:** A dropdown menu.
- Wait to Revert:** A text input field.
- Preferred Link:** A text input field.
- Non-preferred Link:** A text input field.

At the bottom of the window, there are three buttons: **Apply**, **Refresh**, and **Close**.



The Link protection status can be viewed for each link from the GigELinkProtectionView from the Actions submenu of GigePortView as shown in Figure 6:

**Figure 7 Link Protection status**



MG9000

Protection Group Number:

Working or Protected:

Protection Status:

### 3.4.2.3.2 GUI usage and implications

### 3.4.2.3.3 GUI size

**Table 4 New or modified GUIs**

| Abbreviated GUI name | Minimum instances | Maximum instances | Information on memory |
|----------------------|-------------------|-------------------|-----------------------|
| GigeProtection       | 1                 | 2                 |                       |
| GigeProvisioning     | 1                 | 1                 |                       |

### 3.4.2.3.4 GUI fields

The GUI fields for the GigePortLinkView.

**Table 5 GUI field descriptions**

| <b>Field</b>    | <b>New or Changed</b> | <b>Subfield</b> | <b>Entry</b> | <b>Explanation and action</b> | <b>Associated MIB entry</b> |
|-----------------|-----------------------|-----------------|--------------|-------------------------------|-----------------------------|
| protGroupNumber | New                   | -               | -            | Protection Group Number       | nnGLinkProtGrpType          |
| protGroupType   | New                   | -               | -            | protection group type         | nnGLinkProtGrpType          |
| protMode        | New                   | -               | -            | Protection mode               | nnGLinkProtGrpRevertive     |
| waitToRevert    | New                   | -               | -            | No.of seconds to revert       | nnGLinkProtGrpWaitTime      |
| prefLink        | New                   |                 |              | Preferred link                |                             |
| nonPrefLink     | New                   | -               | -            | Non preferred link            |                             |

#### **3.4.2.4 GUI name: Bandwidth Manager**

##### **3.4.2.4.1 Functional description**

In SN08, the Private lines and DSL services are not supported. The following network interface bandwidth data will be monitored: current ITP voice usage, current ABI voice usage and Overall network interface utilization. The data will be displayed in bits/second for GIGE systems. Bandwidth partitioning will also be supported in GIGE. The bandwidth manager panel can be viewed from the Services submenu. The bandwidth manager view has the following details:

**Figure 8 Bandwidth Partitioning View**

The screenshot shows the 'NE-18 Bandwidth Manager' window for 'MG9000 Element 18'. The 'Partition' tab is selected. The interface includes a 'Managing' status indicator, a 'Maximum Partitionable Bandwidth' label, and a 'Partition Enabled' section with radio buttons for 'Yes' and 'No' (the 'No' button is selected). Below this, there are input fields for 'Bearer' (set to 0), a percentage sign, another '0' field, and an 'Upper Bound' field (set to 340657). The 'Interface Capacity' is shown as '100 % 340657 bits/sec'. At the bottom, there are 'Apply' and 'Refresh' buttons.

**Figure 9 Bandwidth threshold managing**

The screenshot shows the 'NE-405 Bandwidth Manager' window for 'MG9000'. The 'Threshold' tab is selected. The interface includes a 'Managing' status indicator, a 'Managing Threshold Setting' label, and a 'Bandwidth Congestion Threshold' field set to '80.0 %'. An 'Apply' button is located at the bottom.

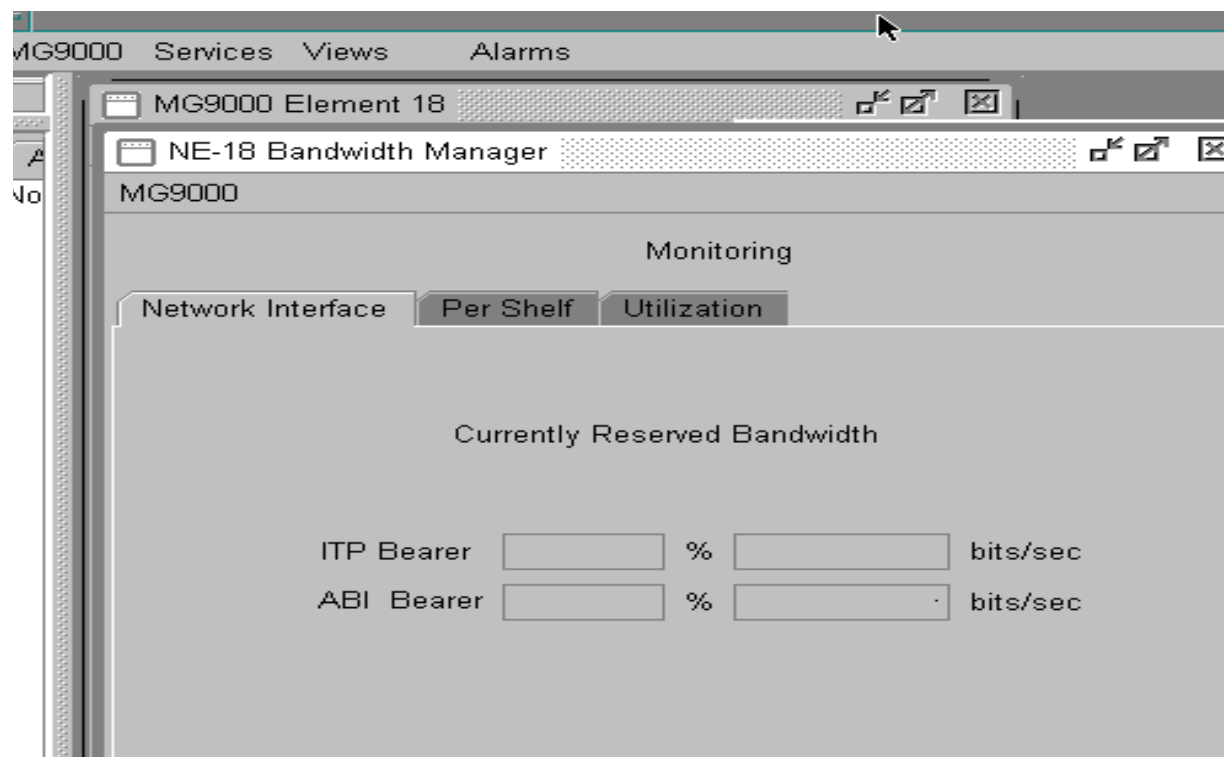
**Figure 10 Bandwidth network Interface View**

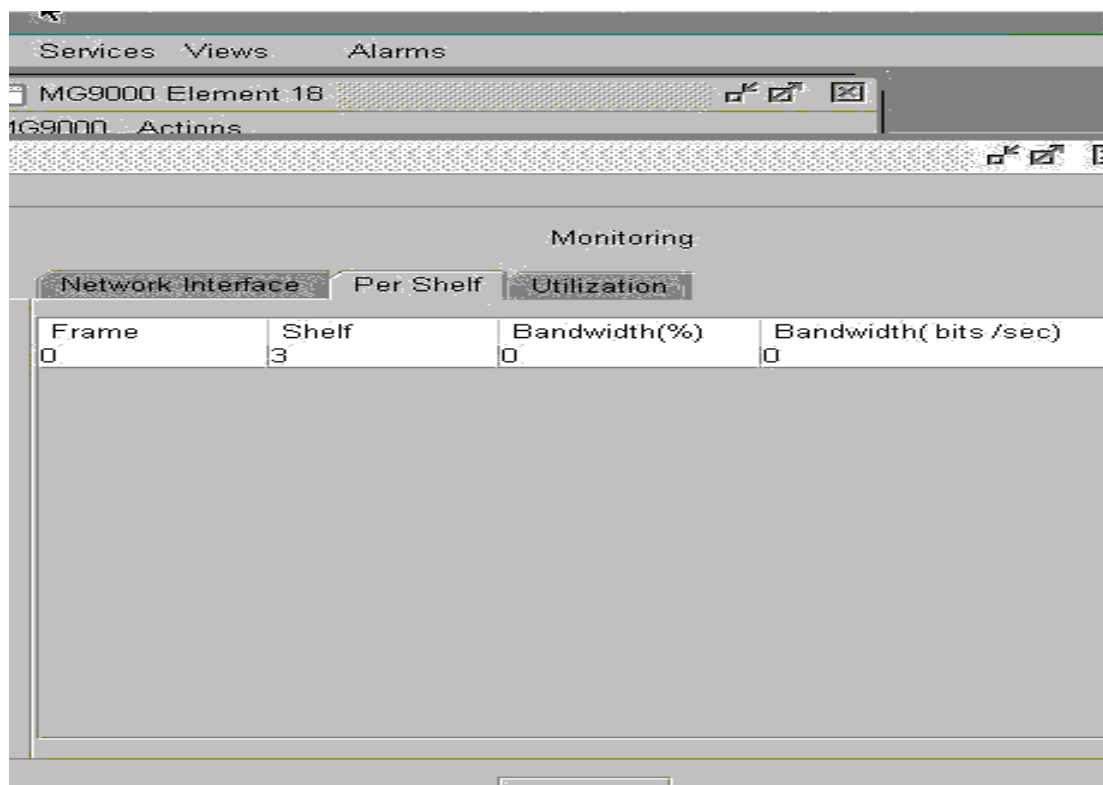
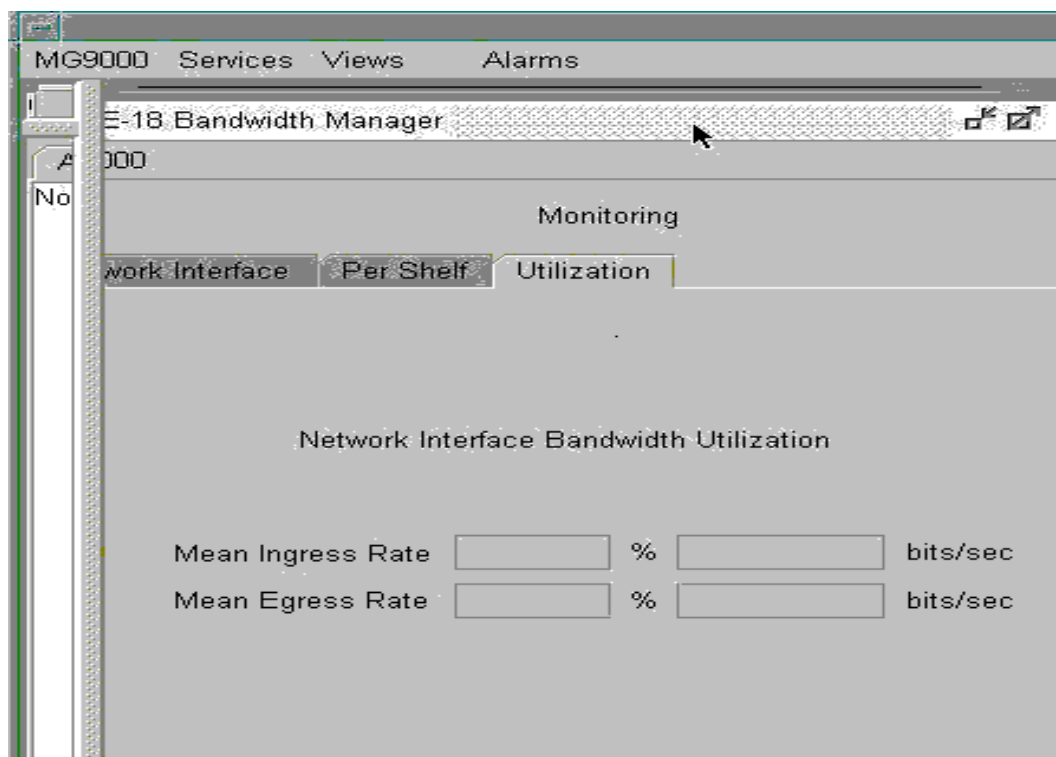
**Figure 11 Bandwidth reserved per shelf**

**Figure 12 Bandwidth utilization view**

#### 3.4.2.4.2 GUI usage and implications

#### 3.4.2.4.3 GUI size

**Table 6 New or modified GUIs**

| Abbreviated GUI name | Minimum instances | Maximum instances | Information on memory |
|----------------------|-------------------|-------------------|-----------------------|
| BandwidthGige View   | 1                 | 1                 |                       |
|                      |                   |                   |                       |

#### 3.4.2.5 GUI name: VLAN

##### 3.4.2.5.1 Functional description

The user will be able to view the VLAN provisioning data from the 'VLAN provisioning' view in the shelf view as shown in Figure 12. There are a total of four VLAN IDs in SN08 release. The user will be able to change the priority and peak rate for VLANs. The VLAN details will be displayed as shown in the figure:

**Figure 13 VLAN information**

Services Views Alarms

MG9000 Element 18

MG9000 Master Shelf NE-18 Frame-0 Shelf-3

OC3 Card: NE-18 Frame-0 Shelf-3 Slot-11

**VLAN View**

MG9000

**Port1**

|             | Card                 | OAMP                 | Bearer               | Call Control         |
|-------------|----------------------|----------------------|----------------------|----------------------|
| VLAN Id :   | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Priority    | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Peak Rate   | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| IP Addr     | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Subnet Mask | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| VLAN Name   | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Apply Refresh Close

#### 3.4.2.5.2 GUI usage and implications

#### 3.4.2.5.3 GUI size

**Table 7 New or modified GUIs**

| Abbreviated GUI name | Minimum instances | Maximum instances | Information on memory |
|----------------------|-------------------|-------------------|-----------------------|
| VLAN                 | 1                 | 1                 |                       |
|                      |                   |                   |                       |

### 3.4.2.5.4 GUI fields

The GUI fields for the VLAN View.

**Table 8 GUI field descriptions**

| Field       | New or Changed | Subfield | Entry | Explanation and action                   | Associated MIB entry         |
|-------------|----------------|----------|-------|------------------------------------------|------------------------------|
| vlanId      | New            | -        | -     | Port Vlan id each port belongs to a VLAN | ?                            |
| peakRate    | New            | -        | -     | Peak Rate for the VLAN id                | nnGLinkVlanPeakRate          |
| priority    | New            | -        | -     | Priority of the VLAN                     | nnGLinkVlanUserPriority      |
| IP Address  | New            | -        | -     | Primary subnet address of the VLAN       | nnGLinkVlanPrimarySubnetAddr |
| Subnet Mask | New            | -        | -     | Primary Subnet mask of the VLAN          | nnGLinkVlanPrimarySubnetMask |
| VLAN Name   | New            | -        | -     | VLAN name                                | NNGLinkVlanName              |

### 3.4.2.6 GUI name: Performance Browser

#### 3.4.2.6.1 Functional description

The GigE feature introduces a Generic OM, Ethernet OM, RMON and PM data. The SMON data related to the VLAN is also displayed in the performance browser. The performance details are as shown in the following figures. The mib details are covered under the Performance section.



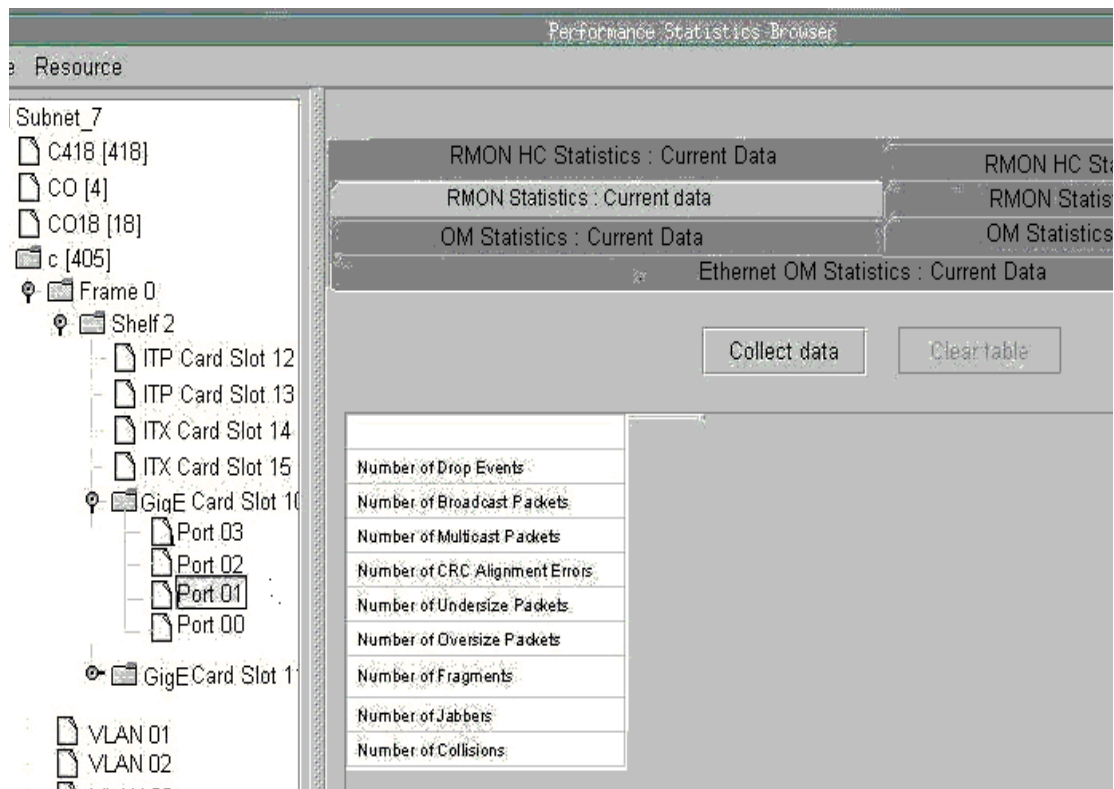
**Figure 14 RMON data**

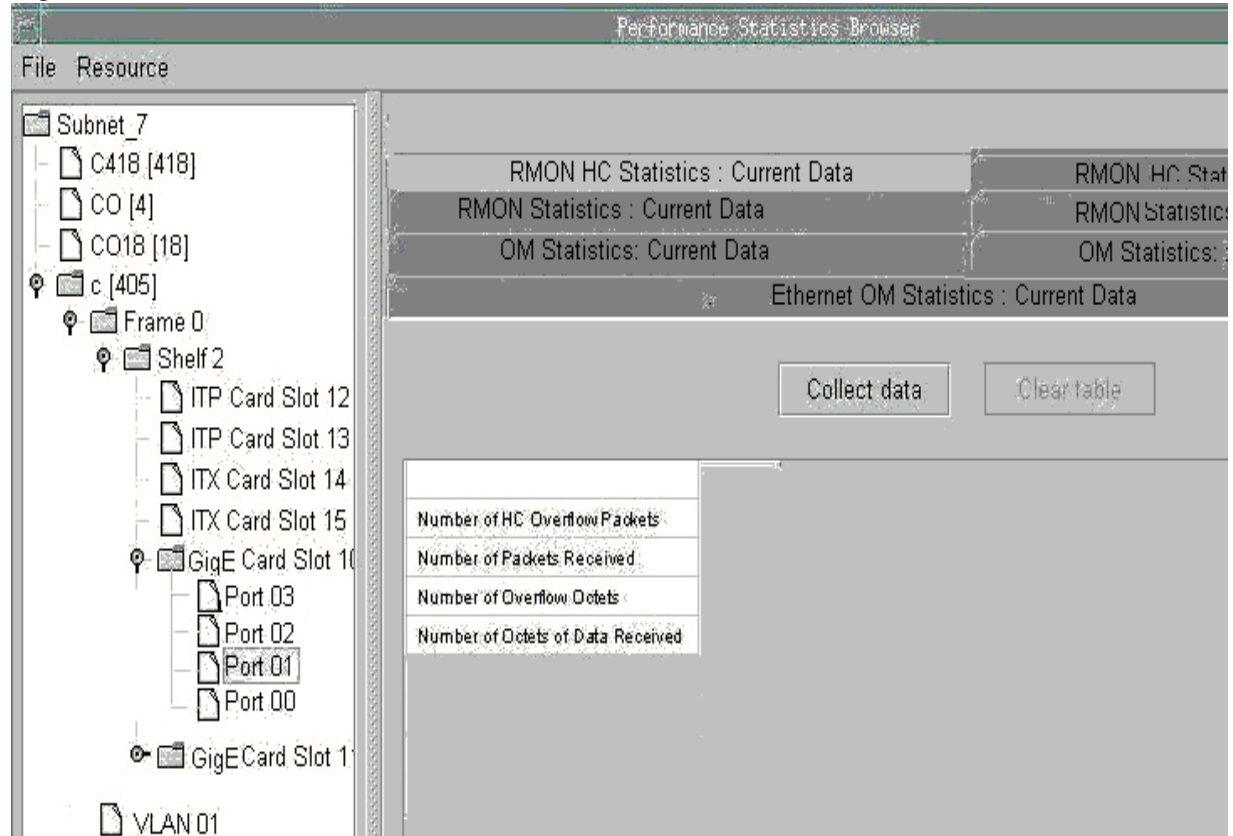
**Figure 15 RMON HC data**

**Figure 16 Ethernet OM Data**

The screenshot displays the 'Performance Statistics Browser' interface. On the left, a tree view shows the hierarchy: Subnet\_7 > C418 [418] > CO [4] > CO18 [18] > c [405] > Frame 0 > Shelf 2 > GigE Card Slot 10 > Port 01. The main area is titled 'Ethernet OM: Current Data' and contains a table with the following statistics:

| RMON HC Statistics : Current Data                                                                                                                                                                                                                                                                                                                                                                                     | RMON HC    |                            |                      |                                        |                           |                                       |                         |                           |                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------|----------------------|----------------------------------------|---------------------------|---------------------------------------|-------------------------|---------------------------|----------------------------|
| RMON Statistics : Current Data                                                                                                                                                                                                                                                                                                                                                                                        | RMON Stat  |                            |                      |                                        |                           |                                       |                         |                           |                            |
| OM Statistics: Current Data                                                                                                                                                                                                                                                                                                                                                                                           | OM Statist |                            |                      |                                        |                           |                                       |                         |                           |                            |
| Ethernet OM: Current Data                                                                                                                                                                                                                                                                                                                                                                                             |            |                            |                      |                                        |                           |                                       |                         |                           |                            |
| <input type="button" value="Collect data"/> <input type="button" value="Clear table"/>                                                                                                                                                                                                                                                                                                                                |            |                            |                      |                                        |                           |                                       |                         |                           |                            |
| <table border="1"><tbody><tr><td>Number of Alignment Errors</td></tr><tr><td>Number of FCS errors</td></tr><tr><td>Number of Internal MAC Transmit Errors</td></tr><tr><td>Number of Frame Too Longs</td></tr><tr><td>Number of Internal MAC Receive Errors</td></tr><tr><td>Number of Symbol Errors</td></tr><tr><td>Number of In Pause Frames</td></tr><tr><td>Number of Out Pause Frames</td></tr></tbody></table> |            | Number of Alignment Errors | Number of FCS errors | Number of Internal MAC Transmit Errors | Number of Frame Too Longs | Number of Internal MAC Receive Errors | Number of Symbol Errors | Number of In Pause Frames | Number of Out Pause Frames |
| Number of Alignment Errors                                                                                                                                                                                                                                                                                                                                                                                            |            |                            |                      |                                        |                           |                                       |                         |                           |                            |
| Number of FCS errors                                                                                                                                                                                                                                                                                                                                                                                                  |            |                            |                      |                                        |                           |                                       |                         |                           |                            |
| Number of Internal MAC Transmit Errors                                                                                                                                                                                                                                                                                                                                                                                |            |                            |                      |                                        |                           |                                       |                         |                           |                            |
| Number of Frame Too Longs                                                                                                                                                                                                                                                                                                                                                                                             |            |                            |                      |                                        |                           |                                       |                         |                           |                            |
| Number of Internal MAC Receive Errors                                                                                                                                                                                                                                                                                                                                                                                 |            |                            |                      |                                        |                           |                                       |                         |                           |                            |
| Number of Symbol Errors                                                                                                                                                                                                                                                                                                                                                                                               |            |                            |                      |                                        |                           |                                       |                         |                           |                            |
| Number of In Pause Frames                                                                                                                                                                                                                                                                                                                                                                                             |            |                            |                      |                                        |                           |                                       |                         |                           |                            |
| Number of Out Pause Frames                                                                                                                                                                                                                                                                                                                                                                                            |            |                            |                      |                                        |                           |                                       |                         |                           |                            |

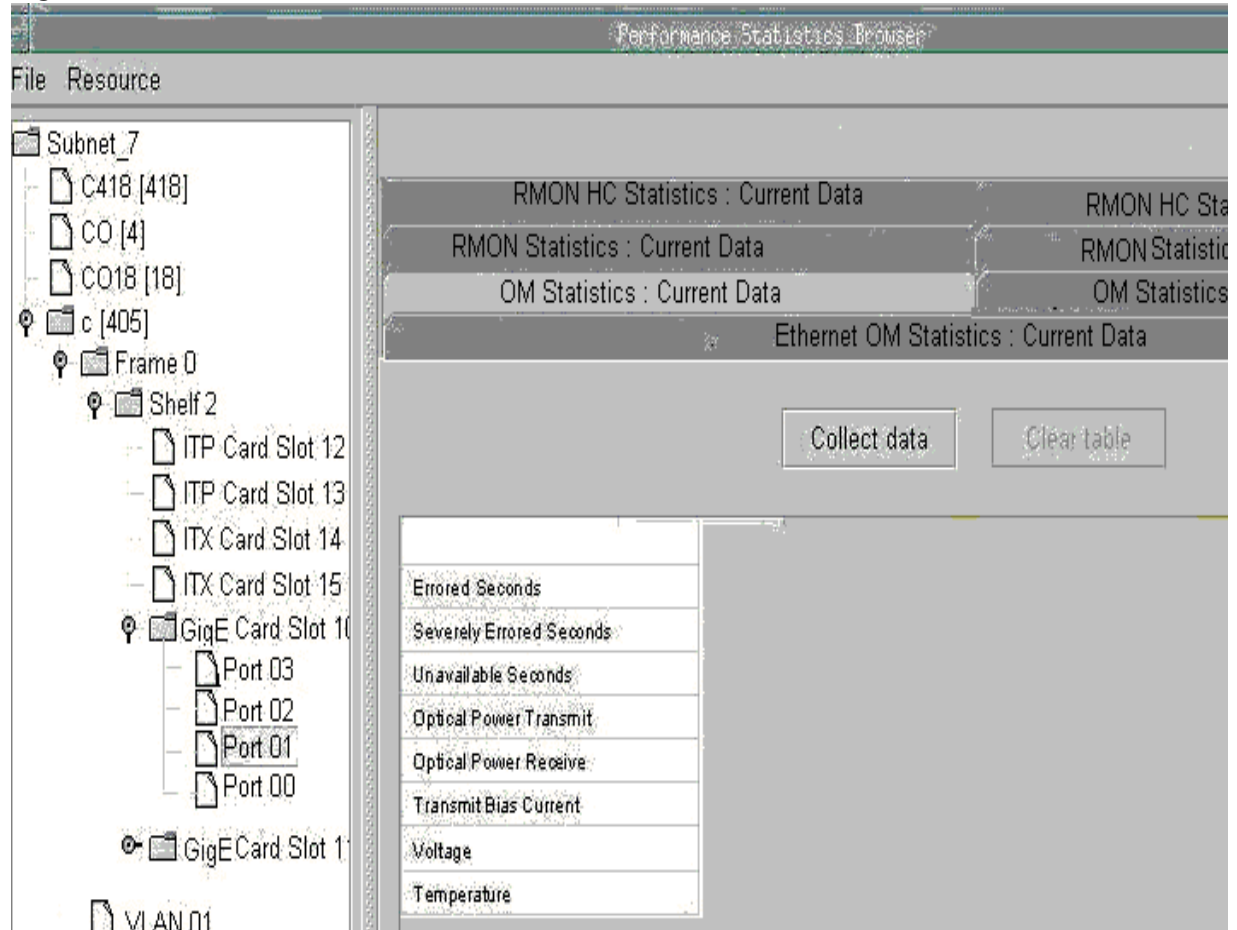
**Figure 17 Generic OM/PM Data**

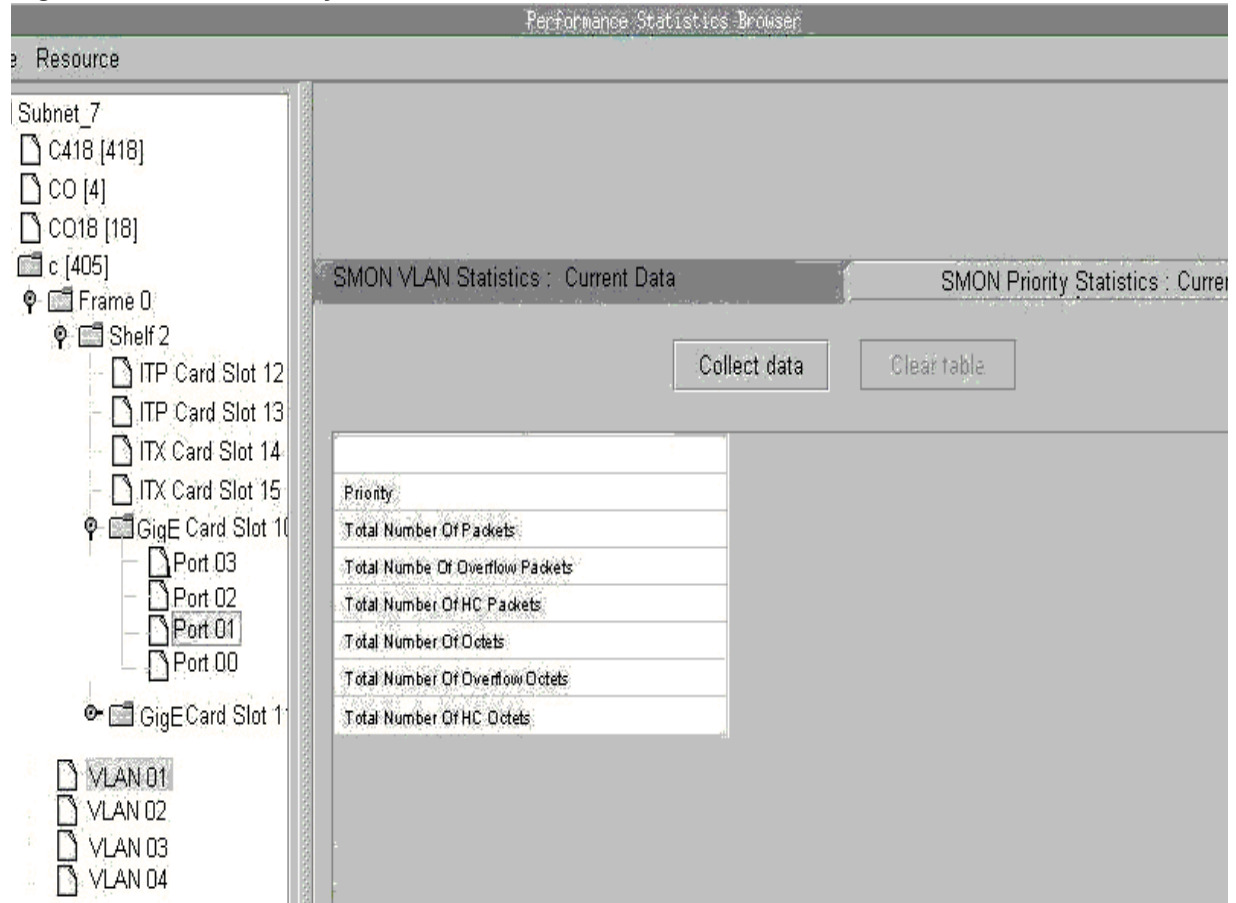
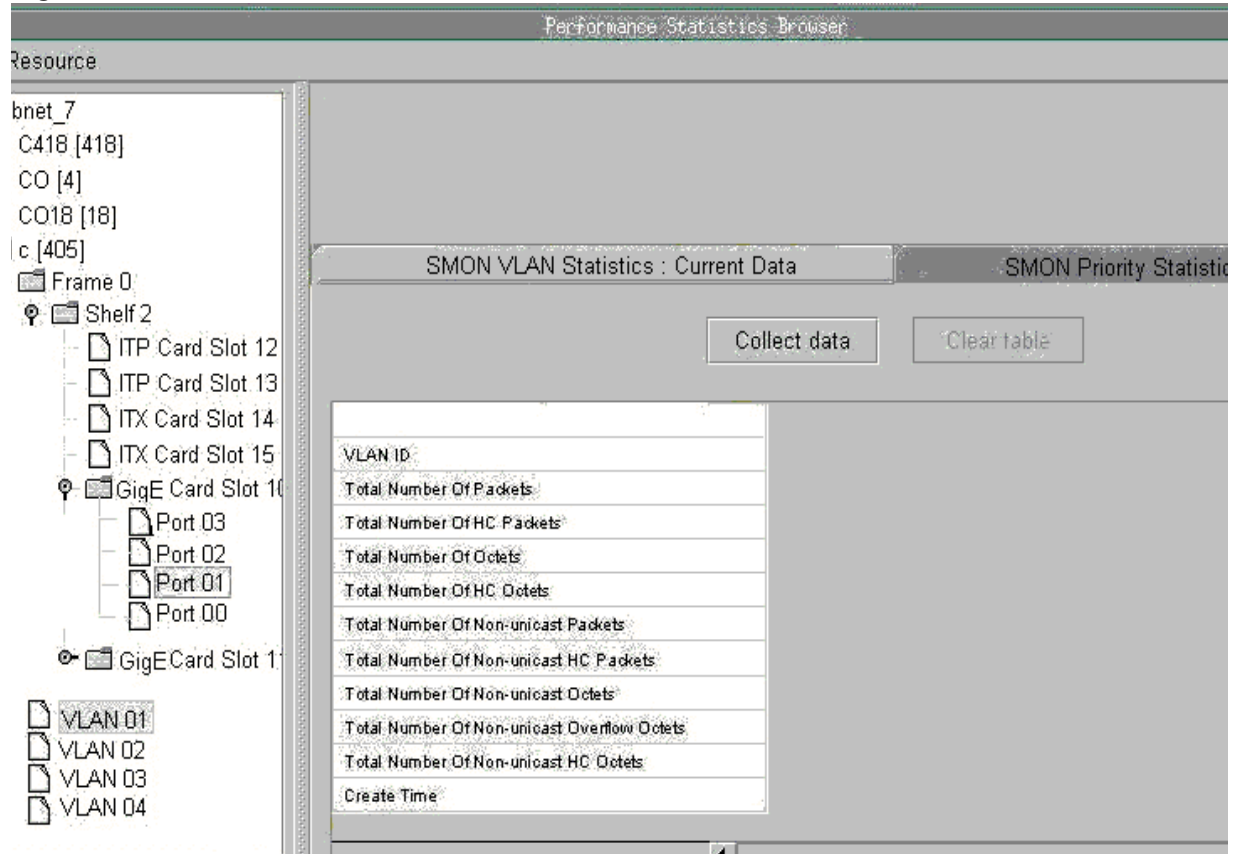
**Figure 18 SMON Priority Data**

**Figure 19 SMON VLAN Statistics****New or modified GUIs**

| Abbreviated GUI name | Minimum instances | Maximum instances | Information on memory |
|----------------------|-------------------|-------------------|-----------------------|
| Performance Browser  | 1                 | 1                 |                       |
|                      |                   |                   |                       |

**3.4.2.6.2 GUI fields**

The GUI fields for the VLAN View.

**Table 9 GUI field descriptions**

| Field        | New or Changed | Subfield | Entry | Explanation and action | Associated MIB entry                          |
|--------------|----------------|----------|-------|------------------------|-----------------------------------------------|
| Generic OM - | New            | -        | -     |                        | IF-MIB (current and interval table)           |
| Ethernet PM  | New            | -        | -     |                        | dot3HCStatsTable (current and interval table) |

**Table 9 GUI field descriptions**

| Field       | New or Changed | Subfield | Entry | Explanation and action | Associated MIB entry                       |
|-------------|----------------|----------|-------|------------------------|--------------------------------------------|
| Ethernet OM | New            | -        | -     |                        | dot3statEnrty (current and interval table) |
| SMON        | New            | -        | -     |                        | smonPrioStatsTable, smonVlanIdStatsTable   |
| RMON        | New            | -        | -     |                        | etherHistoryTable, etherStatsTable         |
|             |                |          |       |                        |                                            |

### 3.4.2.7 GUI name: Link Integrity

#### 3.4.2.7.1 Functional description

The Link Integrity test can be invoked from the shelfview Maintenance submenu 'Link Integrity View'. The link integrity test will be run on a protection group. The details as shown in Figure 19 are displayed. The user should specify the threshold and the threshold interval. The link integrity test can be enabled or disabled using the integrity monitoring field in the Link Integrity Monitoring View. The test will run every interval specified in the view. If the threshold is crossed, an Link Integrity alarm will be raised.

Figure 20 Link Integrity view

### 3.4.2.7.2 GUI usage and implications

### 3.4.2.7.3 GUI size

Table 10 New or modified GUIs

| Abbreviated GUI name | Minimum instances | Maximum instances | Information on memory |
|----------------------|-------------------|-------------------|-----------------------|
| LinkIntegrity        | 1                 | 1                 |                       |
|                      |                   |                   |                       |

### 3.4.2.7.4 GUI fields

The GUI fields for the VLAN View.

Table 11 GUI field descriptions

| Field               | New or Changed | Subfield | Entry | Explanation and action | Associated MIB entry         |
|---------------------|----------------|----------|-------|------------------------|------------------------------|
| Protection Group    | New            | -        | -     | Protection Group       | nnGLinkProtGrpNum            |
| Integrity threshold | New            | -        | -     | threshold              | nnGLinkProtGrpIntegThreshold |



**Table 11 GUI field descriptions**

| Field                | New or Changed | Subfield | Entry | Explanation and action       | Associated MIB entry          |
|----------------------|----------------|----------|-------|------------------------------|-------------------------------|
| Integrity Interval   | New            | -        | -     | Interval for the test to run | nnGLinkProtGrpIntegIntervalty |
| Integrity Monitoring | New            | -        | -     | yes or no                    | nnGLinkProtGrpIntegEnable     |

## 4: MG9000 GIGE Network Interface support from EM

### 4.1 Performance management strategy for A00007000

The following is the existing MG9K EM performance strategy where the data is collected in 15 or 5/30 minutes for 96 intervals.

### 4.2 Performance management tools and utilities

The performance data can be viewed from the Performance browser.

#### 4.2.1 Performance Measurements (PM), Operational Measurements (OM), and statsOM Statistics

The new OM performance parameters introduced in this feature are:

##### 4.2.1.1 Errored Seconds

Component: OM Statistics

Performance measurement name: Errored Seconds

The Performance measurement description: counter associated with Errored Seconds

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - OM Statistics

##### 4.2.1.2 Severely Errored Seconds

Component: OM Statistics

Performance measurement name: Severely Errored Seconds

Performance measurement description: The counter associated with SES

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - OM Statistics

#### **4.2.1.3 Unavailable seconds**

Component: OM Statistics

Performance measurement name: Unavailable Seconds

Performance measurement description: The counter associated with UAS

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - OM Statistics

#### **4.2.1.4 Optical Power Transmit**

Component: OM Statistics

Performance measurement name: Optical Power Transmit

Performance measurement description: The counter associated with Optical Power Transmit

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - OM Statistics

#### **4.2.1.5 Optical Power Receive**

Component: OM Statistics

Performance measurement name: Optical Power Receive

Performance measurement description: The counter associated with Optical Power Receive

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - OM Statistics

#### **4.2.1.6 Transmit Bias Current**

Component: OM Statistics

Performance measurement name: Transmit Bias Current

Performance measurement description: The counter associated with Transmit Bias Current

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - OM Statistics

#### **4.2.1.7 Temperature**

Component: OM Statistics

Performance measurement name: Temperature

Performance measurement description: The counter associated with Temperature

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - OM Statistics

#### **4.2.1.8 Voltage**

Component: Generic OM

Performance measurement name: Voltage

Performance measurement description: The counter associated with Voltage

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - OM Statistics

### **4.2.2 Ethernet OM**

#### **4.2.2.1 AlignErr**

Component: Ethernet OM

Performance measurement name: Number of Alignment Errors

Performance measurement description: The counter associated with AlignErr

Collection Interval: NA

Element Manager Screen Name: GIGE Card/Port xx - Ethernet OM Statistics

#### **4.2.2.2 FcsErr**

Component: FcsErr

Performance measurement name: Number of FCS Errors

Performance measurement description: The counter associated with FcsErr

Collection Interval: NA

Element Manager Screen Name: GIGE Card/Port xx - Ethernet OM Statistics

#### **4.2.2.3 Internalmacrxerr**

Component: Ethernet OM

Performance measurement name: Number of Internal MAC Receive Errors

Performance measurement description: The counter associated with Internalmacrxerr

Collection Interval: NA

Element Manager Screen Name: GIGE Card/Port xx - Ethernet OM Statistics

#### **4.2.2.4 Frtoolongs**

Component: Ethernet OM

Performance measurement name: Number of Frame Too Longs

Performance measurement description: The counter associated with Frtoolongs

Collection Interval: NA

Element Manager Screen Name: GIGE Card/Port xx - Ethernet OM Statistics

#### **4.2.2.5 Internalmactxerr**

Component: Ethernet OM

Performance measurement name: Number of Internal MAC TX Errors

Performance measurement description: The counter associated with Internalmactxerr

Collection Interval: NA

Element Manager Screen Name: GIGE Card/Port xx - Ethernet OM Statistics

#### **4.2.2.6 Symbolerr**

Component: Ethernet OM

Performance measurement name: Number of Symbol Errors

Performance measurement description: The counter associated with Symbolerr

Collection Interval: NA

Element Manager Screen Name: GIGE Card/Port xx - Ethernet OM Statistics

#### **4.2.2.7 Inpausefr**

Component: Ethernet OM

Performance measurement name: Number of Inpause Frames

Performance measurement description: The counter associated with Inpausefr

Collection Interval: NA

Element Manager Screen Name: GIGE Card/Port xx - Ethernet OM Statistics

#### **4.2.2.8 Outpausefr**

Component: Ethernet OM

Performance measurement name: Number of Outpause Frames

Performance measurement description: The counter associated with Outpausefr

Element Manager Screen Name: MG9kEM Performance Browser

Collection Interval: NA

Element Manager Screen Name: GIGE Card/Port xx - Ethernet OM Statistic

### **4.2.3 RMON Data**

#### **4.2.3.1 etherStatsDropEvents**

Component: RMON

Performance measurement name: Number of Drop Events

Performance measurement description: The current data associated with etherStatsDropEvents

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON Statistics

#### **4.2.3.2 etherStatsBroadcastPkts**

Component: RMON

Performance measurement name: Number of Broadcast Packets

Performance measurement description: The counter data associated with etherStatsBroadcastPkts

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON Statistics

#### **4.2.3.3 etherStatsMulticastPkts**

Component: RMON

Performance measurement name: Number of Multicast Packets

Performance measurement description: The counter associated with etherStatsMulticastPkts

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON Statistics

#### **4.2.3.4 etherStatsCRCAlignErrors**

Component: RMON

Performance measurement name: Number of CRC Alignment Errors

Performance measurement description: The counter associated with etherStatsCRCAlignErrors

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON Statistics

#### **4.2.3.5 etherStatsUndersizePkts**

Component: RMON

Performance measurement name: Number of Undersize Packets

Performance measurement description: The counter associated with etherStatsUndersizePkts

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON Statistics

#### **4.2.3.6 etherStatsOversizePkts**

Component: RMON

Performance measurement name: Number of Oversize Packets

Performance measurement description: The counter associated with etherStatsOversizePkts

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON Statistics

#### **4.2.3.7 etherStatsFragments**

Component: RMON

Performance measurement name: Number of Fragments

Performance measurement description: The counter associated with etherStatsFragments

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON Statistics

#### **4.2.3.8 etherStatsJabbers**

Component: RMON

Performance measurement name: Number of Jabbers

Performance measurement description: The counter associated with etherStatsJabbers

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON Statistics

#### **4.2.3.9 etherStatsCollisions**

Component: RMON

Performance measurement name: Number of Collisions

Performance measurement description: The counter associated with etherStatsCollisions

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON Statistics

#### **4.2.4 RMON HC Statistics**

##### **4.2.4.1 HC Overflow Packets**

Component: RMON HC

Performance measurement name: Number of HC overflow packets

Performance measurement description: The counter associated with HC Overflow Packets

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON HC Statistics

##### **4.2.4.2 Packets Received**

Component: RMON HC

Performance measurement name: Number of packets received

Performance measurement description: The counter associated with number of packets received

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON HC Statistics

##### **4.2.4.3 Overflow octets**

Component: RMON HC

Performance measurement name: Number of overflow octets

Performance measurement description: The counter associated with HC number of Overflow octets

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON HC Statistics



#### **4.2.4.4 Octets of data received**

Component: RMON HC

Performance measurement name: Number of octets of data received

Performance measurement description: The counter associated with number of octets of data received.

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: GIGE Card/Port xx - RMON HC Statistics

### **4.2.5 SMON Statistics**

#### **4.2.5.1 VLAN ID**

Component: SMONVlanStats

Performance measurement name: VLAN ID

Performance measurement description: The VLAN ID

Element Manager Screen Name: VLANxx/SMONVLANStatistics

#### **4.2.5.2 Total number Packets**

Component: SMONVlanStats

Performance measurement name: Total number Packets

Performance measurement description: The counter associated with Total number Packets

Element Manager Screen Name: VLANxx/SMONVLANStatistics

#### **4.2.5.3 Total Number of HC Packets**

Component: SMONVlanStats

Performance measurement name: Total Number of HC Packets

Performance measurement description: The counter associated with Total Number of HC Packets

Element Manager Screen Name: VLANxx/SMONVLANStatistics

#### **4.2.5.4 Create Time**

Component: SMONVlanStats

Performance measurement name: Create time

Performance measurement description: create time

Element Manager Screen Name: VLANxx/SMONVLANStatistics

#### **4.2.5.5 Total Number of Octets**

Component: SMONVlanStats

Performance measurement name: Total Number of Octets

Performance measurement description: The counter associated with Total Number of Octets

Element Manager Screen Name: VLANxx/SMONVLANStatistics

#### **4.2.5.6 Total Number of HC Octets**

Component: SMONVlanStats

Performance measurement name: Total Number of HC Octets

Performance measurement description: The counter associated with Total Number of HC Octets

Element Manager Screen Name: VLANxx/SMONVLANStatistics

#### **4.2.5.7 Total number of non unicast packets**

Component: SMONVlanStats

Performance measurement name: Total number of non unicast packets

Performance measurement description: The counter associated with Total number of non unicast packets

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: VLANxx/SMONVLANStatistics

#### **4.2.5.8 Total number of non unicast HC octets**

Component: SMONVlanStats

Performance measurement name: Total number of non unicast HC octets

Performance measurement description: The counter associated with Total number of non unicast HC octets

Element Manager Screen Name: VLANxx/SMONVLANStatistics

#### **4.2.5.9 Total number of non unicast octet**

Component: SMONVlanStats

Performance measurement name: Total number of non unicast octet

Performance measurement description: The counter associated with Total number of non unicast octet

Element Manager Screen Name: VLANxx/SMONVLANStatistics

Total number of non unicast over flow octet

Total number of non unicast over flow octet

#### **4.2.5.10 Total Number of Non Unicast Over Flow Octet**

Component: SMONVlanStats

Performance measurement name: Total number of non unicast over flow octets

Performance measurement description: The counter associated with Total number of non unicast over flow octets

Collection Interval: 15 or 5/30 mins

Element Manager Screen Name: VLANxx/SMONVLANStatistics

#### **4.2.5.11 Total number of non unicast HC octets**

Component: SMONVlanStats

Performance measurement name: Total number of non unicast HC octets

Performance measurement description: The counter associated with Total number of non unicast HC octets

Element Manager Screen Name: VLANxx/SMONVLAN Statistics

## **4.2.6 SMON Priority Statistics**

### **4.2.6.1 Total number of packets**

Component: SMON Priority Statistics

Performance measurement name: Total number of packets

Performance measurement description: It displays the total number of packets

Element Manager Screen Name: VLANxx/SMON Priority Statistics

### **4.2.6.2 Total number of overflow packets**

Component: SMON Priority Statistics

Performance measurement name: Total number of overflow packets

Performance measurement description: It displays the total number of overflow packets

Element Manager Screen Name: VLANxx/SMON Priority

### **4.2.6.3 Total number of HC packets**

Component: SMON Priority Statistics

Performance measurement name: Total number of HC packets

Performance measurement description: It displays the total number of HC packets

Element Manager Screen Name: VLANxx/SMON Priority Statistics

### **4.2.6.4 Total number of octets**

Component: SMON Priority Statistics

Performance measurement name: Total number of octets

Performance measurement description: It displays the total number of octets

Element Manager Screen Name: VLANxx/SMON Priority Statistics

### **4.2.6.5 Total number of overflow octets**

Component: SMON Priority Statistics

Performance measurement name: Total number of overflow octets

Performance measurement description: It displays the total number of overflow octets

Element Manager Screen Name: VLANxx/SMON Priority Statistics

#### **4.2.6.6 Total number of HC octets**

Component: SMON Priority Statistics

Performance measurement name: Total number of HC octets

Performance measurement description: It displays the total number of HC octets

Element Manager Screen Name: VLANxx/SMON Priority Statistics



# SN08 Feature Deltas

*Product = MG 9000*

## **A00007140A--Succession Upgrade Manager (Phase 1)**

### **1.1 Applicable Solution(s)**

UA-AAL1

### **1.2 Functional Description**

This feature introduces a CLUI interface on the MG9k Element Manager to drive upgrades of the MG9k devices such as MTA, XDSL, DS1, ABI, ITP, ITX, SCO and SCI. This CLUI interface can be leveraged by IEMS so the upgrade of the MG9k devices can be driven from a centralized location.

The feature prevents the customer from making any provisioning changes during an MG9k upgrade. It also automates the patching of the devices after the upgrade completes.

The pre-download feature of the CLUI will be added as an enhancement to the existing upgrade GUI. The pre-download prepare phase separates the downloading of the card loads from the actual upgrade of the MG9k cards. The customer will now be able to download all cards outside of a maintenance window. Then once inside the maintenance window, the upgrade of the cards can be performed. Thus allowing the customer to utilize the on-site personnel's time more effectively since they would not have to be on-site and wait for all of the cards to be downloaded.

This feature does not cover upgrade automation of single card replacement (i.e. load from mate). It does not cover node growth (i.e. card pair installation). It does not cover upgrade automation of a protection group. It does not provide a reset upgrade functionality nor a resume capability. It does not provide automatic image functionality.

### 1.3 Hardware Requirements or Dependencies

None

### 1.4 Software Requirements or Dependencies

None

### 1.5 Limitations and restrictions

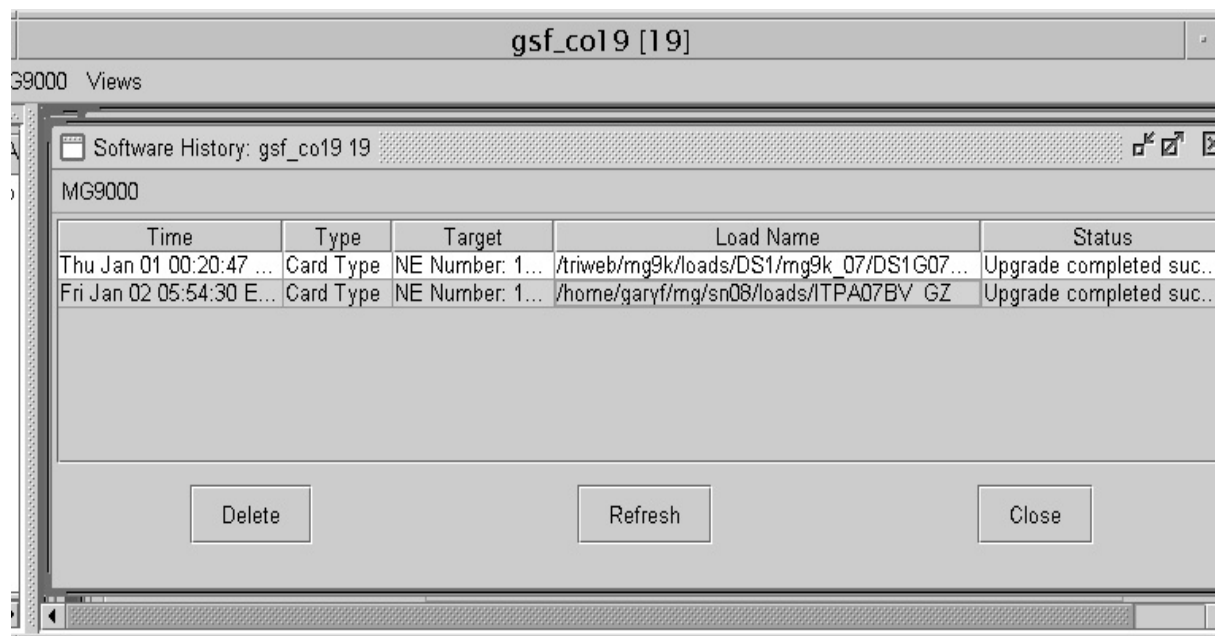
- 1 This version will not support multiple users. For example, a 10 node office would not be able to ask 2 crafts people to upgrade 5 nodes each at the same time. The second person will receive an error message.
- 2 This version will not support progress or status type messages back to the user during the execution of an *mg9kuptool* command. The user will need to create a new telnet session and issue a *mg9kuptool -query* command to obtain this type of information.
- 3 This design does not prevent two users from modifying the config data.
- 4 This design does not go to the SDM and give the user a list of loadnames to choose from. The customer has to enter the loadname manually.
- 5 We are not validating that the customer actually has put the patch files on NPM.
- 6 We are not validating that the NE alarms have been cleared as part of the prepare phase. NE alarms are checked in the precheck and upgrade phases since they could change between the prepare phase and the precheck phase.
- 7 A comparison between the NPM patchlist and the prepatched loads on the SDM are not performed in order to calculate the patch times. For example, if the NPM knows that an ITP card has 15 patches and the prepatched load contains 14 patches, the patching time is calculated based on 15 patches and therefore is a worst case estimate. This can be refined in a future release. With prepatched loads patching time should be considerably shorter.
- 8 The number of simultaneous NE upgrades is limited to four, to prevent overload of SDM.
- 9 The configuration data, created by the configure command, is used for the upgrade. If the GUI is used to prep download, the config command must be re-executed to ensure upgrading of the correct NE. GUI changes do not update the CLUI plan. They are separate interfaces.
- 10 When the user performs a prep download, the gateway will download the specified load -- even if the gateway already has that load.

- 11 After a successful prep download on a card, a normal download will download a new patched image (PI) only if the requested PI base loadname is different from the PI base loadname specified for the prep download. Note that patch content does not alter the PI base loadname.
- 12 If the customer creates a new image of a load that already exists on the gateway, the only way the customer can download the new load to the cards is to use the prep download functionality.
- 13 The validation performed prior to a prep download is the same as the validation performed prior to a regular download.
- 14 Prep download is not supported for card types MTA and XDSL.
- 15 The user cannot perform a prep download on an individual card basis. The user cannot perform a prep download on a protection group basis.
- 16 The mate load functionality on the MG9k gateway does not copy over prep download files.
- 17 The reset upgrade system functionality on the MG9k gateway, which should only be used as a last resort, may remove any prep download files. Therefore, the customer should check each card after performing a reset upgrade system request to ensure the prep download file required is shown in the Restart Flash Backup field on the card view in the Software Load area on the GUI. A new prep download should be performed if the Restart Flash Backup field does not show the proper prep download loadname.
- 18 The *mg9kuptool* only provides support for a full node upgraded. It does not allow single cards to be upgraded. It does not allow protection group upgrades. And it does not allow load from mate.
- 19 If an upgrade fails, there is no retry mechanism in this release.
- 20 The customer does not receive any autonomous updates showing the upgrade status or patching status. The customer can query to find out where the upgrade/patching process is at. The customer can also look at the existing upgrade GUI and see the upgrade progress. We are not including patching progress in any GUI. The only way to see the patching status is to perform a query or look at the customer logs.
- 21 The abort command stops processing the card type which is upgrading. If other card types are already upgraded, they remain on the upgraded or downgraded load. This is the same as if the customer invoked the abort from the GUI.



- 22** Auto processes on the NPM are not automatically turned off nor automatically turned on. The customer must turn off auto processing at the NPM prior to upgrading. The precheck only alerts the customer to ensure auto processes are turned off in the NPM. The post check alerts the customer to manually check and turn auto processing on again.
- 23** The down load and upgrade times are only rough estimates generated by simple calculations using static timings collected from lab tests. To obtain more accurate estimates or progress status would require significant development effort in the Mg9K which is out of the scope of this release.
- 24** This feature does not allow patching of cards which have completed upgrading while other cards are upgrading. For example, if the ABI cards complete upgrades and the ITP cards are being upgraded, patching of the ABI cards is not started.
- 25** There is no indication to the customer showing which patches are already in the imaged load and which patches are going to be applied after upgrading is complete.
- 26** If the prepatched image contained an obsolete patch, NPM does not remove the patch. An NPM alarm indicating that there is an obsolete patch is raised and the customer can see the obsolete patch in the postcheck.
- 27** Prior to upgrading MTA or XDSL cards, the EM verifies that all the cards are in an unlocked/enabled state. If any card is not in the correct state, the EM will not perform the upgrade.
- 28** To upgrade MTA and XDSL cards, the EM will lock the card, download the load and then unlock the card. The order in which the EM upgrades XDSL cards cannot be specified as part of the upgrade.
- 29** If the upgrade of any MTA or XDSL card fails, the EM halts the upgrade process. If the lock or unlock of any card fails, the EM halts the upgrade process.
- 30** If an MTA or XDSL card already has the specified load file, the EM will consider the card already upgraded and move on to the next card to upgrade.
- 31** If the user aborts an upgrade while the EM is upgrading the XDSL cards, the EM will return all cards to an unlocked state. However, the EM will not roll back the loads on any of the cards. For instance, assume the user is upgrading all five XDSL cards on a given node. Assume the user aborts the upgrade after the first two cards have upgraded and a third card is in the process of upgrading. The EM halts the upgrade process after the third card completes its upgrade. In the end, three XDSL cards are running the new load and two XDSL cards are running the old load.

- 32** The “Software History” window does NOT display entries for MTA and XDSL card upgrades. The following figure shows an example of the “Software History” window.



- 33** The existing GUI will not allow the user to perform the specific phases that are defined in the CLUI.
- 34** The existing GUI will not allow the user to perform the following imbedded functions that are available in the CLUI:
- audit of flash data
  - autopatching
- 35** When the user attempts an upgrade, the GUI prints the following warning message:

Each card will download the specified load ONLY IF the specified load file does not already exist in the card's file system. If the card has the specified file, the gateway will NOT download the file -- even if the card's load has different patch content.

This warning applies to all upgrade types: nodal upgrade, card-type upgrade (excluding MTA and XDSL cards), card-specific upgrade (excluding MTA and XDSL cards) and protection group upgrade.

- Consider the following scenario:

- The user creates a new patched image for the ITP card  
ITPA07BV\_GZ
- The user attempts a card type upgrade and specifies load  
ITPA07BV\_GZ

Since the ITP cards already have this load, the user's upgrade will not change the load file on the ITP cards. Furthermore, the GUI will not warn the user that the request upgrade will not result in any changes.

## 1.6 Interactions

### 1.6.1 Existing GUI Upgrade Tool

Currently, the user of the MG9K EM GUI can initiate an upgrade from either the frame view or the card view:

- From the frame view, the user can select “Actions” and “Software Upgrade”. From this selection the user can perform a nodal upgrade to upgrade cards of various card types on a given node.
- From the card view of an upgradable card, the user can select “Actions” and “Software Upgrade”. From this selection the user can perform three types of upgrade: card only, protection group only, and single card type only.

This feature impacts the user interface for nodal upgrade only.

When the user selects “Actions” and “Software Upgrade” from the frame view, the user sees the “MG 9000 Software Upgrade Element” GUI. On this GUI, the user clicks “Configure” to set up an upgrade request. When the user clicks “Configure”, the GUI displays the “MG Upgrade Wizard”.

In SN08, the “MG Upgrade Wizard” has significant changes. First, the wizard asks the user if the EM should perform a “prep download” or a “complete upgrade”. The panel displaying this prompt is shown below.

**Figure 1 MG Upgrade Wizard - Card Type Selection**

When the user clicks “Next”, the “MG Upgrade Wizard” displays the “Card Type Selection” panel. This panel allows the user to choose the card types to upgrade. In addition to the existing choices such as “DS1”, “ITP”, “ITX”, and others, in SN08 the user can also choose “XDSL Cards” and “MTA Cards”. If the user selected “prep download” on the previous screen, the buttons for “XDSL Cards” and “MTA Cards” are disabled. (If the node being configured does not have any cards of a particular type, the Card Type Selection panel does not even display that card type as a choice.) The following figure shows the Card Type Selection Panel when the user has selected to upgrade a node that does not have any ABI cards and the user has selected to perform a “prep download” only.

**Figure 2 MG Upgrade Wizard - Card Type Selection**

The screenshot shows a window titled "MG Upgrade Wizard: garyf\_co19 19". Below the title bar, it says "Card Type Selection: Step 2 of many." The main area contains a checkbox labeled "All Applicable Card Types". Below this, a text box explains: "A list of MG 9000 upgradeable card types is provided. Check the card types to upgrade, or check 'All Applicable Card Types' to upgrade all upgradeable card types in this MG 9000." To the right of this text is a list of card types with checkboxes: XDSL Cards, DS1 Cards, ITX Cards, MTA Cards, ITP Cards, and Supercore OC3 Cards. At the bottom left, there is a checked checkbox labeled "Use one load server only." At the bottom right, there are five buttons: "Remove Entries", "Previous", "Next", "Cancel", and "Finish".

Once the user clicks “Next” on the “Card Type Selection” panel, the “MG Upgrade Wizard” prompts the user for the load information for each of the selected card types. The order in which the GUI gathers the load data for the different card types does not matter.

The prompts for the load information have not changed. Assuming the user selected “one load server” on the “Card Type Selection Panel”, the following two figures show the next two panels displayed by Upgrade Wizard.

**Figure 3 MG Upgrade Wizard: Load Server Selection**

MG Upgrade Wizard: gsf\_col 9 19

Select a load server for selected cards: Step 3 of 7

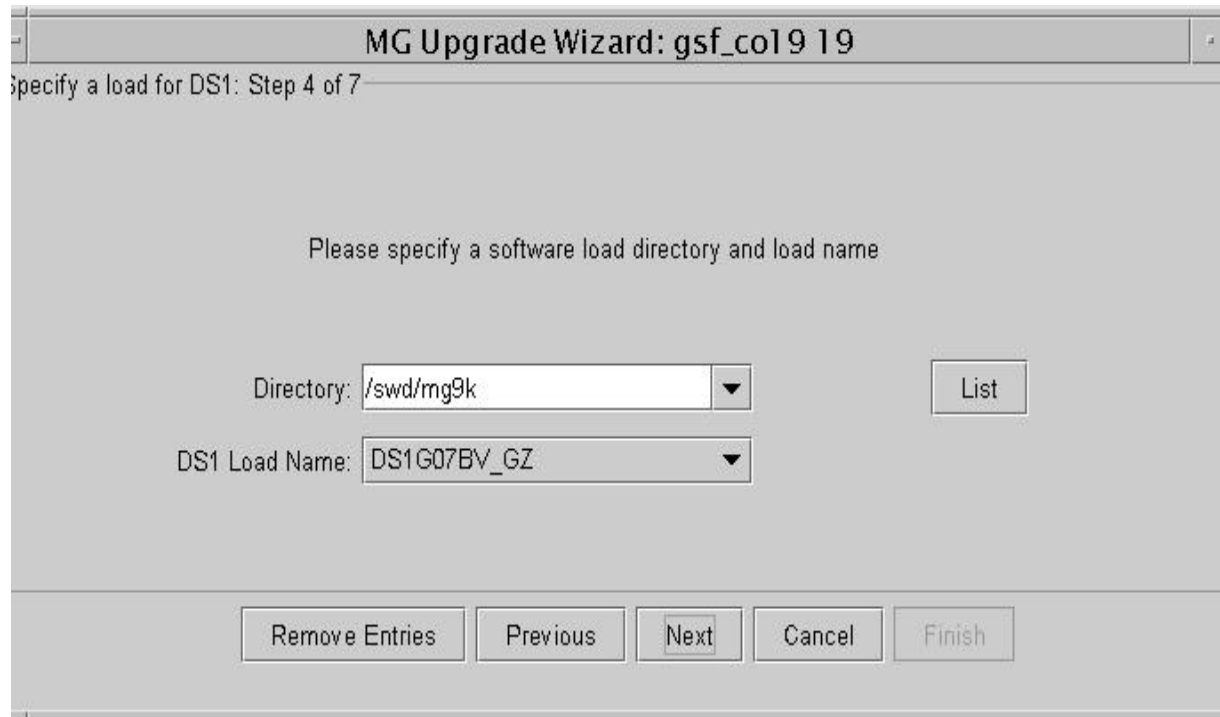
Please enter a new load server address or select from existing addresses. Also, specify a user identifier and password for the selected server.

Server Address: 47.142.106.220 ▼

Server User Identifier: maint

Server Password: \*\*\*\*\*

Remove Entries Previous Next Cancel Finish

**Figure 4 MG Upgrade Wizard: Load Name Selection for Card Type**

MG Upgrade Wizard: gsf\_col 9 19

Specify a load for DS1: Step 4 of 7

Please specify a software load directory and load name

Directory: /swd/mg9k ▼ List

DS1 Load Name: DS1G07BV\_GZ ▼

Remove Entries Previous Next Cancel Finish

Once the user has entered the load information for all of the selected card types, the user clicks “Finish” on the last panel. The “MG Upgrade Wizard” goes away and the GUI redisplay the “MG 9000 Software Upgrade Element” GUI with the settings the user has entered. Field “Upgrade Type” indicates if the user selected a “prep download” or a “complete upgrade”. The subsection “Upgrade Type Data” contains a tab for each selected card type. The user can click the tabs to see the load information for each card type. Finally, the user can click the “Upgrade” button at the bottom of the screen to start the upgrade. The following figure shows the top portion of the “MG 9000 Software Upgrade Element” GUI.

**Figure 5 MG 9000 Software Upgrade Element**

The screenshot displays the "MG 9000 Software Upgrade Element" GUI. The window title is "gsf\_co19 [19]". The main content area is titled "MG9000" and contains several sections:

- Upgrade Originator:**
  - MG 9000 Name: gsf\_co19 19
  - Originating View: MG9000 Element 19
- Upgrade State:**
  - Upgrade Status: Configure step completed.
  - Upgrade Action: Configure
  - Upgrade Type: Card Type -- prep download only!
- Upgrade Type Data:**
  - Upgrading: DS1 Card Type
  - DS1 | ITP | ITX | Supercore OC3 (selected)
  - Load Server: 47.142.106.220
  - Load Server User Id: maint
  - Load: /swd/rng9k/DS1G07BV\_GZ
- Upgrade Instructions & Results:**
  - performing abort

## 1.6.2 CLI Interface

Command Syntax:

`mg9kuptool <option> <-n NE_number_list>`

| Command Options | Description                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -configure      | This option provides the configuration of the upgrade tool. This includes the list of NEs to upgrade, the name and location of the card loads, etc.                                                                                                                                                                                                                                              |
| -prepare        | This option is largely informative to allow the user to determine if they are prepared to upgrade the system. It is executed for each node in the target node list <-n>.                                                                                                                                                                                                                         |
| -precheck       | This option reviews the overall system health of each node defined in the target node list <-n> in preparation for the upgrade. Any problems discovered are returned so that action can be taken to correct the issue before the upgrade begins.                                                                                                                                                 |
| -download       | This option down loads the card loads as defined in the upgrade plan. It is executed for each node in the target node list <-n>.                                                                                                                                                                                                                                                                 |
| -upgrade        | This option executes the actual upgrade process defined in the upgrade plan. It is executed for each node in the target node list <-n>. This may include the down loading of card loads if that was not executed earlier as a separate step.<br><br>When the upgrade is complete all available patches will be applied. If patches are applied, a new image of the patched load will be created. |
| -postcheck      | This option checks to see if any alarms were raised, asks the customer to run any test calls or test scripts and reports any patches that were not applied. It is executed for each node in the target node list <-n>.                                                                                                                                                                           |
| -query          | This option provides status information regarding the upgrade process for each node in the target node list <-n>.                                                                                                                                                                                                                                                                                |
| -abort          | This option terminates the upgrade step being executed for each node in the target node list <-n>.                                                                                                                                                                                                                                                                                               |
| -n              | This option describes the list of nodes on which to apply the operation. This is a comma separated list of numbers. If the list is specified as '*' then the operations is applied to all nodes in the plan. This option may be used on all commands except <configure>.                                                                                                                         |

### 1.6.2.1 CLI - Interactive Mode No Options

Issuing the *mg9kuptool* command without options will result in an interactive conversation with the user to determine which command option to process.

`mg9kuptool`



```
1 configure
2 prepare
3 precheck
4 download
5 upgrade
6 postcheck
7 abort
8 query
x exit
```

Please select an option:

### 1.6.2.2 CLI - Interactive Mode configure Option

Issuing the *mg9kuptool -configure* command or selecting this option from the interactive list will bring up the following dialog:

NOTE: All input is case sensitive.

In which directory on the imaging server do the loads reside?

```
/swd/mg9k
```

Enter MTA loadname:

```
MTAG07EJ_1_GZ
```

Enter XDSL loadname:

```
DSLA06_2EI
```

Enter DS1 loadname:

```
DS1G08BV_GZ.tar
```

Enter ABI loadname:

```
ABIG08BV_GZ.tar
```

Enter ITP loadname:

```
ITPA08BV_GZ.tar
```

Enter ITX loadname:

```
ITXA08BV_GZ.tar
```

Enter SCO loadname:

```
SCOA08BV_GZ.tar
```

```
Enter SCI loadname:
```

```
SCIA08BV_GZ.tar
```

```
Verifying loads on SDM.....
```

```
Loads valid.
```

```
Which NE(s) do you want to upgrade/downgrade? Enter NE number. If more
than 1 NE separate with commas (e.g. 8,9):
```

```
8
```

```
Plan name is /data/mg9kem/persistdata/MG9kUpgradePlan.dat
```

### 1.6.2.3 CLI - Interactive Mode prepare Option

Issuing the *mg9kuptool -prepare* command or selecting this option from the interactive list will bring up the following dialog:

```
Have you put the patch files on the NPM? Y/N
```

```
Y
```

```
Upgrading to loads:
```

```
/swd/mg9k/MTAG07EJ_1_GZ
```

```
/swd/mg9k/DSLA06_2EI
```

```
/swd/mg9k/DS1G08BV_GZ.tar
```

```
patchlist:
```

```
none
```

```
/swd/mg9k/ABIG08BV_GZ.tar
```

```
patchlist:
```

```
AMZ005
```

```
/swd/mg9k/ITPA08BV_GZ.tar
```

```
patchlist:
```

```
AMZ006
```

```
HDD013
```

```
HDD014
```

```
HDD015
```

```
/swd/mg9k/ITXA08BV_GZ.tar
```

```
patchlist:
```

```
none
```

```
/swd/mg9k/SCOA08BV_GZ.tar
```

```
patchlist:
```

```
AMZ007
```

```
AMZ008
```

```
HDD016
```

```
/swd/mg9k/SCIA08BV_GZ.tar
```

```
patchlist:
```

```
AMZ008
```

Please compare the patchlists above against the Nortel web page.

NE# 8: time to download is 1 hour

time to upgrade is 1.5 hours

time to patch is 27 minutes

#### 1.6.2.4 CLI - Interactive Mode precheck Option

Issuing the *mg9kuptool -precheck* command or selecting this option from the interactive list will bring up the following dialog:

- Enter the node number or node number list for the precheck request:  
<the displayed default is the list of all NEs in the plan>

#### 1.6.2.5 CLI - Interactive Mode download Option

Issuing the *mg9kuptool -download* command or selecting this option from the interactive list will bring up the following dialog:

- Enter the node number or node number list for the download request:  
<the displayed default is the list of all NEs in the plan>

#### 1.6.2.6 CLI - Interactive Mode upgrade Option

Issuing the *mg9kuptool -upgrade* command or selecting this option from the interactive list will bring up the following dialog:

This process will affect DSL traffic and should be performed during a maintenance window only.

- Enter the node number or node number list for the upgrade request:

<the displayed default is the list of all NEs in the plan>

#### 1.6.2.7 CLI - Interactive Mode postcheck Option

Issuing the *mg9kuptool -postcheck* command or selecting this option from the interactive list will bring up the following dialog:

- Enter the node number or node number list for the postcheck request:

<the displayed default is the list of all NEs in the plan>

#### 1.6.2.8 CLI - Interactive Mode abort Option

Issuing the *mg9kuptool -abort* command or selecting this option from the interactive list will bring up the following dialog:

- Enter the node number or node number list for the abort request:

<the displayed default is the list of all NEs in the plan>

#### 1.6.2.9 CLI - Interactive Mode query Option

Issuing the *mg9kuptool -query* command or selecting this option from the interactive list will bring up the following dialog:

- Enter the node number or node number list for the query request:

<the displayed default is the list of all NEs in the plan>

### 1.6.3 Customer Logs

Customer logs will be created each time the *mg9kuptool* is executed. A new NT standard log number will be defined as follows:

- MGEM714

#### 1.6.3.1 Format

Here is an example of the new MGEM 714 log:

- Aug 18 15:07:28 apex-unit0 MGEM: 714 Executing mg9kuptool command precheck

#### 1.6.3.2 Field descriptions

| Field            | Description                       | Example         |
|------------------|-----------------------------------|-----------------|
| Date/Time        | Date and time stamp of the log    | Aug 18 15:07:28 |
| Host Name        | Host machine name                 | apex-unit0      |
| Application Name | The application producing the log | MGEM            |
| Log Number       | The log number                    | 714             |

| Field    | Description            | Example                                     |
|----------|------------------------|---------------------------------------------|
| Log Text | The action being taken | Executing<br>mg9kuptool<br>command precheck |

## 1.7 Glossary

| Term | Description                       |
|------|-----------------------------------|
| CLI  | Command Line Interface            |
| CLUI | Command Line User Interface       |
| EM   | Element Manager                   |
| GUI  | Graphical User Interface          |
| IEMS | Integrated Element Manager System |
| MG9K | Media Gateway 9000                |
| MR   | Maintenance Release               |
| NE   | Network Element                   |
| NPM  | Network Patch Manager             |
| SDM  | Succession Data Manger            |

***Product = MG 9000***

## **A00007140B--Upgrade Manager Phase 1 - GWC and SC parts**

### **1.1 Applicable Solution(s)**

UA-AAL1

### **1.2 Functional Description**

As of SN08, Succession CallServer subnetwork upgrades have been performed using a purely manual process which has required a significant amount of human power to orchestrate. Also, the upgrade technician has been forced to navigate hundreds of pages of documentation in order to successfully plan and complete the end-to-end system upgrade. As a result, Succession CallServer subnetwork upgrades have been extremely difficult to manage and have been a constant source of concern/dissatisfaction with Nortel customers.

The SN08 Succession Upgrade Manager delivers:

- a robust SC upgrade tool.
- a robust GWC upgrade tool.
- a robust MG9K upgrade tool. (This FN covers only the GWC and SC upgrade tools. The MG9K is in another document.)

The SC and GWC upgrade tools serve as the underlying per-network element tools for the end architecture. The intent for SN08 is to focus as much effort as required to make these underlying tools as robust and complete as possible.

As part of the SN08 Succession upgrade tools, the SC and GWC upgrade tools both provide a pure CLI for the customer or upper-level coordinator to invoke upgrade functionalities. In addition, an interactive CLUI is also provided to customers for easy use of the tool. The following content will give a detailed description on SC and GWC.

### 1.2.1 Internally used options

SC and GWC upgrade tools are designed to work with the upper level MOP automation tool. So there are some internally used options which will not appear in the customer documentation.

## 1.3 Deployment

Basically the GWC and SC upgrade tools will be packaged within the GWC and SC element manager servers.

### 1.3.1 SC upgrade tool

The tool will be part of the NTsam21em package, when the SAM21EM is configured and running properly, the SC upgrade tool is ready to use.

In the SSPFS running environment, the SC upgrade tool is located in:

- `/opt/nortel/sam21em/bin/scuptool.sh` -- Program entry
- `/opt/nortel/sam21em/classes` -- Jar files

### 1.3.2 GWC upgrade tool

The GWC uptool will be part of the NTsesm package, and it is located in:

- `/opt/nortel/NTsesm/gwcuptool` -- Base directory
- `/opt/nortel/NTsesm/gwcuptool/bin` -- All scripts
- `/opt/nortel/NTsesm/gwcuptool/jars` -- Jar files
- `/opt/nortel/NTsesm/gwcuptool/bin/gwcuptool.sh` -- Program entry

If you want to use the GWC upgrade tool the following applications must be configured and running properly:

- SAM21EM is running.

- SESM Service is running.
- NPM/PSE is configured properly.

### 1.3.3 Running restriction

Users must belong to one of these groups “mgcmte, mgcadm, emsmte, emsadm”, who have permission to run the upgrade tools.

## 1.4 GWC Upgrade Tool

In SN08, GWC will provide a basic CLI interface and an interactive CLUI that is based on the basic CLI interface.

The GWC upgrade tool provides the basic functions that GWC upgrading needs. They are:

- Start the GWC upgrade manager server prior to client launching.
- Configure the upgrade options before the actual upgrade.
- Prepare the necessary steps for getting the tool and system ready prior to the actual upgrade.
- Pre-check the relevant EM and configured GWC states including alarms.
- Upgrade the configured GWC with configured options.
- Post-check the upgraded GWC states including alarms.
- Query the GWC upgrade states in progress.
- Query the GWC information and list them by profile types.
- Query the configurations currently used.
- Stop the upgrade manager server.
- The help facility provided with the functions.

All these functions are provided by a shell named *gwcuptool.sh*. The end user should run the corresponding commands in an order which is given in the appendices. The order ensures you encounter, as little as possible, any warnings and errors. The order is mandatory.

### 1.4.1 Restriction for GWC upgrade

Because the GWC upgrade tool needs SESM, SAM21EM, and NPM to execute the real device operations, while the GWC upgrade is in progress, the following functions will be disabled to prevent any unexpected problems:

- All provisioning actions in SESM.
- All (CS2k/V5.2/Trunk/Line) Data Integrity Audits.
- GWC auto imaging in GWCEM.
- GWC auto patching in NPM.

When the upgrade is finished, provisioning functions will be enabled automatically by the GWC upgrade tool.

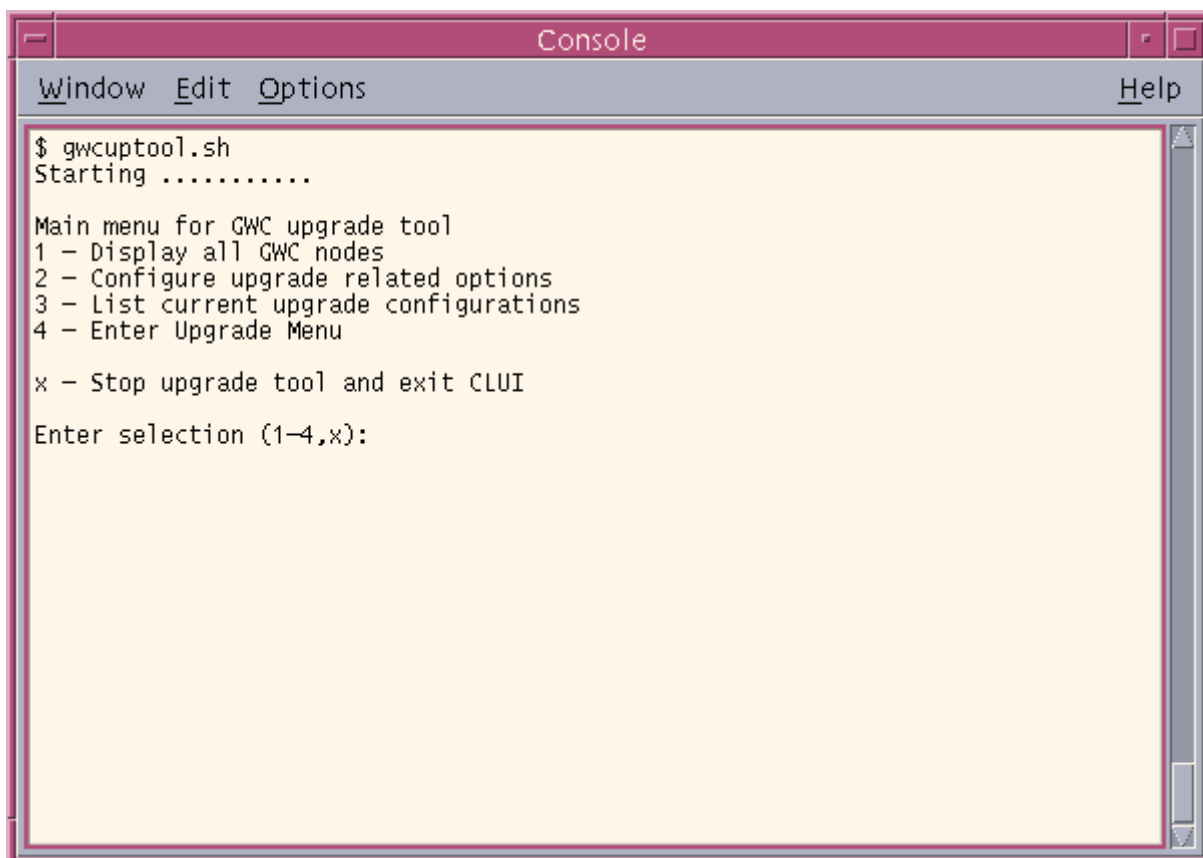
Before using this tool, the end user must make sure that PSE in the same SSPFS is configured properly.

When the user/password is required, the end user must make sure that the login user belongs to one of these groups “mgcmte, mgcadm, emsmte, emsadm”. Otherwise, the operation is denied.

### 1.4.2 Interactive CLUI

The interactive CLUI is a shell that wraps basic CLI. It provides a “restricted” tool to achieve the upgrade goal.

Issue “gwcuptool.sh” to launch the GWC upgrade tool CLUI. The main menu is as follows:



```
$ gwcuptool.sh
Starting

Main menu for GWC upgrade tool
1 - Display all GWC nodes
2 - Configure upgrade related options
3 - List current upgrade configurations
4 - Enter Upgrade Menu

x - Stop upgrade tool and exit CLUI

Enter selection (1-4,x):
```

There are a total of five selections in the main menu. There are:

#### **1 Display all GWC nodes**



This selection queries all GWC nodes information, including name, ip and state.

## **2 Configure upgrade related options**

This selection configures upgrade options manually. CLUI will prompt the end user to input necessary information step by step. These options are effective in the whole upgrade process.

## **3 List current upgrade configurations**

This selection lists all options currently used.

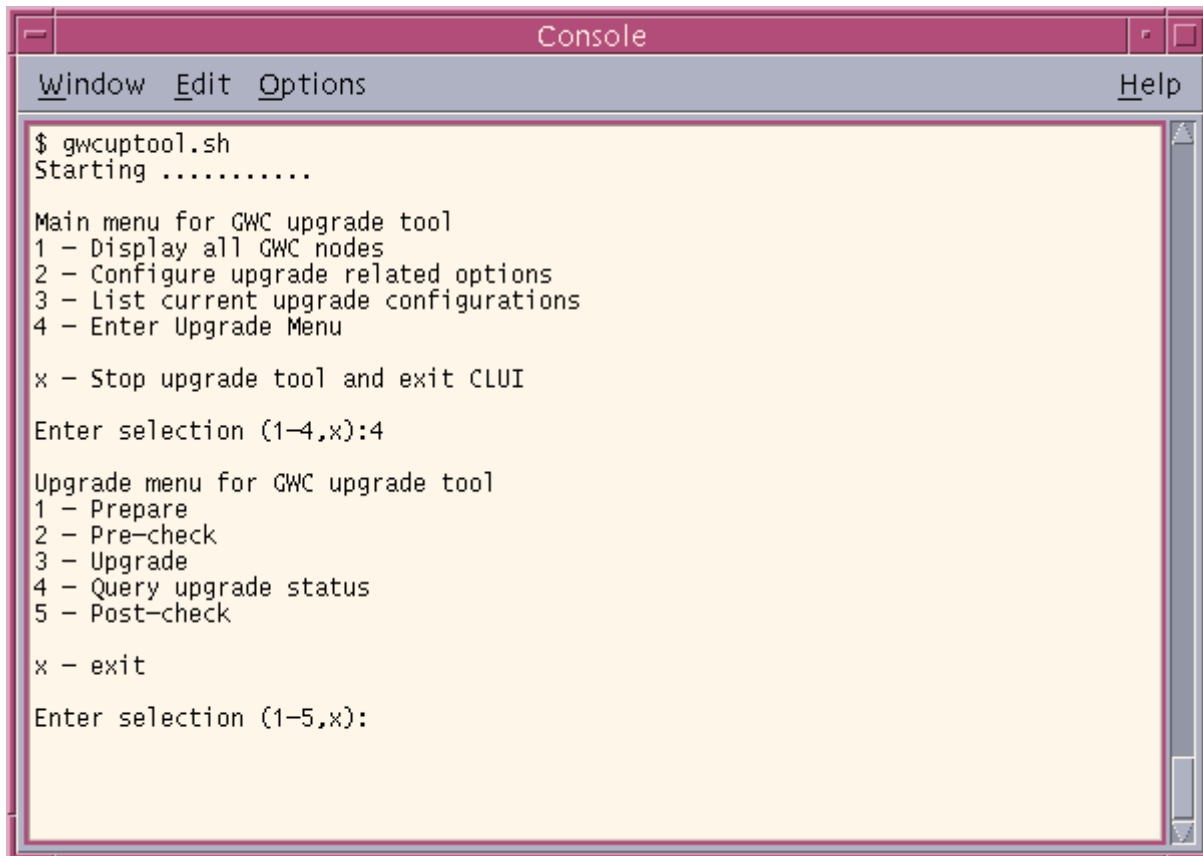
## **4 Enter upgrade menu**

This selection enters the upgrade submenu.

## **5 Stop upgrade tool and exit CLUI**

This selection stops the GWC upgrade tool and exits CLUI.

When selection 4 is selected, the end user will enter the upgrade submenu to do the real upgrade process. The following figure illustrates the upgrade submenu:



```
Console
Window Edit Options Help
$ gwcuptool.sh
Starting

Main menu for GWC upgrade tool
1 - Display all GWC nodes
2 - Configure upgrade related options
3 - List current upgrade configurations
4 - Enter Upgrade Menu

x - Stop upgrade tool and exit CLUI

Enter selection (1-4,x):4

Upgrade menu for GWC upgrade tool
1 - Prepare
2 - Pre-check
3 - Upgrade
4 - Query upgrade status
5 - Post-check

x - exit

Enter selection (1-5,x):
```

There are a total of six selections in the upgrade submenu. All these selections are based on the options configured in the main menu.

- **Prepare**  
This selection is the preparation prior to the actual upgrade.
- **Pre-check**  
This selection does the pre-check prior to the actual upgrade.
- **Upgrade**  
This selection does the real upgrade.
- **Query upgrade status**  
This selection queries the upgrade status.
- **Post-check**  
This selection does the post-check after the actual upgrade.
- **exit**  
This selection exits the upgrade submenu and enters the main menu.

### 1.4.3 Basic CLI

Corresponding functions to the above are achieved using the `gwcuptool.sh` command. The details are as follows.

#### 1.4.3.1 Start GWC upgrade manager server prior to client launching.

```
gwcuptool.sh -start [-gwcem ip:port] [-sam21em ip:port] [-sid sid]
```

Command description:

Start the GWC upgrade tool server, in order to do the following actions:

- 1 Request the end user to input a user name/password if not applying the session ID in the command.
- 2 Connect to GWCEM / SAM21EM through CORBA.
- 3 Check whether this user has permission to perform the upgrade operations.

Options:

[1] `-gwcem`

**Requirement:** Internally used options.

**Description:** Provides CORBA server ip and the port GWCEM server registered.

**Default:** localhost:2001

[2] `-sam21em`

**Requirement:** Internally used options.

**Description:** Provides CORBA server ip and the port SAM21EM server registered.

**Default:** localhost:2001

[3] `-sid`

**Requirement:** Internally used options.

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
gwcuptool.sh -start
```

If the end user only issues “`gwcuptool.sh -start`”, only the user who belongs to one of “`mgcmte`, `mgcadm`, `emsmte`, `emssadm`” groups, can run the tool.

#### 1.4.3.2 Configure upgrade options before actual upgrade.

```
gwcuptool.sh -config [-n <GWC list>] [-o [value]] ...
```

Command description:

Configure the upgrade options. These options are useful to upgrade, pre-check, post-check and query commands.

Note:

- 1 All configurations' default value will be stored in a property file on the upgrade manager server machine. We do not support customers who modify it themselves.
- 2 When only “gwcuptool.sh -config -list” is issued, the upgrade manager server will return all current configurations. Its functionality is query configuration.
- 3 If the end user only issues “gwcuptool.sh -config”, the shell will prompt the end user to input necessary information step by step.
- 4 When the second configuration command is issued, all prior configurations will be replaced.

The options are as follows:

[1] -pa load\_directory\_name

**Requirement:** Optional

**Description:** Specify the load file path in SDM/CBM. If no directory name is applied, the default directory '/swd/gwc/' will be used.

**Default:** “/swd/gwc/”

**Example:**

-pa /swd/gwc/

[2] -f new\_load\_file\_name

**Requirement:** Mandatory

**Description:** Target load file name. The user must specify a load file name here. Otherwise, the config function will return an error message.

**Default:** "".

**Example:**

-f gn080ak.imag

[3] -l new\_load\_name

**Requirement:** Optional

**Description:** Target the load name of the given GWC load file. The new load name will be used to query the patch list from NPM. If the file name does not contain the GWC load name, the end user MUST specify a valid GWC load name here.

**Default:** new load file name except “.imag”

**Example:**

-l GN080AK

[4] -o old\_load\_name

**Requirement:** Optional

**Description:** The load upgrade from. If the end user ignores it, the upgrade manager server will bypass the old load checking. By default users do not need to specify the old load name, and all selected GWC nodes will be upgraded automatically.

**Default:** "".

**Example:**

```
-o GN070BK
```

```
[5] -m <single | bulk | mix>
```

**Requirement:** Optional

**Description:** Upgrade mode

- Single: all GWC nodes will be upgraded one by one ordered by the GWC profile type and GWC ID.
- Bulk: All GWC nodes within the same service group (e.g. TRUNK, LINE) will be upgraded at the same time. If patching is needed, the first selected “seed” GWC node which is used to create the soak image will use single mode and the others that do not need patching will use bulk mode.
- Mix: In the same GWC profile group (e.g. TRUNK GWCs, Line GWCs), one GWC node will be upgraded first. (Purpose: the end user can do verification on the specified type of GWC.) After it is upgraded successfully, all other GWC nodes within the same profile group will be upgraded at the same time.

See “Appendix 3: Upgrade mode examples in GWC upgrade tool” on page 1362.

**Default:** bulk.

**Example:**

```
-m bulk
```

```
[6] -p [0,1,2,3,4,5,6]
```

**Requirement:** Optional

**Description:** Upgrade pause points. If the end user does not provide this option, no pause points are done during upgrading.

The following shows what the number means:

- For the first GWC node within the same GWC group:
  - 1 - before lock the first upgrade unit of the “seed” node.
  - 2 - after patch applied to the “seed” unit.
  - 3 - before warm-swact.
  - 4 - after “seed” node upgraded.
  - 5 - pause on all the above conditions.
- For bulk upgrade GWC nodes with the same GWC profile type:
  - 6, before warm-swact.

**Default:** 0, without any pause points.

**Example:**

```
-p '1,3,4'
```

The example option means the upgrade will pause on conditions 1,3, 4.

```
[7] -d [VRB | MAJ | MNR | CRT]
```

**Requirement:** Optional

**Description:** Define logging level for the upgrade log file.

VER: Logging verbose information.

MAJ: Logging major information.

MNR: Logging minor information.

CRT: Logging critical information.

**Default:** MAJ.

**Example:**

```
-d MNR
```

```
[8] -s
```

**Requirement:** Optional. Internally used by the designer.

**Description:** Skip patching because the given load is soaked. Do not apply patches on the new GWC load.

**Example:**

```
-s
```

```
[9] -n <GWC list>
```

**Description:** Define the GWC list that should be upgraded. It will be the default GWC list for pre-check, upgrade, post-check and query commands.

**Default:** all

**Example:**

```
-n 'GWC-1,GWC-2,GWC-3,GWC-5'
```

```
[10] -t <mins>
```

**Description:** Define a time limitation for doing the upgrade. If the upgrade cannot complete all nodes within the given time slot, the un-upgraded GWC nodes will be kept there. The upgrade will finish. If “0” is specified as the time limitation, the limitation check will be disabled.

**Default:** 0

**Example:**

```
-t 180
```

Note: The time begins when the “gwcuptool.sh -up” command is executed. A second “gwcuptool.sh -up” command does not reset the time slot.

```
[11] -np <max parallel number>
```

**Requirement:** Optional. Internally used by the designer.

**Description:** Max parallel number during the bulk upgrade.

**Default:** 32

Example:

```
-np 16
```

```
[12] -a [CRT | MAJ] -an [number]
```

**Requirement:** Optional.

**Description:** The allowed highest alarm level during the upgrade, and the allowed max alarm number during the upgrade. It is a dynamic alarm checking values. If the current alarm state has higher priority than is defined here, the upgrade program will be paused and the end user is notified of this.

For examples, if we specify “-a MAJ -an 2” in config step:

- If there are 3 MAJ alarms raised in the EM Server for this node, the upgrade tool will be paused
- If there is 1 MAJ alarm raised in the EM Servers for this node, the upgrade tool will ignore it and continue the upgrade process.
- If there is 1 CRT alarm raised in the EM Server for this node, the upgrade tool will be paused too because the CRT has high priority than the MAJ alarms.

**Default:** MAJ 2

**Example:**

```
-a CRT -an 2
```

```
[13] -sid sid
```

**Requirement:** Optional, internally used by the MOP automation tool,

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide valid session ID to avoid re-login. The end user need not input this option. This option is not a part of the configuration

**Default:** 0

**Example:**

```
gwcuptool.sh -config -f gn080ak.imag -sid
312308CDA87F5C7ECD3185F639892BC2
```

An example of a whole command format:

```
gwcuptool.sh -config -f gn080ak.imag -o GN070BV -m bulk -p '1,3,4' -d CRT -n 'GWC-1'
-t 120 -a CRT -an 4 -sid 312308CDA87F5C7ECD3185F639892BC2
```

### 1.4.3.3 Prepare necessary steps for getting the tool and system ready prior to the actual upgrade.

```
gwcuptool.sh -prep [-sid sid]
```

Command description:

Shows the end user the necessary preparations that include upgrade steps and order, notes and warnings.

The following actions should be checked in the prepare command:

- 1 Check the load available in SDM/CBM.
- 2 Get the patch list from NPM, display the patch list to the end user, and ask the end user to confirm:
  - The name is based on the load name specified in the “-config” step, by default the load file name will be used as the load name.
  - The GWC Upgrade tool will use the load name to query the list of patches that NPM knows about.
  - The list of patches will be presented to the user.
  - Prompt the user to tell them that they need to go to the Nortel web site and verify that the list they have is the list that they should have. Also make them type “Y”/”yes” to confirm that they have verified this before we allow the preparation to succeed.
- 3 Display the upgrade plan for the GWC.
- 4 Calculate the estimated time of the upgrade.

Options:

[1] -sid sid

**Requirement:** Optional, internally used by the MOP automation tool.

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option. This option is not part of the configuration

**Default:** 0

**Example:**

```
gwcuptool.sh -prep -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.4.3.4 Pre-check relevant EM and configured GWC states including alarms.

```
gwcuptool.sh -precheck [-n <GWC List>] [-sid sid]
```

Command description:

Pre-check the necessary conditions before the upgrade.

If there is no given GWC list, the configured GWC list will be used instead. Perform the following actions:

- 1 GWCEM, SAM21EM and NPM server status.
- 2 Load is available on the load server. (Get from SAM21EM server.)



- 3 Alarm status.
- 4 Hardware level health check. If the node has two physical units, check both of them are in service.
- 5 Software level health check. The inactive unit is in hot-standby.

[1] -n <GWC List>

**Requirement:** Internally used by the MOP automation tool

**Description:** GWC nodes that should be upgraded. If there is no given GWC list, the configured GWC list will be used instead.

[2] -sid sid

**Requirement:** Optional, internally used by the MOP automation tool,

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
gwcuptool -precheck -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.4.3.5 Upgrade configured GWC with configured options.

```
gwcuptool.sh -up [-n <GWC list>] [-sid sid]
```

Command description:

Does the real upgrade work? Still perform the pre-check / post-check using this command. During the upgrade the client side will display the logs sent from the server side. The client side may need to answer some questions or do some confirmation for different conditions. If the end user enabled break points, this tool will work in interactive mode.

When the “seed” GWC node’s inactive unit is patched, the GWC upgrade tool will invoke the function provided by NPM to query the patch applying status. The status is displayed to the end user.

[1] -n <GWC List>

**Requirement:** Internally used by the MOP automation tool

**Description:** GWC nodes that should be upgraded. If there is no GWC list, the configured GWC list will be used instead.

[2] -sid sid

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
gwcuptool.sh -up -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.4.3.6 Post-check upgraded GWC states including alarms.

```
gwcuptool.sh -postcheck [-n <GWC list>] [-sid sid]
```

Command description:

Do the post-check for the given GWC nodes.

If there is no GWC list, the configured GWC list will be used instead.  
The following status will be checked:

- Application status from GWCEM.
- Alarm state
- Query the patch applied status from NPM

[1] -n <GWC List>

**Requirement:** Internally used by the MOP automation tool

**Description:** GWC nodes which should be upgraded. If there is no GWC list, the configured GWC list will be used instead.

[2] -sid sid

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
gwcuptool.sh -postcheck -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.4.3.7 Query upgrade states in progress.

```
gwcuptool.sh -query [-n <GWC list>] [-sid sid]
```

Command description:

Query the status of the GWC units and upgrade status.

The status includes two parts. If there is no upgrading GWC, no part A status exists.

If there is no GWC list, the configured GWC list will be used instead.

- Upgrade status report.

Report includes following items:

- GWC-ID: e.g. GWC-3

- Current upgrade step: e.g. SWACT (7 / 12)
- Spent time: e.g. 10 minutes
- Time left: e.g. about 13 minutes.
- B. Unit status report

Report items.

- GWC Unit name: GWCUnit IP
- GWC type and profile.
- GWC load information. Upgraded or not.
- Status from GWCEM
- Status from SAM21EM

[1] -n <GWC List>

**Requirement:** Optional

**Description:** Only the specified GWC node status will be shown.

[2] -sid sid

**Requirement:** Internally used by the MOP automation tool.

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
gwcuptool.sh -query -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.4.3.8 Query GWC information and list them by profile types.

```
gwcuptool.sh -query -n all [-sid sid]
```

Command description:

Query all GWC information including name, ip and state.

This command reuses “gwcuptool.sh -query” interface, it can list all GWCs’ information and show them by profile types.

Example:

```
gwcuptool.sh -query -n all -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.4.3.9 Query configurations currently used.

```
gwcuptool.sh -config -list [-sid sid]
```

Command description:

Query current configurations. It reuses the “gwcuptool.sh -config” interface.

**Example:**

```
gwcuptool.sh -config -list -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.4.3.10 Stop upgrade manager server.

```
gwcuptool.sh -stop [-sid sid]
```

Command description:

Stop upgrade server.

Options:

[1] -sid

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
gwcuptool.sh -stop -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.4.3.11 Help facilities of the functions.

```
gwcuptool.sh -start -h
gwcuptool.sh -config -h
gwcuptool.sh -prep -h
gwcuptool.sh -precheck -h
gwcuptool.sh -up -h
gwcuptool.sh -postcheck -h
gwcuptool.sh -query -h
gwcuptool.sh -stop -h
```

Command description:

Shows the end user the help facilities of the functions. It includes function description, option meaning and usage.

How to use the above separate commands to achieve a complete upgrade task. Appendix 1 gives you an example.

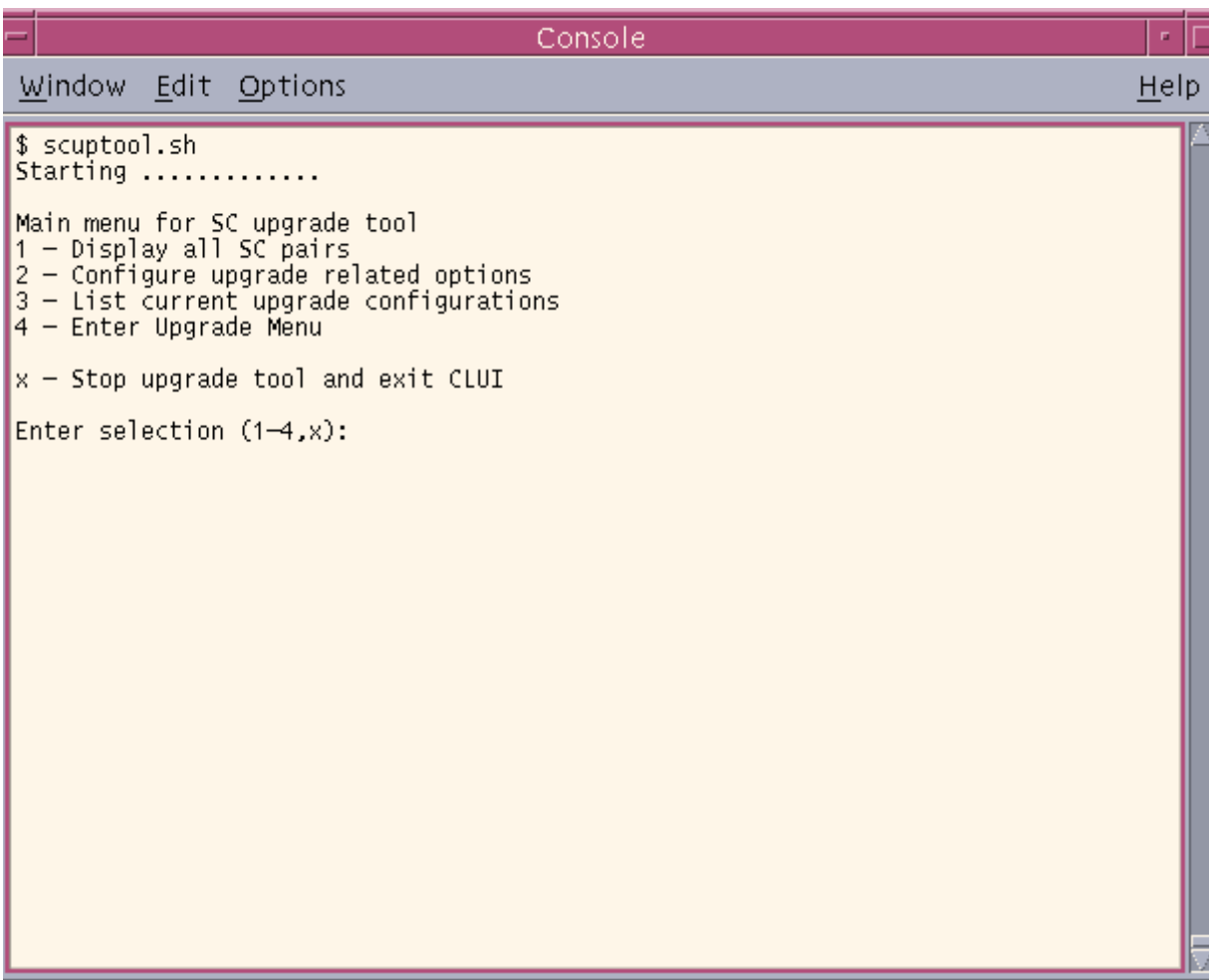
## 1.5 SC Upgrade Tool

In SN08, SC will provide a basic CLI interface and an interactive CLUI that is based on the basic CLI interface.

### 1.5.1 Interactive CLUI

The interactive CLUI is a shell that wraps basic CLI. It provides a “restricted” tool to achieve the upgrade goal.

Issue “scuptool.sh” to launch the SC upgrade tool CLUI. The main menu is as follows:

A screenshot of a terminal window titled "Console". The window has a menu bar with "Window", "Edit", "Options", and "Help". The terminal text shows the execution of "scuptool.sh", which starts a main menu for the SC upgrade tool. The menu lists four numbered options: 1 - Display all SC pairs, 2 - Configure upgrade related options, 3 - List current upgrade configurations, and 4 - Enter Upgrade Menu. It also includes an 'x' option to stop the tool and exit the CLUI. The prompt "Enter selection (1-4,x):" is displayed at the bottom of the menu.

```
$ scuptool.sh
Starting

Main menu for SC upgrade tool
1 - Display all SC pairs
2 - Configure upgrade related options
3 - List current upgrade configurations
4 - Enter Upgrade Menu

x - Stop upgrade tool and exit CLUI
Enter selection (1-4,x):
```

There are a total of five selections in main menu. There are:

**1** Display all SC pairs

This selection queries all SC nodes information, including name, ip and state.

**2** Configure upgrade related options

This selection configures upgrade options manually. CLUI will prompt the end user to input the necessary information step by step. These options are effective during the whole upgrade process.

**3** List current upgrade configurations

This selection lists all options currently used.

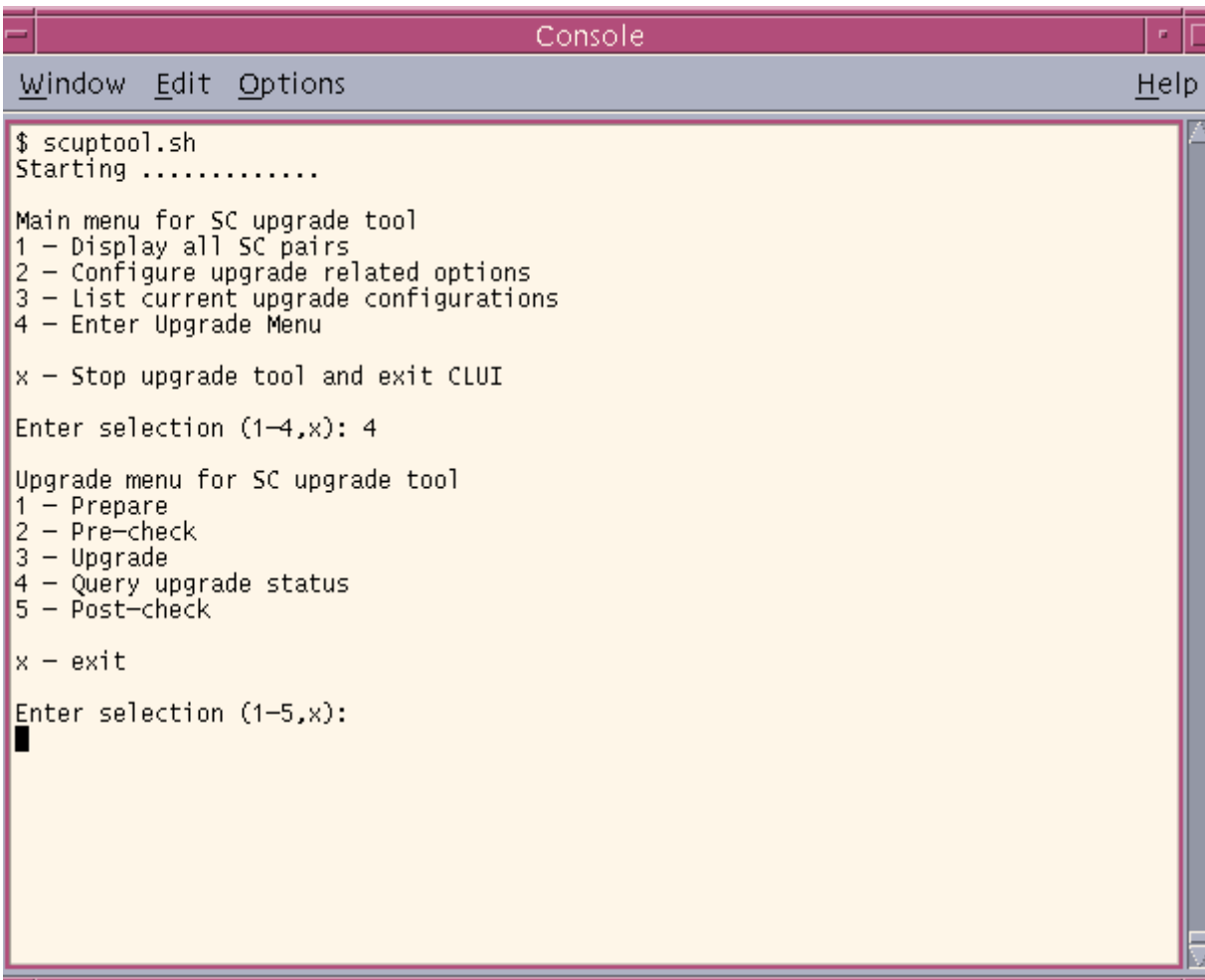
**4** Enter the upgrade menu

This selection enters the upgrade submenu.

**5** Stop upgrade tool and exit CLUI

This selection stops the SC upgrade server and exits CLUI.

When selection 4 is selected, the end user enters the upgrade submenu to do the real upgrade process. The follow figure is the upgrade submenu:



```
$ scuptool.sh
Starting

Main menu for SC upgrade tool
1 - Display all SC pairs
2 - Configure upgrade related options
3 - List current upgrade configurations
4 - Enter Upgrade Menu

x - Stop upgrade tool and exit CLUI

Enter selection (1-4,x): 4

Upgrade menu for SC upgrade tool
1 - Prepare
2 - Pre-check
3 - Upgrade
4 - Query upgrade status
5 - Post-check

x - exit

Enter selection (1-5,x):
█
```

There are a total of six selections in the upgrade submenu. All these selections are based on the options configured in the main menu.

- **Prepare**

This selection does the preparation prior to the actual upgrade.

- **Pre-check**

This selection does the pre-check prior to the actual upgrade.

- **Upgrade**

This selection does the real upgrade.

- **Query upgrade status**

This selection queries the upgrade status.

- **Post-check**

This selection does the post-check after the actual upgrade.

- **exit**

This selection exits the upgrade submenu and enters the main menu.

## 1.5.2 Basic CLI

The basic CLI provides the basic functions that the SC upgrading needs. They are:

- Start SC upgrade manager server prior to launching the client.
- Configure the upgrade options before the actual upgrade.
- Prepare the necessary steps for getting the tools and system ready prior to the actual upgrade.
- Pre-check relevant EM and configured SC states including the alarms.
- Upgrade configured SC with configured options.
- Post-check upgraded SC states including alarms.
- Query SC upgrade states in progress.
- Query SC information and list them.
- Query configurations currently used.
- Stop the upgrade manager server.
- The help facilities of the functions.

All these functions are provided by a shell named *scuptool.sh*. Although the end user can use every function in any order, we recommend that you should run the corresponding commands in an order which is given in the appendices. The order ensures you encounter, as little as possible, any warnings and errors. The order is mandatory

Corresponding functions to the above are achieved using the *gwcuptool.sh* command. The details are as follows.

### 1.5.2.1 Start the SC upgrade manager server prior to client launching.

```
scuptool.sh -start [-sam21em ip:port] [-sid sid]
```

Command description:

Start the SC upgrade tool server, it does the following:

- 1 Request the end user to input a user name/password if not applying the session ID in the command.
- 2 Connect to SAM21EM through CORBA;
- 3 Check whether this user has permission to perform the upgrade operations.



Options:

[1] -sam21em

**Requirement:** Internally used options.

**Description:** Provides the CORBA server ip and port SAM21EM server registered.

**Default:** localhost:2001

[2] -sid

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

Example:

```
scuptool.sh -start -sam21em localhost:2001 -sid
312308CDA87F5C7ECD3185F639892BC2
```

If the end user only issues “scuptool.sh -start”, only the user who belongs to one of “mgcmte, mgcadm, emsmte, emsadm” groups, can run the tool.

### 1.5.2.2 Configure the upgrade options before the actual upgrade.

```
scuptool.sh -config [-n <SC list>] [-o [value]] ...
```

Command description:

Configure upgrade options. These options are useful to upgrade, pre-check, post-check and query.

Note:

- 1 All configurations' default value will be stored in a property file on the upgrade manager server machine.
- 2 When only “scuptool.sh -config -list” is issued, the upgrade manager server will return all current configurations.
- 3 If the end user only issues “scuptool.sh -config”, shell will prompt the end user to input necessary information step by step.
- 4 When the second configuration command is issued, all prior configurations will be replaced.

The following are detailed options.

[1] -pa load\_directory\_name

**Requirement:** Optional

**Description:** Specify the load file path in SDM/CBM. If no directory name is

applied, the default directory '/swd/sam21/' will be used.

**Default:** "/swd/sam21/"

**Example:**

```
-pa "/swd/sam21/"
```

```
[2] -f new_load_file_name
```

**Description:** Target load file name. This option is mandatory.

**Default:** "".

**Example:**

```
-f "11.0.0.047231351"
```

```
[3] -o old_load_name
```

**Requirement:** Optional

**Description:** The load upgrade from. If the end user ignores it, the upgrade manager server will bypass old load checking. By default the user does not need to specify the old load name, and all the selected SC pairs will be upgraded automatically.

**Default:** "".

**Example:**

```
-o "10.0.0.047231351"
```

```
[4] -m <single | bulk >
```

**Description:** Upgrade mode (Optional)

single: all SC pairs will be upgraded one by one as ordered by the SC ID.

bulk: All other SC pairs will be upgraded at the same time.

**Default:** bulk.

**Example:**

```
-m bulk
```

```
[5] -p [0,1,2,3,4,5]
```

**Description:** Upgrade pause points. (Optional). If the end user does not provide this option, no pause points are done during upgrading.

The following list shows what the number means:

- For the first SC pair:
  - 1, before lock the first upgrade unit of "seed" pair.
  - 2, before warm-swact.
  - 3, after "seed" pair upgraded.
  - 4, pause on all above conditions.
- For bulk upgrade SC pairs:
  - 5, before warm-swact.

**Default:** 0, without any pause points.

**Example:**

```
-p '1,2,3'
```

The example option means the upgrade will pause on conditions 1,2,3.

[6] -d [VRB | MAJ | MNR | CRT ]

**Requirement:** Optional

**Description:** Define logging level for the upgrade log file.

VER: Logging verbose information.

MAJ: Logging major information.

MNR: Logging minor information.

CRT: Logging critical information.

**Default:** MAJ.

**Example:**

-d MNR

[7] -n <SC list>

**Description:** Provides a SC list for pre-check, upgrade, post-check and query.

**Default:** all

**Example:**

-n 'SC1, SC2, SC3, SC5'

[8] -t <mins>

**Description:** Define a time limitation for doing the upgrade. If the upgrade cannot complete all pairs within the given time slot, the un-upgraded SC pairs will be kept there. The upgrade will finish. If “0” is specified as the time limitation, the limitation check will be disabled

**Default:** 0

**Example:**

-t 180

Note: The time begins when “suptools.sh -up” command is executed. A second “suptools.sh -up” command does not reset the time slot.

[9] -np <max parallel number>

**Requirement:** Optional. Internally used by the designer.

**Description:** Max parallel number during the bulk upgrade.

**Default:** 8

**Example:**

-np 8

[10] -a [CRT | MAJ] -an [number]

**Requirement:** Optional.

**Description:** The allowed highest alarm level during the upgrade, and the allowed max alarm number during the upgrade. It is a dynamic alarm checking values. If the current alarm state has higher priority than is defined here, the upgrade program will be paused and the end user is notified of this.

For examples, if we specify “-a MAJ -an 2” in config step:

- If there are 3 MAJ alarms raised in the EM Server for this pair, the upgrade tool will be paused.

- If there is 1 MAJ alarm raised in the EM Servers for this pair, the upgrade tool will ignore it and continue the upgrade process.
- If there is 1 CRT alarm raised in the EM Server for this pair, the upgrade tool will be paused too because CRT has high priority than the MAJ alarms.

**Default:** MAJ 2

**Example:**

```
-a CRT -an 2
```

```
[11] -sid sid
```

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
scuptool.sh -config -f 11.0.0.047231351 -sid
312308CDA87F5C7ECD3185F639892BC2
```

Note: This option is not a part of configuration.

A whole command format likes:

```
scuptool.sh -config -f 11.0.0.047231351 -o 10.0.0.047231351 -m bulk -p '1,3' -d CRT -
n 'SC1' -t 120 -np 16 -a CRT -an 4 -sid 312308CDA87F5C7ECD3185F639892BC2
```

### 1.5.2.3 Prepare the necessary steps for getting the tool and system ready prior to the actual upgrade.

```
scuptool.sh -prep [-sid sid]
```

Command description:

Shows the end user the necessary preparations that include upgrade steps and order, notes and warnings.

The following actions should be checked in prepare command:

- 1 Check the load available in SDM/CBM.
- 2 Make an upgrade plan for the SC and calculate the estimated time of the upgrade.

Options:

```
[1] -sid
```

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level

upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
scuptool.sh -prep -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.5.2.4 Pre-check relevant EM and configured SC states including alarms.

```
scuptool.sh -precheck -n <SC list> [-sid sid]
```

Command description:

Pre-check the necessary conditions before upgrade.

If there is no SC list, the configured SC list will be used instead.

Perform the following actions:

- 1 SAM21EM server status
- 2 Load is available on the load server.
- 3 Alarm status.
- 4 Hardware level health check. If the pair has two physical units, check both of them are in service.
- 5 Whether the inactive unit is in hot-standby.

[1] -n <SC List>

**Requirement:** Internally used by the MOP automation tool

**Description:** SC pairs which should be upgraded. If there is no given SC list, the configured SC list will be used instead.

[2] -sid sid

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
scuptool.sh -precheck -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.5.2.5 Upgrade configured SC with configured options.

```
scuptool.sh -up [-n <SC list>] [-sid sid]
```

Command description:

The command does the real upgrade work. You still perform the pre-check / post-check in this command. During the upgrade, the client side will display the logs sent from the server side. Also, the end user may need to answer some question or do some confirmation for different conditions. If the end user enabled break points, this tool will work in interactive mode.

If there is no SC list, the configured SC list will be used instead.

Note: Must prompt the end user to do the pre-check before upgrading. The pre-checked SC list is stored in the server side. If there is no pre-checked SC, the server will refuse upgrading.

[1] -n <SC List>

**Requirement:** Internally used by the MOP automation tool

**Description:** SC pairs which should be upgraded. If there is no given SC list, the configured SC list will be used instead.

[2] -sid sid

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
scuptool.sh -up -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### 1.5.2.6 Post-check upgraded SC states including alarms.

```
scuptool.sh -postcheck [-n <SC list>] [-sid sid]
```

Command description:

Do the post-check for the given SC pairs.

If there is no SC list, the configured SC list will be used instead.

The following status will be checked:

- Hardware status from SAM21EM.
- Alarm state

[1] -n <SC List>

**Requirement:** Internally used by the MOP automation tool

**Description:** SC pairs which should be upgraded. If there is no given SC list, the configured SC list will be used instead.

[2] -sid sid

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
scuptool.sh -postcheck -sid
312308CDA87F5C7ECD3185F639892BC2
```

### 1.5.2.7 Query upgrade states in progress.

```
scuptool.sh -query [-n <SC list>] [-sid sid]
```

Command description:

Query the status of SC pairs and the upgrade status.

The status includes two parts. If there is no upgrading SC, then no part A status exists.

If there is no SC list, the configured SC list will be used instead.

- Upgrade status report.

The report includes the following items:

- SC-ID: e.g. SC3
- Current upgrade step: e.g. SWACT.
- Spent time: e.g. 4 minutes
- Time left: e.g. about 5 minutes.

- B. Unit status report

The report items:

- SC Unit name: SC Unit IP
- SC load information. Upgraded or not.
- Status from SAM21EM

[1] -n <SC List>

**Requirement:** Internally used by the MOP automation tool

**Description:** SC pairs which should be upgraded. If there is no given SC list, the configured SC list will be used instead.

[2] -sid sid

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**

```
scuptool.sh -query -sid
312308CDA87F5C7ECD3185F639892BC2
```

### 1.5.2.8 Query SC information and list them.

```
scuptool.sh -query -n all [-sid sid]
```

Command description:

Used to query all SC information including name, ip and state.

This command reuses the “scuptool.sh -query” interface, it can list all SCs’ information.

**Example:**

```
scuptool.sh -query -n all -sid
312308CDA87F5C7ECD3185F639892BC2
```

### 1.5.2.9 Query configurations currently used.

```
scuptool.sh -config -list [-sid sid]
```

Command description:

Queries current configurations. It reuses the “scuptool.sh -config” interface.

Example:

```
scuptool.sh -config -list -sid
312308CDA87F5C7ECD3185F639892BC2
```

### 1.5.2.10 Stop upgrade manager server.

```
scuptool.sh -stop [-sid sid]
```

Command description:

Stop upgrade server.

Options:

[1] -sid

**Requirement:** Internally used by the MOP automation tool

**Description:** Provides session ID upgrade manager uses. The upper-level upgrade manager can provide a valid session ID to avoid re-login. The end user need not input this option.

**Default:** 0

**Example:**



```
scuptool.sh -stop -sid
312308CDA87F5C7ECD3185F639892BC2
```

#### **1.5.2.10.1 Help of the functions.**

```
scuptool.sh -start -h
scuptool.sh -config -h
scuptool.sh -prep -h
scuptool.sh -precheck -h
scuptool.sh -up -h
scuptool.sh -postcheck -h
scuptool.sh -query -h
scuptool.sh -stop -h
```

Command description:

Shows the end user the help facilities of the functions. It includes function description, option meaning and usage.

Appendix 2 gives you an example of how you use these separate commands to achieve a complete upgrade task.

## **1.6 Hardware Requirements or Dependencies**

No new hardware or hardware dependencies are introduced.

## **1.7 Software Requirements or Dependencies**

No new customer software or firmware dependencies are introduced in this feature.

## **1.8 Limitations and restrictions**

The limitations and restrictions work on both the GWC and SC upgrade manager except for the items specified.

- 1** For Upgrade Manager Phase I, the upgrade tools must be running in the same SSPFS box with GWCEM/SESM and SAM21EM.
- 2** This version will not support multiple users. But the end user can upgrade GWC nodes or SC pairs in parallel.
- 3** This version does not support automatically downgrade. The end user must downgrade NE manually.
- 4** Both the GWC and SC upgrade server only provide support for a full node upgrade. They do not allow a single card/unit to be upgraded.

## 1.9 Interactions

No interactions between this feature and existing features.

### Appendix 1: An example of how to use `gwcuptool.sh` to complete GWC upgrade in an office.

For SN08, the GWC upgrade order is:

- 1 Audio
- 2 BICC (UA-AAL1 solutions only)
- 3 VRDN
- 4 Session Server (SN08 to SN08 upgrades only)
- 5 SIP-T/APG/RA
- 6 APG/RA
- 7 SIP-T/APG
- 8 APG
- 9 SIP-T
- 10 Trunk
- 11 H.323 (new in SN06.2)
- 12 Proxy [RTP MP])
- 13 V5.2 Trunk
- 14 Lines (includes CICM)

Assumption:

- |                |                        |
|----------------|------------------------|
| 1 Audio        | GWC-1, GWC-3, GWC-5    |
| 2 BICC         | GWC-7, GWC-9, GWC-11   |
| 3 VRDN         | GWC-13, GWC-15, GWC-17 |
| 4 SIP-T/APG/RA | GWC-19, GWC-21, GWC-23 |
| 5 APG/RA       | GWC-25, GWC-27, GWC-29 |
| 6 SIP-T/APG    | GWC-31, GWC-33, GWC-35 |
| 7 APG          | GWC-37, GWC-28, GWC-39 |
| 8 SIP-T        | GWC-32, GWC-34, GWC-36 |
| 9 Trunk        | GWC-26, GWC-28, GWC-30 |

|    |                       |                        |
|----|-----------------------|------------------------|
| 10 | H.323 (new in SN06.2) | GWC-20, GWC-22, GWC-24 |
| 11 | Proxy [RTP MP])       | GWC-14, GWC-16, GWC-18 |
| 12 | V5.2 Trunk            | GWC-8, GWC-10, GWC-12  |
| 13 | Lines (includes CICM) | GWC-2, GWC-4, GWC-6    |

**Note:** You also can get the information by using the “gwcuptool.sh query -n all” command.

**Step 1: Create a soak image on GWC-1. (Which GWC is selected is determined by yourself.)**

Create the SSH communication channel.

```
ssh
```

//start um server by inputting the following command:

```
gwcuptool.sh -start
```

//If this fails, upgrade-man checks the CORBA naming service and EM server state.

///Retry after checking.

//configure all options for upgrading the first GWC and creating the soak image:

```
gwcuptool.sh -config -pa "/swd/gwc/" -f pn080ak.imag
-m single -p 5 -d VRB -n "GWC-1" -t 120 -a CRT -an 4
//If this fails, check retry or abort.
```

//print what upgrade-man needs to prepare:

```
gwcuptool.sh -prep
```

//Pre-check configured GWC;

```
gwcuptool.sh -precheck
```

//If this fails, check and retry or abort.

//Upgrade configured GWC:

```
gwcuptool.sh -up
```

//If this fails, check and retry or abort.

//Post-check configured GWC:

```
gwcuptool.sh -postcheck
```

//If this fails, check and retry or abort.

//Stop um server:

```
gwcuptool.sh -stop
//If this fails, check and retry or abort.
```

**Step 2: Using the soak image to upgrade other GWCs.**

Create the SSH communication channel.

```
ssh
```

```
//start um server.
```

```
gwcuptool.sh -start
//If this fails, check and retry or abort.
```

```
//Query available GWC. Shell will print out name, ip etc.:
```

```
gwcuptool.sh -query -n all
```

```
//Configure all options for upgrading. Pause points are removed for bulk
//upgrading. Upgrade-man can select the GWC list for configuration by above
//one command:
```

```
gwcuptool.sh -config -pa "/swd/gwc/" -f pn080ak.imag
-m bulk -d VRB -n 'GWC-7,GWC-9,GWC-11' -t 120 -a CRT
-an 4
```

```
//If this fails, check and retry or abort.
```

```
//Print what upgrade-man needs to prepare:
```

```
gwcuptool.sh -prep
```

```
//Pre-check configured GWC:
```

```
gwcuptool.sh -precheck
//If this fails, check and retry or abort.
```

```
//Upgrade configured GWC:
```

```
gwcuptool.sh -up
//If this fails, check and retry or abort.
```

```
//Upgrade-man can query the upgrading state until the upgrade completes:
```

```
gwcuptool.sh -query
//If this fails, check and retry or abort.
```

```
//Post-check configured GWC:
```

```
gwcuptool.sh -postcheck
//If this fails, check and retry or abort.
```

```
//Stop um server:
```

```
gwcuptool.sh -stop
//If this fails, check and retry or abort.
```

## Appendix 2: An example of how to use scuptool.sh to complete SC upgrade in an office.

Assumption: There are a total of 8 SC pairs in an office. They are from SC1 to SC8.

### Step 1: Upgrade one SC. Pause at all pause points to make upgrade-man has chance to verify.

Create the SSH communication channel:

```
ssh
```

//start um server by inputting the following command:

```
scuptool.sh -start
```

//If this fails, upgrade-man checks the CORBA naming service and EM server state. Retry after checking.

//configure all options for upgrading the first SC:

```
scuptool.sh -config -pa "/swd/sam21/" -f
11.0.0.0.2222 -m single -p 4 -d VRB -n SC1 -t 120 -a
CRT -an 4
```

//If this fails, check, retry or abort.

//print what upgrade-man needs to prepare:

```
scuptool.sh -prep
```

//Pre-check configured SC:

```
scuptool.sh -precheck
```

//If this fails, check and retry or abort.

//Upgrade configured SC:

```
scuptool.sh -up
```

//If this fails, check and retry or abort.

//Post-check configured SC:

```
scuptool.sh -postcheck
```

//If this fails, check and retry or abort.

//Stop um server:

```
scuptool.sh -stop
```

//If this fails, check and retry or abort.

**Step 2: Bulk upgrading other SCs. No pause point.**

Create the SSH communication channel:

```
ssh
```

//start um server:

```
scuptool.sh -start
```

//If this fails, check and retry or abort.

//Query SC information:

```
scuptool.sh -query -n all
```

//Configure all options for upgrading:

```
scuptool.sh -config -pa "/swd/sam21/" -f
11.0.0.0.2222 -m bulk -d VRB -n 'SC1,SC2,SC3' -t 120
-a CRT -an 4
```

//If this fails, check and retry or abort.

//Print what upgrade-man needs to prepare:

```
scuptool.sh -prep
```

//Pre-check configured SC:

```
scuptool.sh -precheck
```

//If this fails, check and retry or abort.

//Upgrade configured SC:

```
scuptool.sh -up
```

//If this fails, check and retry or abort.

//Upgrade-man can query upgrading state until upgrade completes:

```
scuptool.sh -query
```

//If this fails, check and retry or abort.

//Post-check configured SC:

```
scuptool.sh -postcheck
```

//If this fails, check and retry or abort.

//Stop um server:

```
scuptool.sh -stop
```

//If this fails, check and retry or abort.

## Appendix 3: Upgrade mode examples in GWC upgrade tool

Here is an example where we can explain the GWC upgrade mode much more clearly.

In the customer office, there are the following GWCs:

Audio GWC: GWC-1

Trunk GWC: GWC-12, GWC-13, GWC-14

Line GWC: GWC-5, GWC-6, GWC-7, GWC-8, GWC-9, GWC-10

Based on the “Upgrading the Gateway Controller, NN10196-461”, we need to upgrade the Audio GWC first, then the Trunk GWCs, and the Line GWCs last.

### **In the single mode: running with “gwcuptool.sh -config -f NewLoadFileName -m single”**

GWCs will be upgraded one by one, and obey the service type order. So the upgrade order will be:

- 1 GWC-1 (Audit GWC. apply patch; create soak image for other GWCs)
- 2 GWC-12 (Trunk GWC)
- 3 GWC-13 (Trunk GWC)
- 4 GWC-14 (Trunk GWC)
- 5 GWC-5 (Line GWC)
- 6 GWC-6 (Line GWC)
- 7 GWC-7 (Line GWC)
- 8 GWC-8 (Line GWC)
- 9 GWC-9 (Line GWC)
- 10 GWC-10 (Line GWC)

### **In the bulk mode: running with “gwcuptool.sh -config -f NewLoadFileName -m bulk”**

All GWCs within the same service type will be upgraded at the same time. the upgrade order will be:

- 1 GWC-1 (Audit GWC. apply patch; create soak image for other GWCs)
- 2 GWC-12, GWC-13, GWC-14 (Trunk GWC)
- 3 GWC-5, GWC-6, GWC-7, GWC-8, GWC-9, GWC-10 (Line GWC)

**In mix mode: running with “gwcuptool.sh -config -f NewLoadFileName -m mix”**

The first GWC node within the same service type group will be upgraded first, then all other GWCs in the same group will be upgraded in parallel at the same time. The upgrade order will be:

- 1 GWC-1 (Audit GWC, apply patch, create the soak image for other GWCs)
- 2 GWC-12 (Trunk GWC)
- 3 GWC-13, GWC-14 (Trunk GWC)
- 4 GWC-5 (Line GWC)
- 5 GWC-6, GWC-7, GWC-8, GWC-9, GWC-10 (Line GWC)

## 1.10 Glossary

| Term     | Explanation                                    |
|----------|------------------------------------------------|
| CS2M     | CS2000 Management Components                   |
| SESM     | Succession Element Sub-element Manager         |
| SAM21 EM | CS2000 SAM21 Manager                           |
| NPM      | Network Patch Manager                          |
| SSPFS    | Succession Server Platform Foundation Software |
| CLUI     | Command line user interface                    |
| CLI      | Command line interface.                        |
| SDM      | SuperNode Data Manager                         |

***Product = MG 9000***

**A00007213--MG9000 5/30 minutes OMs**

***Functional Description***

### 1.1 Applicable Solution(s)

UA-AAL1



## 1.2 Description

This feature consists of following deliverable.

1. This feature allows the user to configure Sample interval and Summary intervals on SN08 MG9K from MG9KEM. This configuration is supported through a new configuration GUI "Configure Collection Interval", which will be introduced under the submenu option MG9KEM Subnet view ->Performance. All the MG9Ks in a Subnet are configured with same intervals.

In SN08, user is allowed to select following combinations of Sample and Summary intervals from GUI.

- Sample and Summary intervals of 5 and 30 minutes respectively.
- Sample interval of 15 minutes and no Summary interval.

In the new configuration GUI, Sample and Summary intervals are specified in terms of minutes.

Example: For the Sample and Summary intervals of 5 and 30 minutes, user has to select the value "5/30 minutes" in the GUI. For the 15 minutes Sample interval, user has to select the value "15 minutes" in the GUI.

2. Whenever Collection intervals are changed, Performance browser and OM Collector behave as follows.
  - OM Collector will start collecting OMs at new collection intervals, starting from next collection interval.
  - After Collection interval is changed, if User tries to collect performance data, Performance browser will collect OMs at new Sample collection interval.

Refer to the limitation mentioned in section 2.5.

3. Following changes are done in Performance browser.
  - The intervals shown in Performance browser are based on the Sample interval. That means, intervals shown in the fields "From" and "To" of Performance browser are based on Sample interval.

Note that, Only Sample intervals are shown on Performance browser. 96 intervals are shown irrespective of sample interval value.

4. OM Collector generates CSV files named with appropriate tag to indicate the collection interval of the OM data, which is stored in CSV file. To be inline with the tag used today for 15 minutes interval, following tags will be used for new intervals in SN08.

For 5 minutes interval: 5\_MIN\_TRAFFIC

For 30 minutes interval: 30\_MIN\_TRAFFIC

CSV filename convention:

<NEType>.<NodeName>.OMs.<ReportName>.<Year>.<Month>.<Day>\_<Hour>.<Minute>\_<TimeZone>.<fileextension>

Example CSV file names:

- MG9000.CO18.OMs.5\_MIN\_TRAFFIC.2003.06.06\_13.15\_EDT.csv
- MG9000.CO18.OMs.15\_MIN\_TRAFFIC.2003.06.06\_13.15\_EDT.csv
- MG9000.CO18.OMs.30\_MIN\_TRAFFIC.2003.06.06\_13.15\_EDT.csv

5. Once CSV file is generated successfully, OM Collector sends CORBA notification with following information.
  - Source IP address (IP address of the EM workstation, where CSV file is available. In a HA system, this is the Virtual IP address).
  - CSV filename with complete path
  - NE IP address (IP address of the NE for which the CSV file is generated)
6. When OMs are not available, reason for the same would be available in the SFTP response. When OMs are not available, OM Collector will raise a minor alarm. OM Collector will try to extract the reason from SFTP response and will put the same in appropriate field/s of the alarm. OM Collector also logs these alarms in Customer log. OM Collector will clear the alarm when OMs are available again.
7. OM Collector is integrated with MG9KEM as detailed below
  - Configuration of OM Collector will be integrated with that of MG9KEM server.
  - OM Collector will be started and stopped along with MG9KEM server.

Even though OM Collector is brought inside MG9KEM, OM Collector is retained as a separate JAR and is delivered as a separate package.

### 1.3 Hardware Requirements or Dependencies

None

### 1.4 Software Requirements or Dependencies

This feature depends on A00007107 (MG9K feature to support 5/30 minutes).  
This feature requires A00007107 at least by the time of its Integration testing.

With reference to the requirement #5 mentioned in [1], this feature sends a notification. The IEMS feature A00007388 (MG9K Performance integration). uses this notification. Hence, IEMS feature A00007388 depends on the delivery of A00007213.

## 1.5 Limitations and restrictions

When MG9KEM changes Collection interval, any data collected by OM Collector and/or Performance browser till the end of current collection interval after MG9KEM changes collection intervals, may not be accurate. Following paragraphs explains the reason for this.

### Example #1:

Let us consider that, MG9KEM changes the collection intervals say from 15 to 5/30 minutes, at 9:06 AM. In this scenario, MG9KEM and OM Collector will switch over starting from next collection interval time as explained below.

- OM Collector will collect new Sample interval (i.e, 5 min in this example) starting from 9:10 AM and Summary interval starting from 9:30 AM.
- Performance browser will changeover immediately. i.e, it will show Collection time period in terms of new Sample collection interval.

However, MG9K changes over to new collection interval at end of current collection interval (i.e., at 9:15 AM in the scenario explained above). Also, MG9K flushes its history performance data at 9:15 AM.

Because of this behavior difference between MG9K and MG9KEM PM components (i.e., performance browser and OM Collector), any data collected by OM Collector and/or Performance browser till and including 9:15 AM, may not be accurate.

### Example #2:

Let us consider that, MG9KEM changes the collection intervals say from 5/30 to 15 minutes, at 9:06 AM. In this scenario, MG9KEM and OM Collector will switch over starting from next collection interval time as explained below.

- OM Collector will collect new Sample interval (i.e, 15 min in this example) starting from 9:15 AM.
- Performance browser will changeover immediately. i.e, it will show Collection time period in terms of new Sample collection interval.

However, MG9K changes over to new collection interval at end of current collection interval (i.e., at 9:10 AM in the scenario explained above). Also, MG9K flushes its history performance data at 9:10 AM.

Because of this behavior difference between MG9K and MG9KEM PM components (i.e., performance browser and OM Collector), any data collected by OM Collector and/or Performance browser till and including 9:15 AM, may not be accurate.

## 1.6 Interactions

This feature interacts with the SN07 feature, A00003531 (MG9KEM - Frame location enhancements) as follows;

- The SN07 feature A00003531 replaces Internal frame number by Office frame number in the CSV files for 15 minutes interval. This capability is utilized in SN08 for the new intervals 5 and 30 minutes also.
- This feature uses the capability introduced by A00003531 to either enable or disable OM data collection for a particular MG9K.

## 1.7 Glossary

| Term                            | Description                                                                                                                                                                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collection interval or interval | Time interval for which MG9K either periodically or upon request from application such as OMC, generates performance data.                                                                                                                                                                                               |
| Collection time period          | This is the time period shown in Performance browser. User is allowed to select one or more collection intervals from this time period and can request to collect history data for those many number of past intervals. Based on the Sample collection interval, Collection intervals are shown within this time period. |
| EM                              | Element Manager                                                                                                                                                                                                                                                                                                          |
| Internal (logical) frame number | Frame number, which is unique within a MG9K                                                                                                                                                                                                                                                                              |
| MG9K                            | Media Gateway 9000                                                                                                                                                                                                                                                                                                       |
| MIB                             | Management Information Block.<br><br>RFC-driven MIBs are standard MIBs defined in RFC. Enterprise MIB is one written by Nortel.                                                                                                                                                                                          |
| Office (External) frame number  | Frame number, which is unique within an office                                                                                                                                                                                                                                                                           |
| OM                              | Operational Measurement                                                                                                                                                                                                                                                                                                  |

| Term                | Description                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| OMC                 | OM Collector                                                                                                                                              |
| Performance Browser | It is a component of MG9K EM. It collects performance data (both previous and current) from MG9K through SNMP interface and shows them in tabular format. |
| PV                  | Product Verification                                                                                                                                      |
| Sample Interval     | The interval which the MG collects and stores OM information in its MIBs. Interval to be 5 or 15 minutes                                                  |
| Summary Interval    | An aggregation of sample intervals calculated at the MG. This interval is expected to be 30 (6x5) or 1.                                                   |

## 1.8 Recommended Reading/References

[1] A00007213\_5\_30\_MINUTE\_OM\_DID.fm Version 1.0

[2] A00007107\_OMs\_5\_30.doc Version 1.0

## 2: Fault Management for A00007213

### 2.1 Fault management strategy

This feature uses the existing MG9KEM Fault management framework to raise and clear alarms.

### 2.2 Fault management tools and utilities

NA

### 2.3 Logs

#### 2.3.1 Log Title/Log ID: OMC300

##### 2.3.1.1 Formats

MSH10\_I06BR \*\*\* OMC300 JUN20 15:29:20 4642 TBL OMDataCollectionFailed

Location: 1-RM9K

Notification Id:1000

State: not acknowledged

Category: Communication Alarm

Cause: Communications Subsystem Failure

Time: Jun 20 15:29:20 2003

Component Id: MG9k EM Comm Network  
Specific Problem: OM data collection failed  
Description:  
Site Flr RPos Bay\_id  
FFFF FF FFF FFFF FFF

#### **2.3.1.2 Explanation**

Description: Log report OMC300 indicates that OM Collector failed to collect OM file from MG9K during a particular collection interval.

### 2.3.1.3 Field descriptions

Table 1: Field descriptions

| Field            | Value             | Description                                                                                           |
|------------------|-------------------|-------------------------------------------------------------------------------------------------------|
| event type       | TBL               | Describes event type                                                                                  |
| event id         | string            | Log name. In this case, it is OMC300                                                                  |
| Location         | NE Number-NE Name | Gives a complete location of the originator                                                           |
| Notification Id  | Alarm if          |                                                                                                       |
| State            | string            | Indicates state of alarm. Can be one of {not acknowledged, acknowledged, cleared}                     |
| Category         | string            | Indicates type of fault. In this case it is "Communication Alarm"                                     |
| Cause            | string            | Cause of failure: In this case it is "Communications Subsystem Failure"                               |
| Time             |                   | Date/Time indicating when the condition occurred                                                      |
| Component Id     | string            | Indicates the type of equipment having the fault.                                                     |
| Specific Problem | string            | Indicates the specific problem that caused the fault                                                  |
| Description      | string            | Provides specific text for the fault.<br><br>In this case, it consists of Frame location information. |

### 2.3.1.4 Action

Check the following

- whether MG9K is traffic overloaded.

### 2.3.1.5 Associated Operational Measurements or Performance Measurements

None

### 2.3.1.6 Additional information

Following is a list of reasons for the generation of the log report OMC300.

- MG9K is traffic overloaded
- Disk may be full. Hence, the OM Collector is not able to store the downloaded OM file.
- Gateway user id and password mentioned may be wrong
- OM file details mentioned in the SFTP request may be wrong

## 2.3.2 Log Title/Log ID: OMC300

### 2.3.2.1 Formats

MSH10\_I06BE OMC300 APR23 08:50:10 5176 INFO OM Collection failed  
Alarm Cleared

Location: 1-RM9K (Act)

Description: OM collection failed alarm cleared.

### 2.3.2.2 Explanation

Description: Log report OMC300 indicates that OM Collector could restart collecting OM file from MG9K, for which it had problem.

### 2.3.2.3 Field descriptions

Table 2: Field descriptions

| Field       | Value             | Description                                 |
|-------------|-------------------|---------------------------------------------|
| event type  | INFO              | Describes event type                        |
| event id    | string            | Log name. In this case, it is OMC300        |
| Location    | NE Number-NE Name | Gives a complete location of the originator |
| Description | string            | Provides specific text for the fault        |

### 2.3.2.4 Action

This log report requires no action.

### 2.3.2.5 Associated Operational Measurements or Performance Measurements

None



### 2.3.2.6 Additional information

None

## 2.4 Alarms

### 2.4.1 Integrated Element Manager GUI Fields

Table 3: IEMS Alarm GUI Field descriptions

| Field           | Value                                        |
|-----------------|----------------------------------------------|
| Severity        | Minor                                        |
| Category        | Communication Alarm                          |
| LogName         | OMC                                          |
| LogNumber       | 300                                          |
| EventType       | TBL                                          |
| EventLabel      | TBD                                          |
| ProbableCause   | Communications Subsystem Failure             |
| SpecificProblem | OM data collection failed                    |
| BodyText        | Site Flr RPos Bay_id<br>FFFF FF FFF FFFF FFF |

### 2.4.2 SNMP Northbound Alarm Event (Non-legacy logs only)

NA (Alarm raised for this feature are EM specific)

### 2.4.3 Explanation

Description: OM Collector could not collect OM file for a particular NE for a particular collection interval. Severity: Minor

### 2.4.4 Action

Check the following

- whether MG9K is traffic overloaded.

### 2.4.5 Corresponding Clear Log

Log Title: **OMC300**

#### 2.4.5.1 Format

MSH10\_I06BE OMC300 APR23 08:50:10 5176 INFO OM Collection  
failed Alarm Cleared  
Location: 1-RM9K (Act)  
Notification Id: 1000  
State: Cleared

Description: OM collection failed alarm cleared.

#### **2.4.5.2 NTSTD**

MSH10\_I06BE OMC300 APR23 08:50:10 5176 INFO

Location: 1-RM9K

Notification Id: 1000

State: Cleared

Time: APR23 08:50:10 2004

#### **2.4.5.3 SCC2**

19 OMC 300 5176 INFO

Location: 1-RM9K

Notification Id: 1000

State: Cleared

Time: APR23 08:50:10 2004

#### **2.4.5.4 Syslog**

Feb 24 19:19:43 wnc0s0pf IEMS:

\_V2\_~I=~H=wnc0s0pf~A=IEMS~S=0618~~ OMC300 NONE INFO ^M

Location: 47.166.56.10^M Notification Id: 13^M State: Cleared^M

Time: Jan 24 19:19:49 2004

#### **2.4.5.5 SNMP**

NA (since, these alarm are originated from EM)

### **2.5 Related documentation**

[1] A00007213 FN

## **3: Configuration for A00007213**

### **3.1 Hardware and Software Requirements**

None

### **3.2 Initial Configuration**

NA

### **3.3 Office/Subnet parameters (OP/SP) (CM & SESM)**

NA

## 3.4 Upgrade Considerations

### 3.4.1 Element Management Upgrade

#### 3.4.1.1 Element Management Upgrade from SN07 to SN08

Here are the steps to upgrade MG9K Manager software from SN07 to SN08.

1. Stop SN07 OM Collector (Refer to note #1 in this section).
2. Uninstall SN07 OM Collector package
3. Install SN08 EM package (Note that, user is not allowed to install SN08 EM server package if SN07.x OMC package exists)
4. Install SN08 OMC.
5. Start SN08 MG9KEM

All the MG9Ks in a subnet are configured with same collection intervals. SN07 MG9K support 15 minutes Collection interval. Hence, Collection interval is not allowed to be set to anything other than 15 minutes until all MG9Ks are upgraded to SN08.

Note #1: SN07 OMC keeps CSV files in /data/oms/1. If SN08OMC is also configured to keep CSV files in /data/oms/1, then we will have problem if SN07 OMC is also left running, since both would try to write CSV file into the same directory. To avoid this problem, step #1 shall be performed before step #5.

#### 3.4.2.2 Element Management Upgrade from SN06.x to SN08

Here are the steps to upgrade MG9K Manager software from SN06/SN06.2 to SN08.

1. Start SN08 MG9KEM
2. Consider one SN06.x NE at a time. Before performing step #3, delete the NE from SN06.2 OMC (Refer to note #1 and #2)
3. When the NE is upgraded to SN08 software, enable OM collection for SN06.2 NEs in SN08 MG9KEM.
4. Repeat step #2 and #3 for each NE.

Note #1: The reason for performing step #2 after step #1 is as follows. After step #1, older NEs would be upgraded to SN08. If there are more older NEs, then this would take relatively more time. If we remove all the NEs from SN06.x OMC immediately after step #1, then we would lose OM data for the period wherein older NEs are upgraded to SN08.

Note #2: The reason for performing step #2 before step #3 is as follows. SN08 NE support SFTP and SN06.2 OMC supports only FTP. If NE still exists in

SN06.2 OMC even after NE is upgraded to SN08 (i.e, step #3), then data collection would fail.

### 3.4.2 Downgrade impact

#### 3.4.2.1 Element Management Upgrade from SN08 to SN07/SN06.x

When collection interval is 5/30 minutes, if a NE is downgraded to older release, then disable OM collection for the downgraded NE. With this, OMC does not collect data for the downgraded NE. The reason is that, downgraded NE can not collect at 5/30 minutes.

## 3.5 Data schema (DS) (CM, MIBS, RDB)

### 3.5.1 New/modified tables, MIBs, or Database Schema

Table 4 New or modified tables

| Table/MIB name       | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------------|--------------------------|------------------------------------|
| OFFICE_WIDE_DEFAULTS | Changed                  | Unchanged                          |

### 3.5.2 Table/MIB/Remote Database Schema information

#### 3.5.2.1 Name: OFFICE\_WIDE\_DEFAULTS

Office wide defaults Database table.

##### 3.5.2.1.1 Functional description

One more entry is made in this existing database table to store Collection intervals.

##### Impact on existing functionality of enabling/disabling of OM collection:

When OM Collection is enabled or disabled for a NE through GUI, the database variable OMCSTATUS in the database table NODE\_ATTRIBUTES will be set to enabled.

While a pre SN08 NE is discovered, current collection interval (which is configured at EM) will be checked. If it is 5/30 minutes, the database variable OMCSTATUS will be set to disabled. In turn, OM collection will be disabled from next collection cycle.

##### Impact on discovery of NE:

While a SN08 NE is discovered, current collection interval (which is configured at EM) will be pushed to the NE. In case the push fails, discovery would still continue. The mismatch will be rectified when NE is audited next time.

### 3.5.2.1.2 Usage sequence and implications (CM Only)

None

### 3.5.2.1.3 Size

**Table 5 Table size**

| Abbreviated table name | Minimum tuples             | Maximum tuples                          | Information on memory                 |
|------------------------|----------------------------|-----------------------------------------|---------------------------------------|
| OFFICE_WIDE_DEFAULTS   | Same as current table size | One more entry than current table size. | Memory requirement is less than 1 KB. |

### 3.5.2.1.4 Fields/OIDs

The following table lists fields/OIDs for OFFICE\_WIDE\_DEFAULTS

**Table 6 Table field descriptions**

| Field          | New or Changed | Subfield or refinement | Entry                                    | Explanation and action |
|----------------|----------------|------------------------|------------------------------------------|------------------------|
| DFLT_NAME      | Changed        | NA                     | New value "Collection_Interval" is added |                        |
| DFLT_SUBSYSTEM | Changed        | NA                     | OMC                                      |                        |
| DFLT_VALUE     | Changed        | NA                     | Default value is "15 Minutes"            |                        |

### 3.5.2.1.5 Datafill example

None

### 3.5.2.1.6 Table release history update

One more entry is made in the table OFFICE\_WIDE\_DEFAULTS, to store the Collection intervals. This entry is made either during major release upgrade or during SN08 MR upgrade.

### 3.5.2.1.7 Supplementary information

The Collection interval value stored in the table OFFICE\_WIDE\_DEFAULTS is applicable for all the NEs present in the subnet.

### 3.5.2.1.8 Translation verification and other tools

None

## 3.6 Service Orders (SO) (CM & SESM)

NA

## 3.7 Software optionality control (SOC)

NA

## 3.8 Element Management

### 3.8.1 New/modified GUIs

Table 7 New or modified GUIs

| GUI name                       | NEW, CHANGED, or DELETED |
|--------------------------------|--------------------------|
| Configure Collection Interval  | New                      |
| Performance Statistics Browser | Changed                  |

### 3.8.2 GUI information

#### 3.8.2.1 GUI name: Configure Collection Interval

##### 3.8.2.1.1 Functional description

This new GUI is introduced under the submenu option MG9KEM Subnet view ->Performance. This GUI allows users to configure Sample and Summary intervals uniformly for all SN08 MG9Ks in a Subnet. If there are no MG9Ks in a subnet, the configured collection interval will just be stored in database.

Sample and Summary intervals are specified in terms of minutes. In SN08, the user is allowed to select following combinations of Sample and Summary intervals.

- Sample interval of 5 minutes and Summary interval of 30 minutes. This is shown as “5/30 minutes” in the GUI.
- Sample interval of 15 minutes and no Summary interval. This is shown as “15 minutes” in the GUI.

If Collection intervals are not configured from the GUI “Configure Collection Interval”, they will have the default value “15 minutes”.

##### Impact on existing functionality of enabling/disabling of OM collection:

OM collection can be enabled for a MG9K through the “OMCollection” check box provided in the existing GUIs, “MG900 Provisioning”, “NE Properties”. Refer to A00003531 CN for more details. In association with this existing capability of enabling OM collection, the GUI “Configure Collection Interval” affects OM collection as follows.

- When OMC is running, if OM collection is enabled for a MG9K, OMC will start collecting OM data at the Collection intervals.
- If collection interval is 5/30 minutes, the OMC checkbox is disabled for pre-SN08 NEs.

Impact on working of OMC and Performance Browser:

Whenever Collection intervals are changed, Performance browser and OM Collector behave as follows.

- OM Collector will start collecting OMs at new collection intervals, starting from next collection interval.
- After Collection interval is changed, if User tries to collect performance data, Performance browser will collect OMs at new Sample collection interval.

### 3.8.2.1.2 GUI usage and implications

None

### 3.8.2.1.3 GUI size

**Table 8 New or modified GUIs**

| Abbreviated GUI name          | Minimum instances | Maximum instances | Information on memory |
|-------------------------------|-------------------|-------------------|-----------------------|
| Configure Collection Interval | 1                 | 1                 | TBD                   |

### 3.8.2.1.4 GUI fields

The following table lists fields for GUI “Configure Collection Interval”.

**Table 9 GUI field descriptions**

| Field               | New or Changed | Subfield | Entry                                                                              | Explanation and action                                                                                                                                                                                                                                                                                                    | Associated MIB entry                                                                                                                                                          |
|---------------------|----------------|----------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collection Interval | New            | None     | <ul style="list-style-type: none"> <li>5/30 minutes</li> <li>15 minutes</li> </ul> | <ul style="list-style-type: none"> <li>A value “5/30 minutes” specifies Sample and summary collection intervals of 5 and 30 minutes respectively.</li> <li>A value “15 minutes” specifies Sample and summary collection intervals of 15 minutes and none respectively.</li> <li>Default value is “15 minutes”.</li> </ul> | <p><u>MIB name:</u><br/>NORTEL-UEMG-BASE.mib</p> <p><u>Table name:</u> None</p> <p><u>Attributes:</u><br/>nnUemgOMStandardInterval and<br/>nnUemgOMExtendedIntervalMulti.</p> |

The following paragraphs explain about the option/s shown in this field, during different scenarios.

#### **Scenarios wherein there is mix of NEs:**

If either undiscovered or pre-SN08 NE exists along with SN08 NE(s), then only currently configured collection interval will be shown. This is explained with below examples.

##### **Example #1:**

Step 1/ Let say just one or more SN08 NEs exist and collection interval is set to X minutes (15 or 5/30).

Options shown are; 15 and 5/30 minutes

Step 2/ A new NE is added and is not discovered.

Note: EM can not make out the NE version of a discovered NE. So. EM will it consider this as a “mix NEs” scenario.

Options shown are; X minutes, the current configured collection interval.

Step 3/ The new NE is discovered and is pre-sn08.

Options shown are; X minutes, the current configured collection interval.

##### **Example #2:**

Step 1/ Let say just one or more pre-SN08 NEs exist and collection interval is set to X minutes (15 or 5/30).



Options shown are; 15 and 5/30 minutes

Step 2/ A new NE is added and is not discovered.

Options shown are; X minutes, the current configured collection interval.

Step 3/ The new NE is discovered and is sn08.

Options shown are; X minutes, the current configured collection interval.

Difference between example #1 and example #2 is that, example #1 had sn08 first and got added with pre-sn08 NE later. Example #2 had pre-sn08 first and got added with sn08 NE later.

#### **Scenarios wherein there is no mix of NEs;**

Case #1: Subnet has only sn08 NEs:

Options shown are; both the options

Case #2: Subnet has only undiscovered NEs:

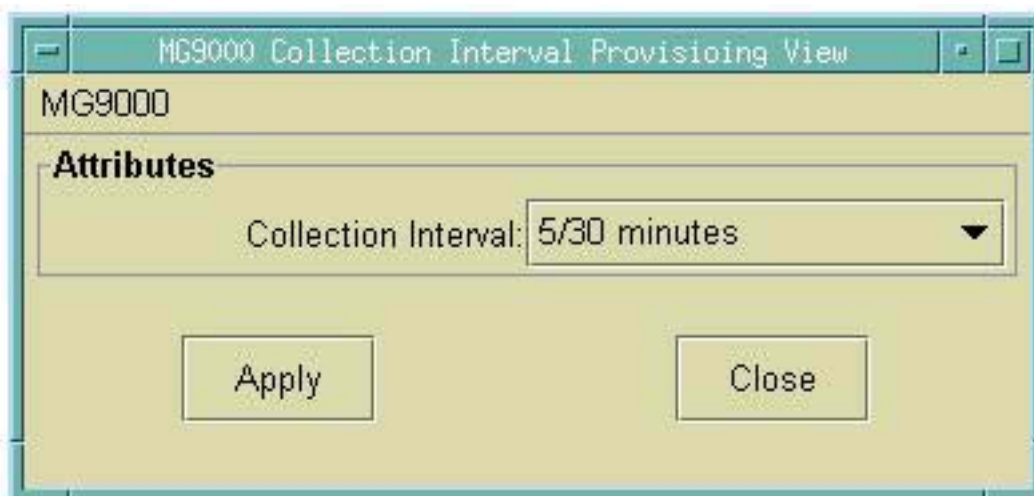
Options shown are; both the options

Case #3: Subnet has only pre-sn08 NEs:

Options shown are; only 15 min

#### **3.8.2.1.5 Usage example**

The following example shows the GUI “Configure Collection Intervals“, when the value “5/30 minutes” is selected.



**3.8.2.1.6 GUI release history update**

A new GUI “Configure Collection Interval” is introduced in order to configure Sample and Summary intervals uniformly for all the MG9Ks in a Subnet.

**3.8.2.1.7 Context sensitive launching information**

None

**3.8.2.1.8 Supplementary information**

When MG9KEM changes Collection interval, any data collected by OM Collector and/or Performance browser till the end of current collection interval after MG9KEM changes collection intervals, may not be accurate. Following paragraphs explains the reason for this.

Example #1:

Let us consider that, MG9KEM changes the collection intervals say from 15 to 5/30 minutes, at 9:06 AM. In this scenario, MG9KEM and OM Collector will switch over starting from next collection interval time as explained below.

- OM Collector will collect new Sample interval (i.e, 5 min in this example) starting from 9:10 AM and Summary interval starting from 9:30 AM.

- Performance browser will changeover immediately. i.e, it will show Collection time period in terms of new Sample collection interval.

However, MG9K changes over to new collection interval at end of current collection interval (i.e., at 9:15 AM in the scenario explained above). Also, MG9K flushes its history performance data at 9:15 AM.

Because of this behavior difference between MG9K and MG9KEM PM components (i.e., performance browser and OM Collector), any data collected by OM Collector and/or Performance browser till and including 9:15 AM, may not be accurate.

Example #2:

Let us consider that, MG9KEM changes the collection intervals say from 5/30 to 15 minutes, at 9:06 AM. In this scenario, MG9KEM and OM Collector will switch over starting from next collection interval time as explained below.

- OM Collector will collect new Sample interval (i.e, 15 min in this example) starting from 9:15 AM.

- Performance browser will changeover immediately. i.e, it will show Collection time period in terms of new Sample collection interval.

However, MG9K changes over to new collection interval at end of current collection interval (i.e., at 9:10 AM in the scenario explained above). Also, MG9K flushes its history performance data at 9:10 AM.

Because of this behavior difference between MG9K and MG9KEM PM components (i.e., performance browser and OM Collector), any data collected by OM Collector and/or Performance browser till and including 9:15 AM, may not be accurate.

### 3.8.2.2 GUI name: Performance Statistics Browser

#### 3.8.2.2.1 Functional description

Two date range fields “From” and “To” are shown on Performance browser. Today, these two fields show date either in steps of 15 minutes or in steps of 1 day. Apart from 15 minutes and 1 day, in SN08, these two fields show date in steps of 5 minutes also.

#### 3.8.2.2.2 GUI usage and implications

None

#### 3.8.2.2.3 GUI size

**Table 10 New or modified GUIs**

| Abbreviated GUI name           | Minimum instances | Maximum instances       | Information on memory |
|--------------------------------|-------------------|-------------------------|-----------------------|
| Performance Statistics Browser | 1                 | One per GUI workstation | No change             |

#### 3.8.2.2.4 GUI fields

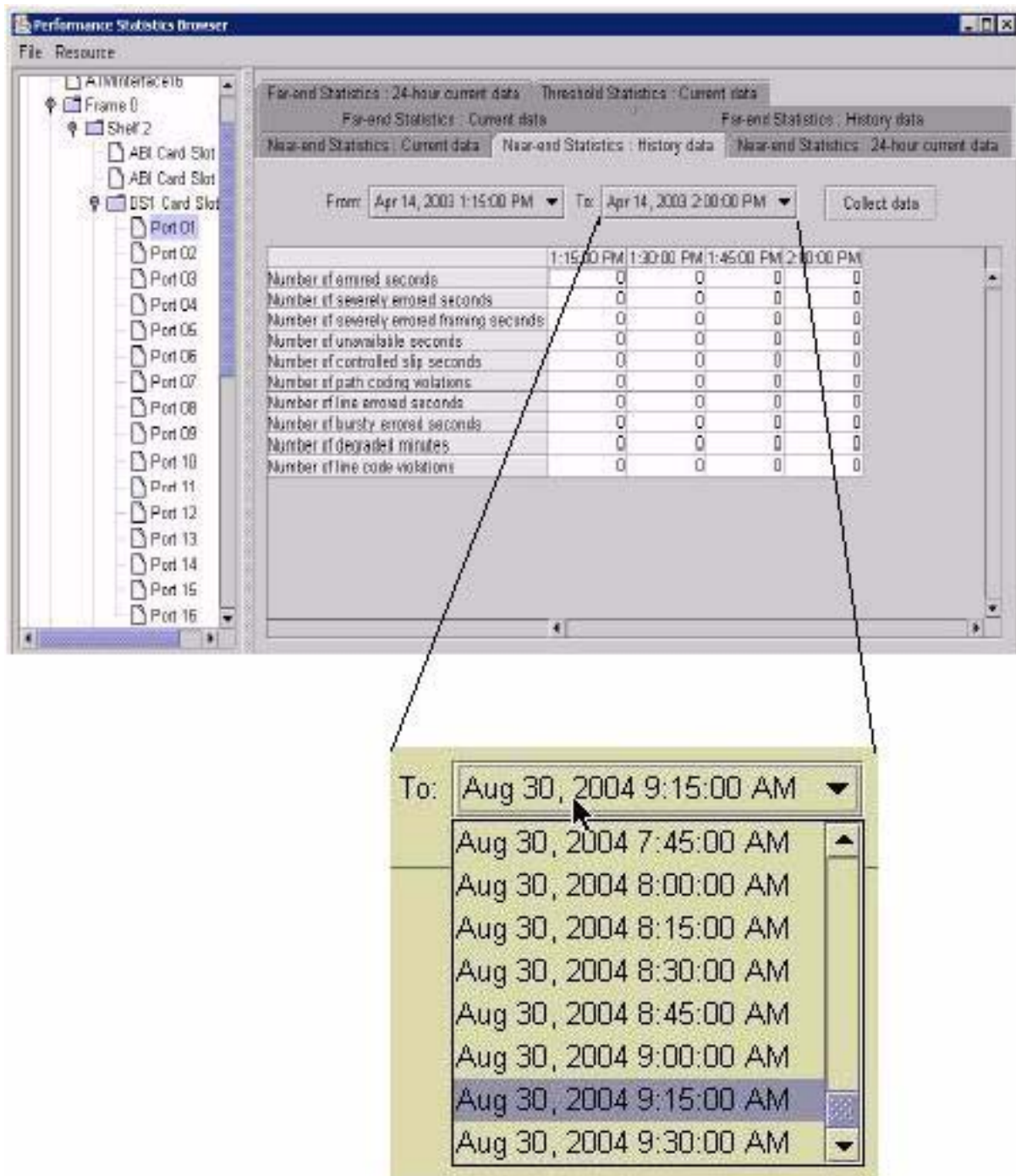
The following table lists fields for GUI “Configure Collection Intervals”.

**Table 11 GUI field descriptions**

| Field | New or Changed | Subfield | Entry                                    | Explanation and action                                                                                           | Associated MIB entry |
|-------|----------------|----------|------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------|
| From  | Changed        | NA       | Data ranges are based on Sample interval | Date range shown corresponds to last 96 sample intervals. Size of each interval is equal to the Sample interval. | None                 |
| To    | Changed        | NA       | Data ranges are based on Sample interval | Date range shown corresponds to 96 sample intervals. Size of each interval is equal to the Sample interval.      | None                 |

### 3.8.2.2.5 Usage example

The following example shows the GUI “Configure Collection Interval“, when the value “15 minutes” is selected.



**3.8.2.2.6 GUI release history update**

The date range fields present in Performance browser are based on the sample interval.

**3.8.2.2.7 Context sensitive launching information**

None

**3.8.2.2.8 Supplementary information**

None

**3.8.3 CLUI Interface**

NA

**3.9 User interface changes**

NA

**3.10 OSSGate Interface Changes**

None

**3.11 Security**

NA

**3.11.1 Authentication**

The new GUI “**Configure Collection Interval**” has an authorization level of “emsw”.

**3.12 Configuration Walkthrough**

None

**3.13 Reference**

[1] A00007213 FN

[2] A00007107 FN

[3] A00003531 CN

**4: Performance Management for A00007213****4.1 Performance management strategy**

In SN08, OM Collector is integrated with MG9KEM server. So, OM Collector is started, stopped and configured along with MG9KEM server.

Today, there is considerable latency between the time OM data is generated at GW and the time it is available at north-bound interfaces of MG9KEM. In order to reduce this latency, OM Collector sends a CORBA notification when

it generates CSV files. It also sends a CORBA notification when it fails to generate CSV files. Note that, these notification are raised one per MG9K per collection interval.

OM Collector raise a minor alarm when it fail to collect OM file from MG9K and clears the alarm when it could again collect OM file from MG9K. Note that these alarms are generated one per MG9K per collection interval.

## 4.2 Performance management tools and utilities

Following are the two configurations which are related to OM data.

- Enabling/disabling OM collection for a MG9K: OM collection can be enabled for a MG9K through a check box provided in the existing GUIs, “MG900 Provisioning”, “NE Properties”. OM collector collects OM data for a MG9K, if OM collection is enabled. Refer to A00003531 CN for more details.
- Configuration of Collection intervals: This is done through the GUI “Configure Collection Interval”.

When OMC is running, if OM collection is enabled for a MG9K, OMC will start collecting OM data at the Collection intervals.

### Impact of “Configuration of Collection Interval”:

Whenever Collection intervals are changed, Performance browser and OM Collector behave as follows.

- OM Collector will start collecting OMs at new collection intervals, starting from next collection interval.
- After Collection interval is changed, if User tries to collect performance data, Performance browser will collect OMs at new Sample collection interval.

When MG9KEM changes Collection interval, any data collected by OM Collector and/or Performance browser till the end of current collection interval after MG9KEM changes collection intervals, may not be accurate. Refer to section 12.4.2.1.8 in A00007213 CN for more details.

### 4.2.1 OM Collector configuration scripts

OM Collector is integrated with MG9KEM server. So, OM Collector is started, stopped and configured along with MG9KEM server. Following is CLUI changes;

- The scripts which were present under the directory /opt/nortel/omcltr\_07/bin/ are no more available in SN08. Instead, user

need to use the scripts available under the directory  
/opt/nortel/mg9ksrv\_08/bin for the same purpose.

- Directory for CSV file is configurable. It can be configured through one of the scripts, “/opt/nortel/mg9ksrv\_08/bin/mg9kconfig.sh”, “/opt/nortel/mg9ksrv\_08/bin/mg9kserver config”. Note that, the default CSV collection directory /data/oms/1 is registered for rotation. However, OMC does not do this registration. If CSV collection directory is configured to directory other than /data/oms/1, User of OMC has to register the CSV collection directory for rotation. In SN08, this capability is intended to be used for designer testing.

### 4.3 Performance Measurements (PM), Operational Measurements (OM), and stats

#### 4.3.1 PM, OM, and stats format

In SN08, following information elements are changed,

- Collection Interval: Periodic collection interval may be configured to a combination of Sample and Summary intervals. In SN08, “5/30 Minutes” and “15 Minutes” are supported.
- OSS delivery (and interface) or Local only: OM Collector sends appropriate CORBA notification whenever it succeeds or fails to generate CSV file
- OSS Collection Interval: As and when CSV file is generated, OM Collector sends a CORBA notification. OSS can use appropriate mechanism to collect CSV file as and when it receives this notification.
- File Name: Directory wherein CSV are generated, are configurable in SN08.

#### 4.3.2 Performance File (CSV, SSV, XML) Format

There is no change in SN08.

#### 4.3.3 OM Group template (applies only to DMS)

NA

***Product = MG 9000***

**A00007244--GIC and GIAC Support on CICM and MG9K**  
***Excerpts from the Test Plan***



## 1.1 Applicable Solution(s)

UA-AAL1

## 1.2 Feature Overview

### 1.2.1 GIC Feature Overview

The MBS Group Intercom (GIC) allows an end user to terminate on a member of a selected group using abbreviated dialing. An intercom group can have a maximum size of ten members, 1000 members, or 10 000 members. End users in a ten member group dial a single digit, 0 to 9, to reach others members in their group. End users in a 100 member group dial a two digit number, 00 to 99. In a 1000 member group, end users dial a three digit code, 100 to 999. In a 10 000 member group, end users dial a four digit code, 0000 to 9999. A Meridian business set (MBS) can have members of several different GIC groups. A separate feature key must represent each group.

To activate MBS Group Intercom, the end user presses the GIC key. The end user dials the correct number of digits. If the call terminates on another MBS, the system rings the GIC key associated with the originating GIC group. The called party must press the GIC key to answer. If the call terminates on a Unity or 500/2500 set, the called party goes off-hook to answer the call. Digits dialed after the end user presses a GIC key appear as dialed. Calls incoming on a GIC key display the GIC member number of the originator.

#### 1.2.1.1 GIC Individual Paging

Individual GIC paging provides for one member of a group intercom (GIC) groups, using the GIC key of MBS set, to activate built-in alerting speaker of another GIC group member's MBS for paging purposes. Both GIC group members must be in same GIC group.

To use GIC individual paging feature, the caller presses the GIC key and dials appropriate GIC member number. Following the first ring, the caller again presses the GIC key. A one-way connection is established, and the caller can then talk over speaker. The called group member can establish a two-way conversation by either pressing the ON key of the handsfree-unit or by lifting the handset.

GIC Individual Paging feature requires GICPAGE option in table CUSTSTN for related customer group

#### 1.2.1.2 GIC and SERVORD command

The assignment of option GIC to an MBS using the ADO command appears in the following SERVORD example. Assignment of option GIC occurs to key 5. The designated name of the line is SMITH. The GIC member number (GICMEMNO) is 24. The SMDR records are a requirement.



SERVORD example for MBS Group Intercom in no-prompt mode

```
>ADO $ 2 0 1 25 2 GIC SMITH 24 Y N $
```

QGRP show the output of GIC group:

```
>qgrp gic HOST 02 0 01 26 4
```

```
SORT_BY_LEN_OR_MEM: LEN
```

```
>len
```

GIC GROUP

-----

```
HOST 02 0 01 26 KEY 4 MEMBER 23
DN 1027835002
```

```
HOST 02 0 01 25 KEY 2 MEMBER 24
DN 1027835001
```

The number of members in the GIC GROUP "SMITH" is 2

### 1.2.2 GIAC Feature Overview

Group Intercom All Call (GIAC) allows an MBS end user to page up to 100 members (with MDC00077 SOC option) for one-way speech path and up to 30 members for two-way speech path in his or her designated Group Intercom (GIC) group simultaneously, and establish a conference with the paged members. This functionality is extremely useful in situations where common announcements need to be broadcast to several individuals in the same GIC group. These individuals must be equipped with Meridian business sets (MBS). An individual group member hears the page over his or her own set's built-in speaker, and can (when required) respond to the originator.

To activate **manual** GIAC paging, a member lifts the handset, presses the GIC key, and presses the octothorpe (#) key on the dial pad. The member who activates GIAC is known as the originator of the call. Then originator presses GIC key again to start paging. When GIAC is activated, a conference bridge is established, and each member of the GIAC group is placed on a port of the conference circuit. The paged group members can establish a two-way conversation by either pressing the ON key of the handsfree-unit or by lifting the handset.

To use **automatic** GIAC paging (PAGING field is datafilled as "Y"), a member lifts the handset, presses the GIC key. The member who activates GIAC is known as the originator of the call. Then when GIAC is activated, a conference bridge is established, and each member of the GIAC group is

placed on a port of the conference circuit. The paged group members cannot establish a two-way conversation by either pressing the ON key of the handsfree-unit or by lifting the handset. Automatic GIAC paging only supports one-way speech path (from originator to paged members).

To use automatic paging function of GIAC feature, MDC00077 SOC implemented by activity A0004007 status should be set to ON.

In order to use GIAC, an individual with an MBS must be a member of an intercom group that has GIAC datafilled in Table KSETFEAT (Business Set and Data Unit Feature). When a member activates GIAC, the other members that belong to the same GIAC group are paged. A GIAC group can have a maximum of 100 (with MDC00077 SOC option) members (including the originator).

#### 1.2.2.1 GIAC and SERVORD command

The following SERVORD example shows how Group Intercom All Call is added to a line using the ADO command.

SERVORD example for MBS Group Intercom in no-prompt mode

```
>ADO $ 02 0 01 25 2 GIAC 7 Y N $
```

QGRP show the output of GIAC group:

```
>qgrp
```

```
GRP_TYPE:
```

```
>giac
```

```
LEN_OR_LTID:
```

```
>HOST 02 0 01 26
```

```
KEY:
```

```
>4
```

GIAC GROUP

-----

```
HOST 02 0 01 25 KEY 2 MEMBER 24
```

```
HOST 02 0 01 26 KEY 4 MEMBER 23
```

THE NUMBER OF MEMBERS IN THE GIAC GROUP "7" IS 2

## ***Product = MG 9000***

### **A00007253--MADN Ring Forward Support for CICM and MG9K** ***Excerpts from the Test Plan***

#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Feature Overview**

##### **1.2.1 MADN description**

A directory number (DN) that is assigned to more than one business set or single line set is called a MADN. The telephone sets that are assigned this DN form a MADN group. MADN groups can be comprised of 2 to 32 members and configured in either a single call arrangement (SCA) or multiple call arrangement (MCA). The option MDN must be assigned to the telephone line appearance.

##### **1.2.2 Single call arrangement (SCA)**

Single call arrangement allows only one call to be active on the SCA group. The active call may be an origination by a SCA member or an incoming call presented to all the SCA members. The originator or answering member will have privacy on the call that excludes all other members. The lamps associated with the SCA appearances on all business set members will be on. The call will remain private, with the active member controlling the option, privacy release (PRL). When the controlling member depresses the PRL key or dials the privacy release activation code (PRLA), the other members will be notified by a blinking lamp associated with the SCA appearance. Upon activation of privacy release, one SCA member may conference into the call.

The MADN ring forward (MRF) option provides four ringing options for calls offered to SCA groups. The ringing options are:

- **abbreviated** - the line appearance rings from call termination until the timer expires.
- **delayed** - the line appearance rings after the timer expires.
- **always** - the line appearance rings from the time the call terminates until it is answered or the caller abandons the call.
- **never** - the line appearance does not ring when a call terminates on the SCA group.

The timer that controls the delayed or abbreviated ring is set on a SCA basis. (0 or 12-60 seconds).

The MADN ring forward manual (MRFM) option provides for the forwarding of ringing of SCA group appearances. The MRFM option allows a station with MRF and the abbreviated ringing option to manually stop its ringing before the timer expires. This is done by pressing a MRFM key. Once the MRFM key is pressed any set with the delayed ringing option begins to ring. MRFM is a subset feature. Therefore, each DN that requires this manual capability must be key listed when this feature is assigned to the business set. One business set can have several MRFM keys. The MADN ring forward (MRF) option must be assigned to the SCA group before an appearance of that SCA may be assigned to the keylist of the MRFM key.

### 1.2.3 MADN Ring Forwarding and SERVORD command

The following SERVORD example shows how MADN Ring Forward is added to an existing SCA MADN line using the SERVORD ADO command. The group is assigned MRF. The system prompts the end user for the MRF\_RING to assign special ringing to the MADN group member.

**SERVORD example for Assigning MADN Ring Forward to an existing SCA MADN line in prompt mode.**

```
> ADO
SONUMBER: NOW 92 1 2 AM
>
DN_OR_LEN:
>00 0 00 04
OPTKEY:
>1
OPTION:
>MRF
AUTO:
>Y
MRF_TIMER:
>12
MRF_RING:
>ABBR
OPTKEY:
>$
```

**SERVORD example for MADN Ring Forward in no-prompt mode**

```
> ADO $ 00 0 00 04 1 MRF Y 12 ABBR $
```

The following SERVORD example shows how MADN Ring Forward is added to an existing SCA MADN line using the SERVORD ADO command. The group is assigned MRF. The system prompts the end user for the MRF\_RING to assign special ringing to the MADN group member.

#### **SERVORD example for Assigning MADN Ring Forward to an MBS key in prompt mode**

```
> ADO
SONUMBER : NOW 90 1 2 AM
>
DN_OR_LEN:
>02 01 02 22
OPTKEY:
>5
OPTION:
>MRFM
KEYLIST:
>1
KEYLIST:
>2
KEYLIST:
>$
KEYLIST:
>$
```

#### **SERVORD example for MADN Ring Forward Manual in no-prompt mode**

```
> ADO $ 02 01 02 22 5 MRFM 1 2 $ $
```

## ***Product = MG 9000***

### **A00007415--MG9K EM Internodal ES**

#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Functional Description**

Inter Nodal ESA will provide the ability to make calls while in ESA between MG9K nodes. In doing so, the Telco's will also be provided the ability to provision a "Community of Interest" which defines which MG9K nodes can make ESA calls between one another. A community must have access to a LAN Switch (i.e. Passport 15K or equivalent) in order for Inter Nodal ESA calls to complete.

If an MG9K does not have access to a LAN Switch, it will operate in the pre-SN08 manner of routing calls between VMGs within a single MG9K node. Also, although a Community of Interest is defined, each node must be in ESA for it to participate in the community. Nodes are not forced to enter ESA.

The current implementation of ESA only allows calls between Virtual Media Gateways (VMG) within the same MG9K node. This feature will expand ESA's ability to make calls between a limited number of MG9K nodes termed a "Community of Interest". However, as with previous ESA releases, calls can only be made between VMGs that are in ESA.

#### **1.3 Hardware Requirements or Dependencies**

This feature will apply to all supported hardware platforms, per SN08 succession server platform foundation software specification.

#### **1.4 Software Requirements or Dependencies**

This MG9K EM feature is dependent on the corresponding SN08 MG9K feature for internodal ESA - A00006894.

#### **1.5 Limitations and restrictions**

- Up to 32 communities of interest are supported.
- Each community can contain up to 15 nodes.
- A given node can only belong in one community.

#### **1.6 Interactions**

N/A

## 1.7 Applicable Customer Facing Sections

### Fault Management

Logs \_\_\_\_\_

Alarms   X  

### Configuration

Data Schema   X  

User Interface   X  

Element Manager   X  

Security \_\_\_\_\_

Service Order \_\_\_\_\_

Office Parameters \_\_\_\_\_

Accounting (Includes AMA billing) \_\_\_\_\_

Performance (Includes OMs) \_\_\_\_\_

## 1.8 Glossary

| Term | Description             |
|------|-------------------------|
| EM   | Element Manager         |
| COI  | Community of Interest   |
| ESA  | Emergency Standalone    |
| VMG  | Virtual Media Gateway   |
| PVR  | Passport Virtual Router |
| MG9K | Media Gateway 9000      |

## 2: Fault Management for A00007415

### 2.1 Fault management strategy

The standard MG9k EM Fault Management strategy will apply to the faults for MG9kEM Internodal ESA. Alarms will be displayed by the MG9K EM Alarm Browser, logged in NT standard format to the SSPFS CUST logs, and forwarded to the northbound OSS.

## 2.2 Fault management tools and utilities

The Alarm Browser - reports alarms from registered events. When an alarm is generated, it is displayed in the Alarm Browser along with the date, time, the NE Id, the generating resource information, the severity and the probable cause. Highlighting the alarm displays the description of the alarm in the text box at the bottom of the Alarm Browser.

The Log Adaptor - generates logs from registered events. The log names and numbers are predetermined and are matched with the incoming event. A log with the corresponding name and number that contains the date, time, physical location, severity and any other pertinent information is generated and placed into a separate file.

## 2.3 Logs and Alarms

Two new alarms (ESA304 (nnEsaCoiFault) and ESA312 (EM generated)) will be added. The new alarm will be displayed at the Alarm Browser at the subnet as well as the alarm browser for each corresponding network element. A log is also generated. Both are NE level alarms.

### 2.3.1 Explanation

#### 2.3.1.1 ESA304 (nnEsaCoiFault)

Title: nnEsaCoiFault

Name: ESA

Description: This log is generated by the EM in response to a trap from the MG9000 (nnEsaCoiFault). The MG9000 sends this trap when it detects communication problems to other nodes in the same community of interest.

Severity: Major

Event type: ESA community of interest

#### 2.3.1.2 ESA312 (Internodal Esa Provisioning Fault)

Title: Esa Provisioning Fault

Name: ESA

Description: This log is generated by the EM when a failure occurs whilst trying to provision internodal community of interest data for a given NE.

Severity: Major

Event type: Internodal ESA Provisioning failure



## 2.3.2 Format

The Log Delivery application for this feature generates logs in the Number 2 Switch Control Center (SCC2) format and the NT standard (STD) format explained in the PLOA\_SLOA\_LOG\_ALARMS DID.

### 2.3.2.1 ESA304 (nnESAFault)

\*\*\*ESA304 Tue Jul 09 14:50:26 EDT 2005 TBL

NE Number: 8 NE Name: co8

State: not acknowledged

Type: Equipment

Cause: Equipment malfunction

Time: Jul 09 14:50:26:616 2005

Severity: Major

Description: Failed to ping members of community of interest

### 2.3.2.2 ESA312 (Esa Provisioning Failure)

\*\*\*ESA312 Tue Jul 09 14:50:26 EDT 2005 TBL

NE Number: 8 NE Name: co8

State: not acknowledged

Type: Processing Error

Cause: Configuration Or Customization Error

Time: Jul 09 14:50:26:616 2005

Severity: Major

Description: Internodal ESA provisioning failure

## 2.3.3 Field descriptions

### 2.3.3.1 ESA304 (nnEsaCoiFault)

**Table 1 Field descriptions ESA304**

| Field                 | Value                       | Description                                                                                                                                                                                               |
|-----------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| office identification | String                      | Identifies the switch that generates the log. This field is optional. The maximum length of this field is 12 characters.                                                                                  |
| alarm                 | ***, **, *, or blank        | Indicates the alarm type of the log report. ***=critical, **=major, *=minor, blank = no alarms/warning                                                                                                    |
| threshold             | + or blank                  | Indicates if a threshold is set for the log report. Plus (+) sign indicates that a threshold was set; if a blank, a threshold was not set.                                                                |
| report identification | AAAA nnn                    | Identifies the log subsystem that generates the report. This field uses 2-4 alphabetical characters and the number 100-999 of the log report in this subsystem.<br><br>For this log AAAA=MGC and nnn=600. |
| day                   | String                      | Identifies the day of the week.                                                                                                                                                                           |
| mmmmdd                | January-December<br>(01-31) | Identifies the month and date the report generates.                                                                                                                                                       |
| hh:mm:ss              | 00-23<br>00-59<br>00-59     | Identifies the hour, the minute, and the second the report generates.                                                                                                                                     |
| zone                  | PST, EST, MST, CST, AST     | Identifies the time zone.                                                                                                                                                                                 |
| yyyy                  | 0000-9999                   | Year                                                                                                                                                                                                      |
| ssdd                  | 0000-9999                   | Defines a different sequence number for each log report generated.                                                                                                                                        |

**Table 1 Field descriptions ESA304**

| Field               | Value          | Description                                                                                         |
|---------------------|----------------|-----------------------------------------------------------------------------------------------------|
| event type          | TBL, INFO, etc | Trouble, Service Summary, State Change, Information, Threshold and Expert.<br><br>TBL for this log. |
| event id            | String         | The Log Title.                                                                                      |
| NE Number           | integer        | Number of the NE                                                                                    |
| NE Name             | string         | Name of the NE                                                                                      |
| Fault Type          | string         | The type of the fault:<br><br>ESA Community of Interest                                             |
| nnUemgEventTime     | DateandTime    | The Date and Time the event occurred in the following format: day mmmdd hh:mm:ss zone yyyy          |
| nnUemgAlarmSeverity | String         | Major                                                                                               |
| Description         | string         | Failed to ping members of community of interest                                                     |

### 2.3.3.2 ESA312 (Internodal ESA Provisioning Fault)

**Table 2 Field descriptions ESA304**

| Field                 | Value                | Description                                                                                                              |
|-----------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------|
| office identification | String               | Identifies the switch that generates the log. This field is optional. The maximum length of this field is 12 characters. |
| alarm                 | ***, **, *, or blank | Indicates the alarm type of the log report.<br>***=critical, **=major, *=minor, blank = no alarms/warning                |

**Table 2 Field descriptions ESA304**

| Field                 | Value                       | Description                                                                                                                                                                                                |
|-----------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| threshold             | + or blank                  | Indicates if a threshold is set for the log report. Plus (+) sign indicates that a threshold was set; if a blank, a threshold was not set.                                                                 |
| report identification | AAAA nnn                    | Identifies the log subsystem that generates the report. This field uses 2-4 alphabetical characters and the number 100-999 of the log report in this subsystem.<br><br>For this log AAAA= MGC and nnn=600. |
| day                   | String                      | Identifies the day of the week.                                                                                                                                                                            |
| mmmmdd                | January-December<br>(01-31) | Identifies the month and date the report generates.                                                                                                                                                        |
| hh:mm:ss              | 00-23<br>00-59<br>00-59     | Identifies the hour, the minute, and the second the report generates.                                                                                                                                      |
| zone                  | PST, EST, MST, CST, AST     | Identifies the time zone.                                                                                                                                                                                  |
| yyyy                  | 0000-9999                   | Year                                                                                                                                                                                                       |
| ssdd                  | 0000-9999                   | Defines a different sequence number for each log report generated.                                                                                                                                         |
| event type            | TBL, INFO, etc              | Trouble, Service Summary, State Change, Information, Threshold and Expert.<br><br>TBL for this log.                                                                                                        |
| event id              | String                      | The Log Title.                                                                                                                                                                                             |
| NE Number             | integer                     | Number of the NE                                                                                                                                                                                           |
| NE Name               | string                      | Name of the NE                                                                                                                                                                                             |

**Table 2 Field descriptions ESA304**

| Field               | Value       | Description                                                                                |
|---------------------|-------------|--------------------------------------------------------------------------------------------|
| Fault Type          | string      | The type of the fault:<br><br>Processing Error                                             |
| nnUemgEventTime     | DateandTime | The Date and Time the event occurred in the following format: day mmmdd hh:mm:ss zone yyyy |
| nnUemgAlarmSeverity | String      | Major                                                                                      |
| Description         | string      | Internodal ESA provisioning failure                                                        |

### 2.3.4 Action

ESA304 (nnEsaCoiFault):

Check failure cause in alarm or log text and perform corrective action This will typically require network route troubleshooting. The MG9000 will clear the alarm autonomously once the root cause is fixed.

ESA312 (Internodal ESA provisioning failure):

Check failure log in the alarm or log text (most common is communication failure between the MG9000 EM and the MG9000). Once the root cause is fixed the alarm can be cleared by running and audit on the affected NE, or hitting “Apply” button on the Internodal ESA configuration GUI.

### 2.3.5 Associated Operational Measurements or Performance Measurements

None.

## 3: Configuration for A00007415

### 3.1 Hardware and Software Requirements

SN08 or a later software load for both the MG9000 and the Element manager. Passport Virtual Router (PVR).

### 3.2 Initial Configuration

This document assumes that the reader is familiar with Emergency Stand-Alone (ESA). ESA allows intra-nodal calls to complete when the MG is cutoff from the call server. Prior to SN08 only intra-nodal ESA was supported. With the introduction of this feature, inter-nodal ESA is now supported as of SN08.

Internodal ESA allows groupings of MG nodes into “communities of interest” (COI). All nodes in a community can communicate with each other during ESA, allowing calls to complete inside the community during ESA.

The Passport Virtual Router must be configured before Internodal ESA will function. The Passport settings are located on the NE Properties GUI on the EM. Each node in the community must be configured with PVR settings before the community is established.

The customer should first determine how the nodes will be grouped together into communities. In addition each MG will need to be configured with a new ESA IP address. This IP address should be chosen from an available IP address from the call control subnet (the same subnet used for the VMG configuration). No “default” communities are provided so each community must be manually configured by the customer in order for inter-nodal ESA to function.

The high-level steps for adding a community of interest are as follows:

- 1 Load the MG9K, MG9KEM, and PVR with the required software.
- 2 Launch the MG9K Element Manager.
- 3 Select a node to be added to the community and configure the PVR settings from the NE Properties screen. Repeat for each node.
- 4 Select Configure Internodal ESA from the Configuration Menu.
- 5 Set the ESA IP address of the nodes that are being placed into communities.
- 6 Create a new community of interest.
- 7 Add the desired nodes to the community of interest.
- 8 Click the Apply button.
- 9 Repeat for each community of interest.

### 3.3 Upgrade Considerations

None

#### 3.3.1 Dump and Restore (CM)

#### 3.3.2 Element Management Upgrade

#### 3.3.3 Downgrade impact

Prior to SN08, intra-nodal ESA was not supported. Therefore, if an MG9K is in a community and is downgraded to SN08 from SN08 an error message will

be generated and the user will not be able to downgrade until the node is removed from its community.

### 3.4 Data schema (DS) (CM, MIBS, RDB)

#### 3.4.1 New/modified tables, MIBs, or Database Schema

| Table/MIB name        | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|-----------------------|--------------------------|-----------------------------------|
| nnCommunityOfInterest | NEW mib                  |                                   |

#### 3.4.2 Table/MIB/Remote Database Schema information

N/A

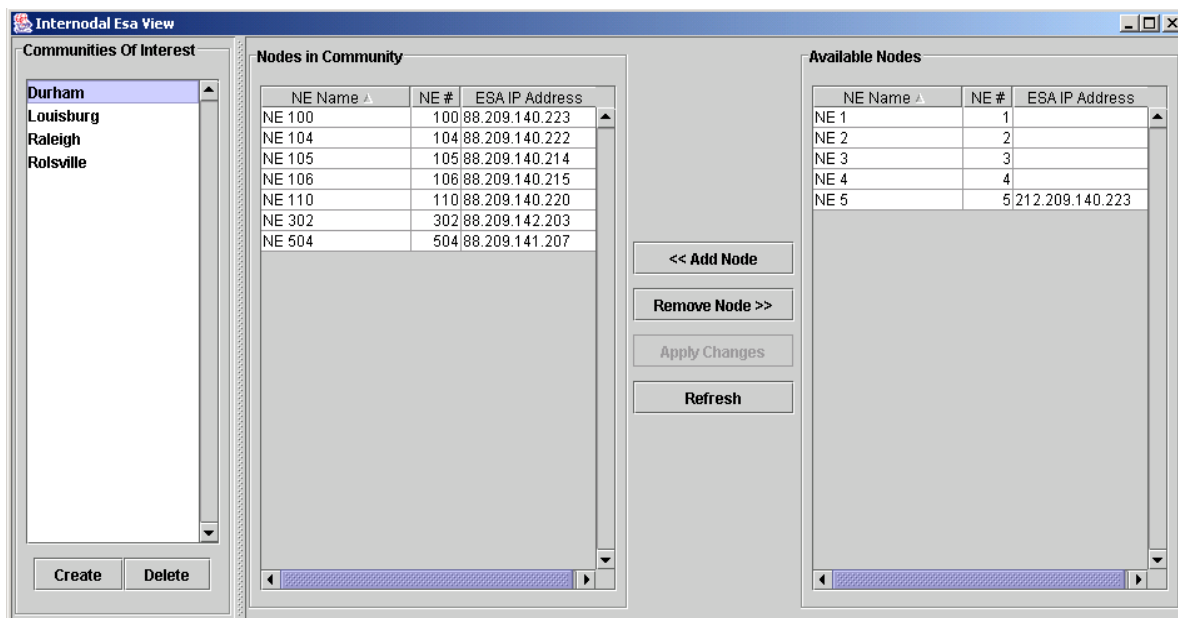
### 3.5 Element Management

#### 3.5.1 New/modified GUIs

| GUI name                     | NEW, CHANGED, or DELETED |
|------------------------------|--------------------------|
| Internodal ESA Configuration | NEW                      |

#### 3.5.2 GUI information

The new GUI will allow the customer to configure communities of interest. A screenshot is provided below for reference only - the screen is subject to change.

**Figure 1 Community Of Interest Configuration GUI**

### 3.5.2.1 GUI name: COI Configuration

#### Community of Interest Configuration

##### 3.5.2.1.1 Functional description

The purpose of the COI Configuration GUI is to allow the customer to manage Internodal ESA Communities of Interest. The GUI is accessed from the main subnet view window under the “Configuration” menu item. The GUI layout contains three main list windows:

- The Communities Of Interest list contains a list of all currently defined communities. When you click on an item in this list the “Nodes In Community” list changes. The number of communities is limited to 32.
- The “Nodes In Community” list displays all the nodes that are currently in the selected community of interest. The number of nodes in a community is limited to 15.
- The “Available Nodes” list displays all nodes that are available to be added to a community (they do not currently belong to a community). Only nodes that are ESA enabled will be displayed in this list.



The Create and Delete buttons allow the user to create and delete COI names. COI names are limited to 20 characters and can only contain the characters 'a' - 'z', 'A' - 'Z', and underscore.

The Add Node button allows the user to add nodes from the available list to the COI node list. Before a node is added the ESA IP address must be set.

The Delete Node button allows the user to remove nodes from the selected community. The currently selected node in the "Nodes In Community" list will be removed from the list and it will appear in the "Available Nodes" list.

The ESA IP Address field in the "Nodes in Community" list and "Available Nodes" list is editable. The other fields in the lists are not editable. The IP Address field must be configured before a node is added to the community. When the user presses enter or clicks in another window or button, the IP address will be validated and saved in the database. The IP address must be "well-formed" and unique in the system.

The Apply Changes button allows the user to apply changes to the Community. The button is disabled until there are changes to commit. When the user makes changes to a community the button is disabled. If the user tries to leave the GUI or click on another community name, the user will be prompted to save or discard changes.

When the user presses Apply, a status window will display the status of NEs that are being updated. The status window will scroll as NEs are successfully updated or if there are any failures. A configuration alarm will be generated if there are any configuration failures. However, if the user exits the GUI and returns to the GUI, there is no way to determine if there were any previous failures, but the alarm will continue to be displayed in the alarm manager until the configuration is successful. If there is a failure, the user can trigger an audit to re-configure the COI or the user can press the "Reconfigure" button on the GUI. The "Reconfigure" button will cause the currently selected COI data to be sent to all affected nodes.

The Refresh button allows the user to completely refresh the GUI with data from the database.

#### **3.5.2.1.2 GUI usage and implications**

The GUIs must be configured in the following sequence. This sequence is for adding a new community of interest.

- 1 Configure MG9K nodes to support ESA, configuring VMGs, etc.
- 2 Bring up the COI Configuration GUI.
- 3 Click the Create button to create a new COI name.
- 4 In the "Available Nodes" list, select a node to be added to the community.

- 5 Set the ESA IP address of the node and press enter.
- 6 Click the Add Node button.
- 7 Repeat until all desired nodes are added to the community.
- 8 Press the Apply Changes button.

A NE cannot be deleted if it is in a community of interest. An error message will be generated if the user attempts to delete an NE that is configured in a community.

### 3.5.2.1.3 GUI size

| Abbreviated GUI name | Minimum instances | Maximum instances | Information on memory    |
|----------------------|-------------------|-------------------|--------------------------|
| COI Configuration    | 0                 | 1                 | fixed memory allocation. |

### 3.5.2.1.4 GUI fields

The following table lists fields for the GUI or pull down menu <abbreviated name of GUI>.

**Table 1 GUI field descriptions**

| Field          | New or Changed | Subfield | Entry                                                                                                                                           | Explanation and action                                                                         | Associated MIB entry |
|----------------|----------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------|
| ESA IP Address | New            | no       | Valid, Unique IP Address                                                                                                                        | The initial value is blank. The field must be filled in before a node is added to a community. |                      |
| COI Name       | New            | no       | Community of Interest Name. Up to 20 characters (a-z, A-Z, and underscore). COI names not case sensitive. So "COI1" and "coi1" cannot co-exist. |                                                                                                |                      |

### 3.5.2.1.5 Usage example

The following example shows sample datafill or menu selection for the GUI Community of Interest:

See the above image.

### 3.6 Configuration Walkthrough

Before initial configuration of inter-nodal ESA begins, the MG9K nodes must be configured to support ESA (see feature A00002020 for more details on configuring intra-nodal ESA). The customer should also determine how the nodes will be grouped into communities, i.e. which nodes go into which community of interest. In addition, each MG9K that supports inter-nodal ESA will need to be configured with an ESA IP address. This IP address should be chosen from an available IP address from the call control subnet. This is the subnet of IP addresses used for VMG configuration. No “default” communities are provided so each community must be manually configured by the customer in order for intra-nodal ESA to function.

The high-level steps for adding a community of interest are as follows:

- 1 Load both the MG9K and MG9KEM with required software.
- 2 Launch the MG9K Element Manager from a web browser.
- 3 Select Configure Internodal ESA from the main menu.
- 4 Set the ESA IP address of the nodes that are being placed into communities.
- 5 Create a new community of interest.
- 6 Add desired nodes to the community of interest.
- 7 Click Apply Changes button.
- 8 Repeat for each community of interest.

When the user presses Apply a status window will display the status of NEs that are being updated. The status window will scroll as NEs are successfully updated or if there are any failures. A configuration alarm will be generated if there are any configuration failures. However, if the user exits the GUI and returns to the GUI, there is no way to determine if there were any previous failures, but the alarm will continue to be displayed in the alarm manager until the configuration is successful. If there is a failure, the user can trigger an audit to re-configure the COI or the user can press the “Reconfigure” button on the GUI. The “Reconfigure” button will cause the currently selected COI data to be sent to all affected nodes.

## ***Product = MG 9000***

### **A00008387--GLC-32 AB Card Support**

#### ***Functional Description***

#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Description**

This feature enhances the MG9KEM to provide the following capabilities:

- GLC-32 AB card (PEC NY53AB) support

Prior to this feature, MG9KEM and MG9K gateways only support the GLC-32 AA card (PEC NY53AA). With the combination of this feature and the matching SN08 gateway feature, both GLC cards, NY53AA and NY53AB are supported in SN08.

- Allowing bulk provisioning GLC card's line service types

This feature provides the capability for the user to bulk provision all the line circuits on a GLC card to the same service type. This option is only enabled when the card is deprovisioned.

- Card replacement support for GLC and WLC cards

With the combination of this feature and the matching SN08 gateway feature, card replacement between GLC AA and GLC AB cards and WLC and GLC cards can be performed without deprovisioning the card.

#### **1.3 Hardware Requirements or Dependencies**

This feature provides support for the NY53AB board with V2.1 or higher Infineon chipset.

#### **1.4 Software Requirements or Dependencies**

The capabilities provided by this feature require the SN08 gateway load.

#### **1.5 Limitations and restrictions**

1. SN08 gateway is required to support the NY53AB GLC card.
2. Once the NY53AB GLC card(s) are installed on a SN08 gateway, any gateway downgrade to pre-SN08 loads will render the NY53AB GLC card non-functional. The NY53AB GLC cards should be deprovisioned and removed prior to the downgrade attempt.
3. Since WLC card only supports the "potsLoopStart" line service type, when replacing a GLC card with a WLC, any EBS/pPhone or potsGroundStart

lines on the GLC card MUST be decommissioned prior to the card replacement attempt; failed to do so will result in lost of service to these lines. Once the GLC card is replaced with a WLC, all line circuits on the card will assume the line service type of “potsLoopStart”.

4. The WLC and GLC card replacement is only supported with the SN08 gateway.

## 1.1 Interactions

## 1.2 Glossary

| Term | Description      |
|------|------------------|
| GLC  | Global Line Card |
| WLC  | World Line Card  |

### *Configuration for A00008387*

## 2.1 Hardware and Software Requirements

Standard Media Gateway 9000 Element Manager (MG9000 EM) configuration.

## 2.2 Initial Configuration

Standard Media Gateway 9000 Element Manager (MG9000 EM) configuration.

## 2.3 Office/Subnet parameters (OP/SP) (CM & SESM)

N/A

## 2.4 Upgrade Considerations

### 2.4.1 Dump and Restore (CM)

### 2.4.2 Element Management Upgrade

### 2.4.3 Downgrade impact

SN08 gateway is required to support the NY53AB GLC card. Once the NY53AB GLC card(s) are installed on a SN08 gateway, any gateway downgrade to pre-SN08 loads will render the NY53AB GLC card non-functional. The NY53AB GLC cards should be deprovisioned and removed prior to the downgrade attempt.

SN06.2 gateway loads do not support pPhone and potsGroundStart line service types for GLC cards. When downgrading to the SN06.2 gateway load, if pPhone and postGroundStart lines are provisioned on the GLC cards, they will have to be deprovisioned prior to the downgrade attempt.

The WLC and GLC card replacement is only supported with the SN08 gateway.

## 2.5 Data schema (DS) (CM, MIBS, RDB)

N/A

## 2.6 Service Orders (SO) (CM & SESM)

N/A

## 2.7 Software optionality control (SOC)

N/A

## 2.8 Element Management

### 2.8.1 New/modified GUIs

Table 2 New or modified GUIs

| GUI name              | NEW, CHANGED, or DELETED |
|-----------------------|--------------------------|
| LineCoefficientView   | changed                  |
| BulkProvSvceTypesView | new                      |

### 2.8.2 GUI information

#### 2.8.2.1 GUI name: LineCoefficientView

##### 2.8.2.1.1 Functional description

This is an existing view that shows the Line Coefficients available for the GLC circuits.

##### 2.8.2.1.2 GUI usage and implications

This is an existing view that shows the Line Coefficients available for the GLC circuits. This GUI is updated to display the Line Coefficient information in a table format. The usage for this GUI has not changed.

##### 2.8.2.1.3 GUI fields

**Table 3 GUI field descriptions**

| <b>Field</b> | <b>New or Changed</b> | <b>Subfield</b> | <b>Entry</b> | <b>Explanation and action</b>                        | <b>Associated MIB entry</b> |
|--------------|-----------------------|-----------------|--------------|------------------------------------------------------|-----------------------------|
| Name         | changed               |                 |              | Name of the Coefficient                              |                             |
| Index        | changed               |                 |              | Coefficient Index                                    |                             |
| PEC          | new                   |                 |              | GLC Card PEC (NY53AA or NY53AB)                      |                             |
| Country Info | new                   |                 |              | Country the coefficient is intended for              |                             |
| CRAM         | new                   |                 |              | cRAM info from the GLC card                          |                             |
| Vinetic Ver. | new                   |                 |              | Vinetic version from the GLC card                    |                             |
| Loop Info    | new                   |                 |              | loop status                                          |                             |
| Metering     | new                   |                 |              | with or without Metering                             |                             |
| Svc Type     | new                   |                 |              | service type the coefficient is for                  |                             |
| Default      | new                   |                 |              | is or is not the default coefficient for the country |                             |

**2.8.2.1.4 Usage example**

From the GLC Card View pulldown menu, select “Coefficient Table Manager...” to launch the GUI.

Here is an example of the GUI:

NE: 18 Line Coefficient Table

MG9000

| Name          | Index | PEC    | Country Info | CRAM | Vinetic Ver. | Loop Info          | Metering | Svc Type | Default |
|---------------|-------|--------|--------------|------|--------------|--------------------|----------|----------|---------|
| PPHONE_LL     | 90    | NY53AA | Global       | 0    | 0x2484       | LongLoop           | false    | pPhone   | true    |
| PPHONE_LL_LV  | 91    | NY53AA | Global       | 0    | 0x2484       | LongLoopLowVoltage | false    | pPhone   | false   |
| POTS_SL       | 1     | NY53AA | NorthAmerica | 0    | 0x2484       | ShortLoop          | false    | pots     | true    |
| POTS_LL_LV    | 13    | NY53AA | NorthAmerica | 0    | 0x2484       | LongLoopLowVoltage | false    | pots     | false   |
| POTS_LL       | 2     | NY53AA | NorthAmerica | 0    | 0x2484       | LongLoop           | false    | pots     | false   |
| POTS_SL       | 10    | NY53AA | Russia       | 0    | 0x2484       | ShortLoop          | false    | pots     | true    |
| POTS_LL       | 11    | NY53AA | Russia       | 0    | 0x2484       | LongLoop           | false    | pots     | false   |
| POTS_LL_LV    | 12    | NY53AA | Russia       | 0    | 0x2484       | LongLoopLowVoltage | false    | pots     | false   |
| POTS_SL       | 3     | NY53AA | Spain        | 0    | 0x2484       | ShortLoop          | false    | pots     | true    |
| POTS_LL       | 5     | NY53AA | Spain        | 0    | 0x2484       | LongLoop           | false    | pots     | false   |
| POTS_LL_WM_LV | 14    | NY53AA | Spain        | 0    | 0x2484       | LongLoopLowVoltage | true     | pots     | false   |
| POTS_LL_WM    | 6     | NY53AA | Spain        | 0    | 0x2484       | LongLoop           | true     | pots     | false   |
| POTS_SL_WM    | 4     | NY53AA | Spain        | 0    | 0x2484       | ShortLoop          | true     | pots     | false   |
| POTS_SL       | 7     | NY53AA | Mexico       | 0    | 0x2484       | ShortLoop          | false    | pots     | true    |
| POTS_LL       | 8     | NY53AA | Mexico       | 0    | 0x2484       | LongLoop           | false    | pots     | false   |
| POTS_LL_LV    | 9     | NY53AA | Mexico       | 0    | 0x2484       | LongLoopLowVoltage | false    | pots     | false   |
| PPHONE_LL     | 95    | NY53AB | Global       | 0    | 0x1490       | LongLoop           | false    | pPhone   | true    |
| PPHONE_LL_LV  | 96    | NY53AB | Global       | 0    | 0x1490       | LongLoopLowVoltage | false    | pPhone   | false   |
| POTS_LL       | 31    | NY53AB | NorthAmerica | 0    | 0x1490       | ShortLoop          | false    | pots     | true    |
| POTS_LL       | 32    | NY53AB | NorthAmerica | 0    | 0x1490       | LongLoop           | false    | pots     | false   |
| POTS_LL_LV    | 33    | NY53AB | NorthAmerica | 0    | 0x1490       | LongLoopLowVoltage | false    | pots     | false   |
| POTS_SL       | 50    | NY53AB | Russia       | 0    | 0x1490       | ShortLoop          | false    | pots     | true    |
| POTS_LL       | 51    | NY53AB | Russia       | 0    | 0x1490       | LongLoop           | false    | pots     | false   |
| POTS_LL_LV    | 52    | NY53AB | Russia       | 0    | 0x1490       | LongLoopLowVoltage | false    | pots     | false   |

Add Delete Refresh

### 2.8.2.1.5 GUI release history update

### 2.8.2.1.6 Context sensitive launching information

This GUI is only accessible through the GLC Card View pulldown menu.

### 2.8.2.1.7 Supplementary information

## 2.8.3 GUI information

### 2.8.3.1 GUI name: BulkProvSvceTypesView

#### 2.8.3.1.1 Functional description

This is a new view. This view can be used to bulk provision all the line circuits on a GLC card to the same service type.

#### 2.8.3.1.2 GUI usage and implications

This view can be used to bulk provision all the line circuits on a GLC card to the same service type. This GUI is only enabled when the card is deprovisioned.

#### 2.8.3.1.3 GUI fields



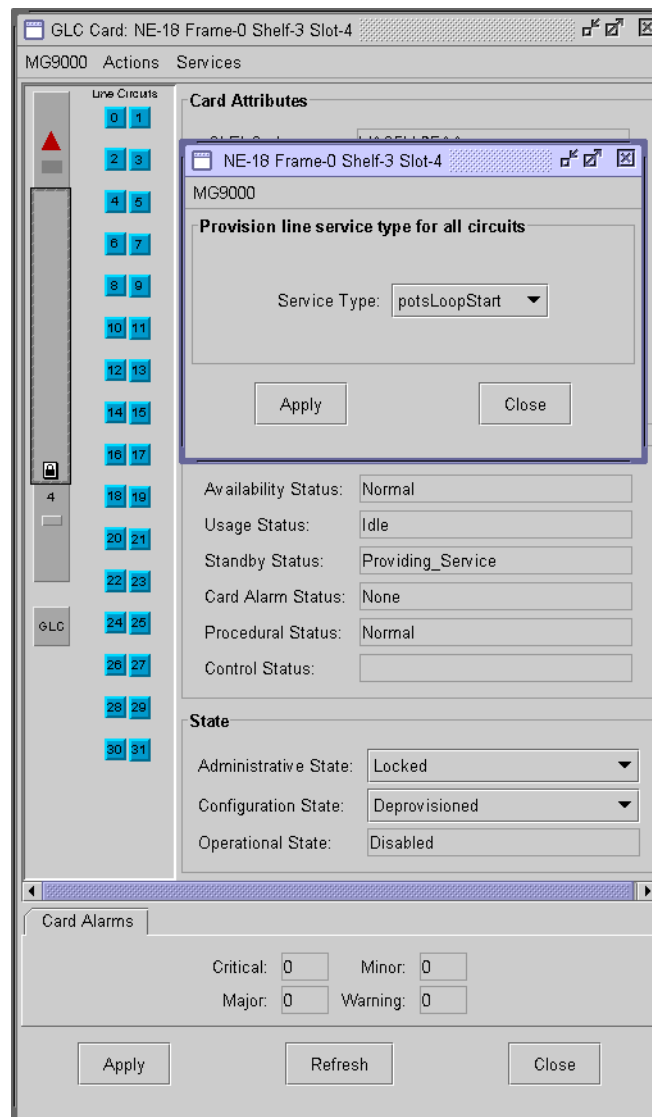
**Table 4 GUI field descriptions**

| Field        | New or Changed | Subfield | Entry | Explanation and action                                                                     | Associated MIB entry |
|--------------|----------------|----------|-------|--------------------------------------------------------------------------------------------|----------------------|
| Service Type | new            |          |       | This is a selection field, the options are:<br>potsLoopStart, pPhone<br>or potsGroundStart |                      |

#### **2.8.3.1.4 Usage example**

From the GLC Card View, offline and deprovision the card. Once the card is deprovisioned, select “Provision Bulk Line Service Types...” from the card’s pulldown menu to launch the GUI. Select the desired service type from the new GUI then press “Apply” to provision this service type for all the circuits on the card.

Here is an example of the GUI:



#### 2.8.3.1.5 GUI release history update

#### 2.8.3.1.6 Context sensitive launching information

This GUI is only accessible through the GLC Card View pulldown menu when the card is deprovisioned.

#### 2.8.3.1.7 Supplementary information

## 2.8.4 CLUI Interface

## 2.9 User interface changes

N/A

## 2.10 OSSGate Interface Changes

N/A

## 2.11 Security

Only users in the *emsmtc*, *emsrw* or *emsadm* groups are authorized to bulk provision the GLC card's line service types.

## 2.12 Configuration Walkthrough



# SN08 Feature Deltas

***Product = Network Patch Manager (NPM)***

## **A00006901--Missing Patches**

### ***Functional Description***

#### **1.1 Applicable Solution(s)**

UA-AAL1

#### **1.2 Description**

This feature, Missing Patches, is a feature that addresses several items. The main purpose of this feature is to aid the customer in getting and applying patches to his office in a timely and routine fashion. This feature also address items that will aid the user/customer in maintaining data over an upgrade as well as adding some clean up mechanisms that the user/customer can implement. The following is a list of items that this feature will provide:

- The ability to perform PFRS (Patch File Receipt System) capabilities on demand from the NPM User Interfaces.
- A new PFRS GenReport (pfrsGenReport) task will be available to the user from the Network Patch Manager User Interfaces. This task will allow the user to create an INFORM list that will be automatically dropped off at the customers patch drop off box.
- A new PFRS GetPatch (pfrsGetPatch) task will be available to the user from the Network Patch Manager User Interfaces. This task will go to the customers/users patch drop off box and get the patches that have been newly downloaded and add them to the NPM database.
- A new PFRSGETPATCH\_FAIL Major alarm and log will be raised in the event that the PfrsGetPatch Task does not executed successfully.

The alarm can only be cleared after a successful execution of the Pfrs-GetPatch Task.

- A new PFRSGENREPORT\_FAIL Major alarm and log will be raised in the event that the PfrsGenReport Task does not executed successfully. The alarm can only be cleared after a successful execution of the PfrsGenReport Task.
- This feature also creates two new system plans for the PFRS functions; one plan will contain the PfrsGetPatch task and the other plan will contain the PfrsGenReport task. Each plan can be scheduled through the NPM Scheduler. This allows flexibility for the customer to schedule and execute PFRS functions according to when each site needs to execute them.
- This feature provides a mechanism that can be accessed from the NPM User Interface that will allow the user to delete patches from the “patch drop off” box. If this function is set in the NPM, the NPM will delete the patches after the PFRS GetPatch function has been executed.
- An automatic audit of a device immediately after a reload. This will provide immediate information back to the user/customer about the device and if patches need to be re-applied.
- This feature adds a new alarm for R-status or released patches; REL\_GEN\_NOT\_APP. This alarm will have a priority of Major.
- The current alarm for GEN patches: GEN\_NOT\_APP will continue to have a priority of NO\_ALARM for all GEN patches.
- This feature also addresses issues with retaining information over upgrades of the NPM and this is responsible for adding the following functions to the NPM. The user will no longer have the ability to change System Defined Reports, Tasks, Sets and Alarms. Users will only be able to modify the execution time and enabled status for System Defined Plans. The user will still have the ability to view the definition of these items via a new “View” button that will be provided on the NPM GUI. The user will still have the ability to create and modify their own reports, plans, tasks, sets and alarms.
- This feature adds a new system plan to the NPM scheduler that will automatically delete reports out of the /data/npm/reports directory. The user will be able to specify the frequency that the reports are deleted

though the NPM Scheduler. A default value of thirty days will be set initially in the NPM.

- This feature provides an enhancement to the NPM GUI which will improve overall usability. A process monitor will be added which will provide a visual indicator to the user that a submitted request is in progress. This monitor will be specific to each instance of the NPM GUI and will not indicate activity of multiple GUIs.
- This feature will enhance the NPM GUI Maintenance window. A new refine or filter button will be available which will allow the user to quickly determine which patch(es) are applicable to which device(s) and vice versa.
- This feature will provide the CM CLI to each NPM GUI window. This will provide clarification when the user is performing patching operations on multiple offices.

### 1.3 Hardware Requirements or Dependencies

None.

### 1.4 Software Requirements or Dependencies

None.

### 1.5 Limitations and restrictions

This feature cannot be patched back to earlier releases due to NPM database changes that must occur with this feature.

### 1.6 Interactions

None.

### 1.7 Glossary

| Term | Description                 |
|------|-----------------------------|
| NPM  | Network Patch Manager       |
| PFRS | Patch File Receipt System   |
| GUI  | Graphical User Interface    |
| CLUI | Command Line User Interface |

## 2: Fault Management for A00006901

## 2.1 Fault management strategy

This feature moves the PatchFile Receipt System access from the SSPFS TOOL into the Network Patch Manger (NPM). This feature also addresses the difference between R-status patches and V-status patches. The addition of this software into the NPM warrants the addition of three new alarms:

- REL\_GEN\_NOT\_APP
- PFRSGETPATCH
- PFRSGENREPORT

## 2.2 Fault management strategy

No additional tools are implemented by this feature. Customer alarms for this feature are generated via the existing alarm software in the Network Patch Manager.

## 2.3 ALARMS

### 2.3.1 REL\_GEN\_NOT\_APP Alarm

- **Alarm Format:**

\*\* NPM360 SEP21 11:23:55 1100 INFO Alarm Raised

Alarm REL\_GEN\_NOT\_APP has been raised.

Alarm Description: Released patches not applied.

- **Severity:** Major
- **Cause:** A patch that has a status of R has been validated but not applied.
- **Duration:** The alarm will continue to alarm until all the R status patches have been applied.
- **Action:** Apply all R status patches.

### 2.3.2 PFRSGENREPORT Alarm

- **Alarm Format:**

\*\* NPM360 SEP21 11:23:55 1100 INFO Alarm Raised

Alarm PFRSGENREPORT has been raised.

Alarm Description: PFRS GENREPORT task has failed.

- **Severity:** Major
- **Cause:** PFRS GENREPORT failed to execute.
- **Duration:** The alarm will continue to alarm until the next successful execution of the PFRS GENREPORT task.
- **Action:** Fix the error and execute the task again.

### 2.3.3 PFRSGETPATCH

- **Alarm Format:**

\*\* NPM360 SEP21 11:23:55 1100 INFO Alarm Raised

Alarm PFRSGETPATCH has been raised.

Alarm Description: PFRS GETPATCH task has failed.

- **Severity:** Major
- **Cause:** PFRS GETPATCH failed to execute.
- **Duration:** The alarm will continue to alarm until the next successful execution of the PFRS GETPATCH task.
- **Action:** Fix the error and execute the task again.

## 2.4 Related documentation

# 3: Configuration for A00006901

## 3.1 Hardware and Software Requirements

This feature requires an SN08 Network Patch Manager (NPM) and the SN08 SSPFS platform.

## 3.2 Network Patch Manager Server

### 3.2.1 Initial Configuration

#### 3.2.1.1 Upgrade

One of the functions of this feature is to save System and User defined information in the NPM database from one release to the next starting with SN08.

Therefore, the procedure for upgrades from an SN08 NPM and beyond retains the *user* and *system* defined information for tasks, set, alarms, reports and



plans over an upgrade. If the user is upgrading from a pre-SN08 to SN08 the information in the database is un-initialized as it has always been.

If the user is going from SN08 to SN08 or above, the NPM now retains system and user defined data for tasks, sets, and plans.

If the user wishes to initialize the NPM database after the SN08 (and beyond) package has been installed; the user must exit the CLI tool after the NPM configuration and re-enter the CLI tool. The user must make their way back into the NPM configuration, only this time the user will choose “CreateDB”. Once this has finished executing, the NPM database will be initialized and all user defined data will be erased.

### **3.2.1.2 PFRS**

In SN07 the configuration of PFRS was moved to the CLI tool. Although the tool offered the user the ability to set up, and execute a PFRS GENREPORT and a PFRS GETPATCH either on demand or through a scheduler, the user needed to have root access to the SSPFS platform to utilize these commands.

This feature moves this information from the CLI tool into the NPM GUI and CLUI. Access for this functionality is the same as it is for all the other NPM maintenance commands; EMSADM.

The user may now set up the PFRS drop box information via a preferences window in the NPM GUI and via a preferences command in the NPM CLUI.

The user may also execute a PFRS GENREPORT and a PFRS GETPATCH on demand through the NPM by executing either one of two NPM system pre-defined tasks; PFRSGENREPORT and PFRSGETPATCH.

Both of these tasks are available in the Maintenance GUI panel or can be executed as part of the existing runtask command in NPM CLUI.

This feature also provides new functionality for the PFRS user. The user can now decide if they would like the NPM to “clean up” or delete patches from the drop box that have been transferred to the NPM after the PFRSGETPATCH task has been executed.

#### **3.2.1.2.1 PFRS Scheduling**

These two tasks can also be scheduled through the NPM Scheduler either via a user defined plan or via the provided NPM system plans; GETPATCH and GETREPORT. Although neither of the plans are defaulted to enabled; the default execution time for GETREPORT is at 9:00 am and the default execution time for GETPATCH is 11:00 pm.

It is recommended that the GETREPORT plan be scheduled to execute before the GETPATCH plan. Both plans should be executed before the NPM System plan.

### 3.2.1.3 Delete Reports

Delete Reports is a new NPM system defined task. This task is used to delete reports that have been created and left in the /data/npm/reports directory. Reports that are left in this directory are created when a user schedules reports to execute through the NPM Scheduler.

### 3.2.1.4 Automatic audit of MG9K and GWC devices after reload

This feature changes the 20 minute audit after an MG9K or GWC device reload to be immediately. This will provide immediate information back to the user/customer about the device load and if patches need to be re-applied.

## 3.3 Network Element Patch Manager GUI/CLUI

### 3.3.1 New/modified GUIs

The NPM GUI has been modified to include a new “View” button on specific NPM GUI panels and a new PatchFile Retrieval Preferences tab as part of the Preferences GUI. The following table will identify the names of each panel that has been modified as a result of this feature because of these specific items and others that will be described later in this document.

**Table 1 New or modified GUIs**

| GUI name                                      | NEW, CHANGED, or DELETED |
|-----------------------------------------------|--------------------------|
| Maintenance - Task List                       | CHANGED                  |
| Maintenance - Maintenance Task                | CHANGED                  |
| Reports - Report List                         | CHANGED                  |
| Alarms - Alarm List                           | CHANGED                  |
| Plans - Plan List                             | CHANGED                  |
| Preferences - PatchFile Retrieval Preferences | NEW                      |

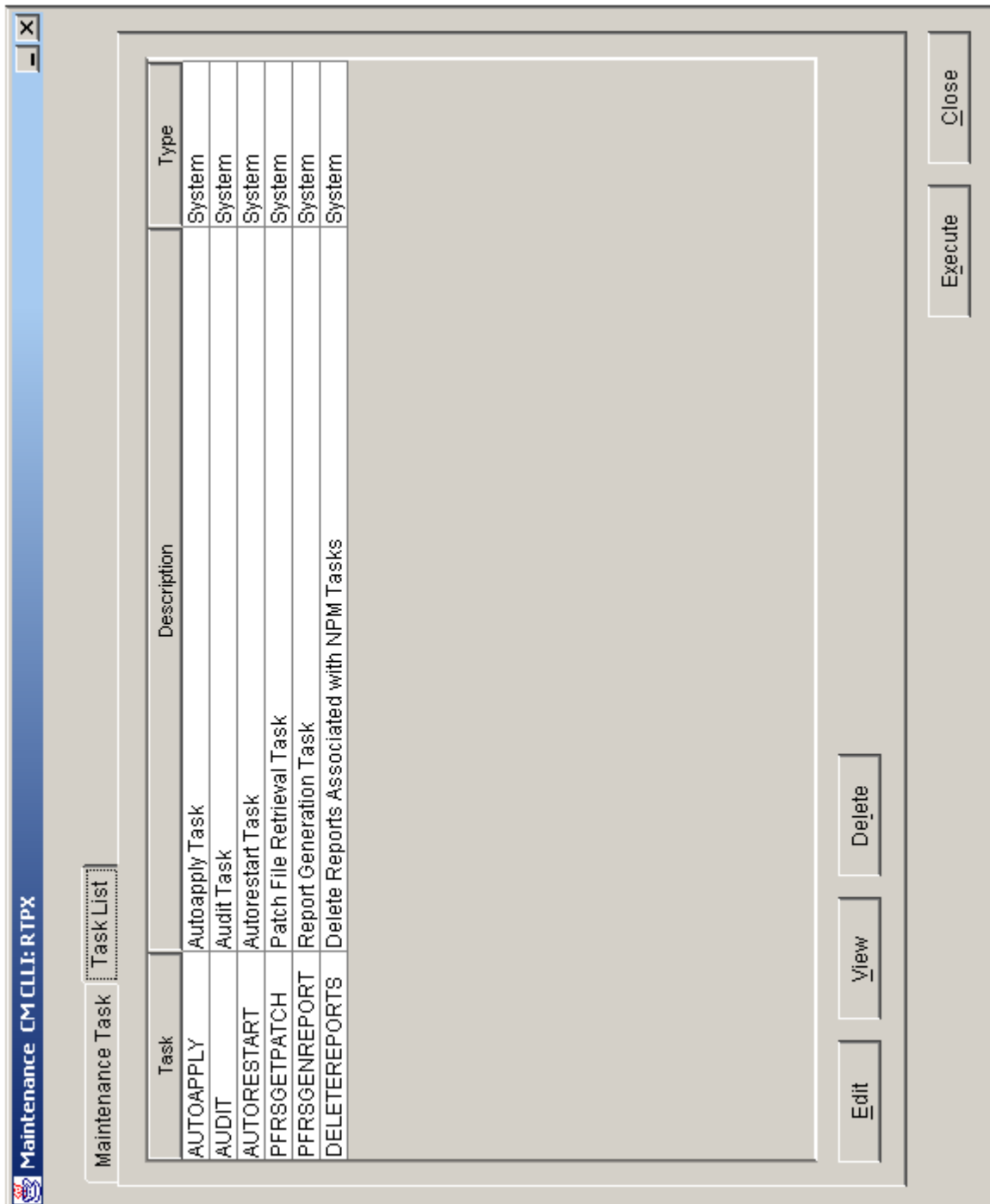
### 3.3.2 GUI information

In addition to the GUI/CLUI items that have been added as a result of the NPM Server, this feature provides the following new features specific to the NPM GUI:

- System defined information in the NPM GUI can now only be viewed and cannot be edited.

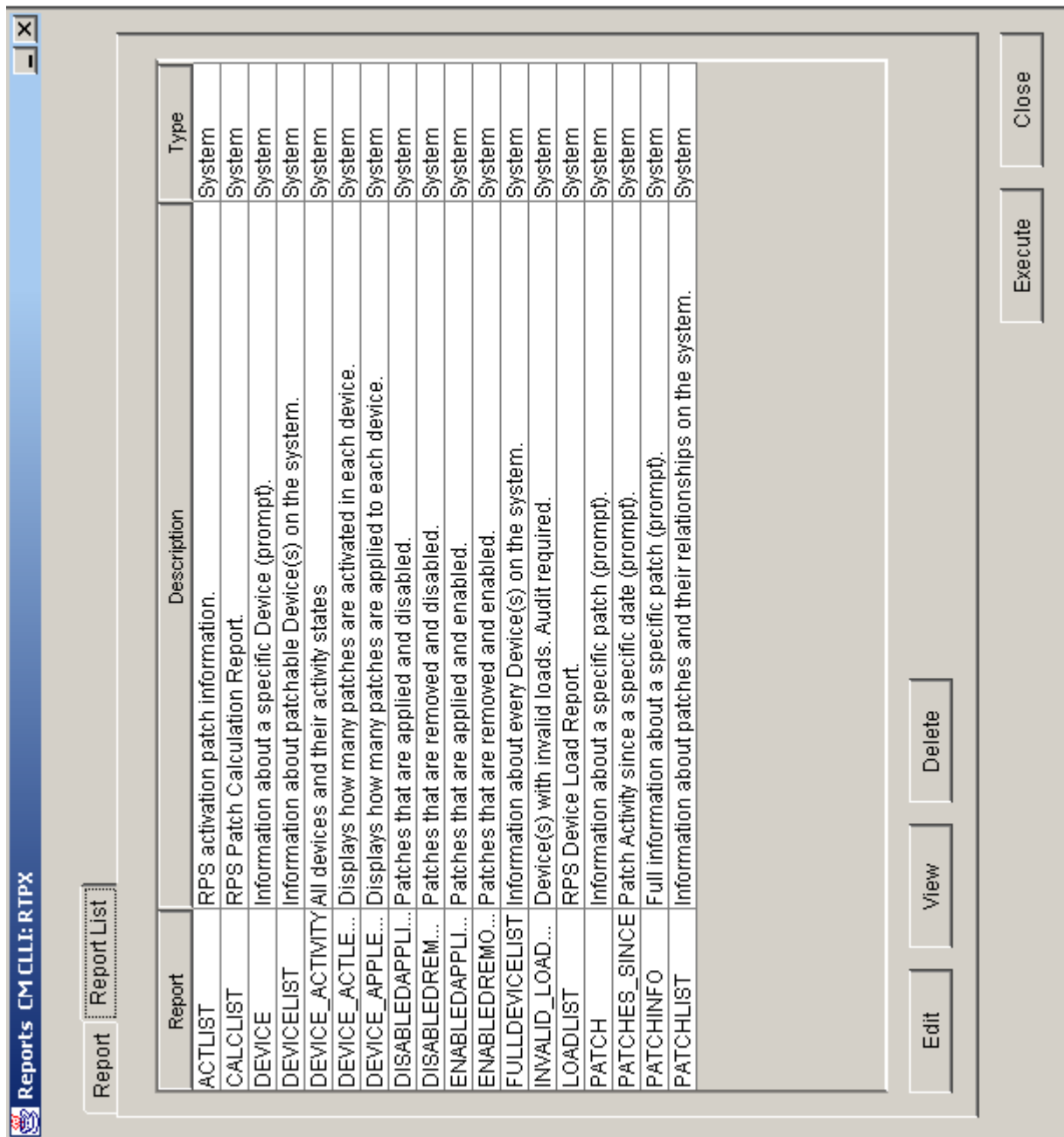
- a new refine or filter button will be available which will allow the user to quickly determine which patch(es) are applicable to which device(s) and vice versa.
- a process monitor has been added which will provide a visual indicator to the user that a submitted request is in progress. This monitor will be specific to each instance of the NPM GUI and will not indicate activity of multiple GUIs.
- the CM CLI will appear on each NPM GUI window. This will provide clarification when the user is performing patching operations on multiple offices.

Figure 1 GUI name: Maintenance - Task List



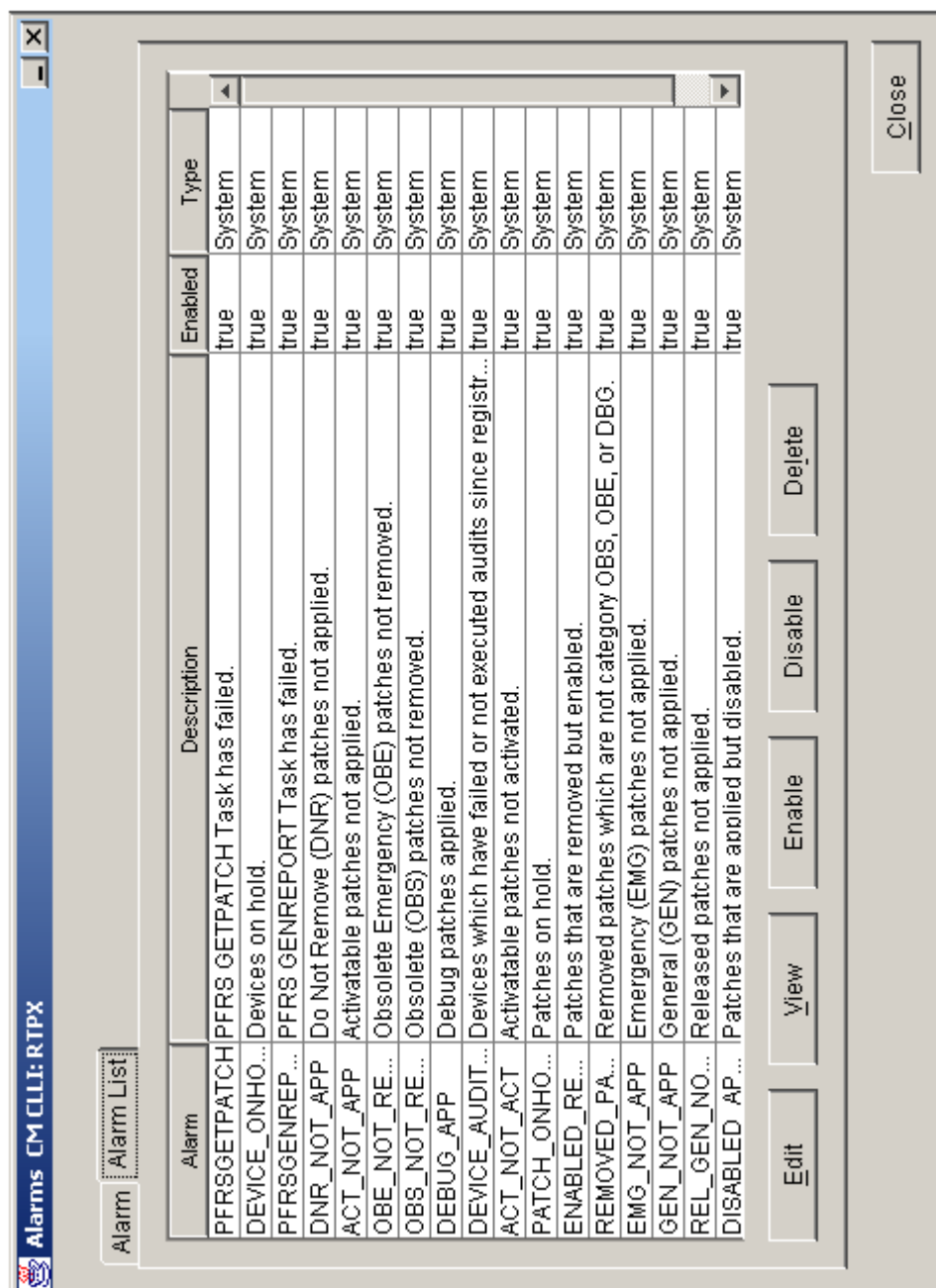
Notice the three new system defined tasks and the new “View” button on the bottom of the panel. System defined tasks can only be viewed.

Figure 2 GUI name: Reports - Reports List



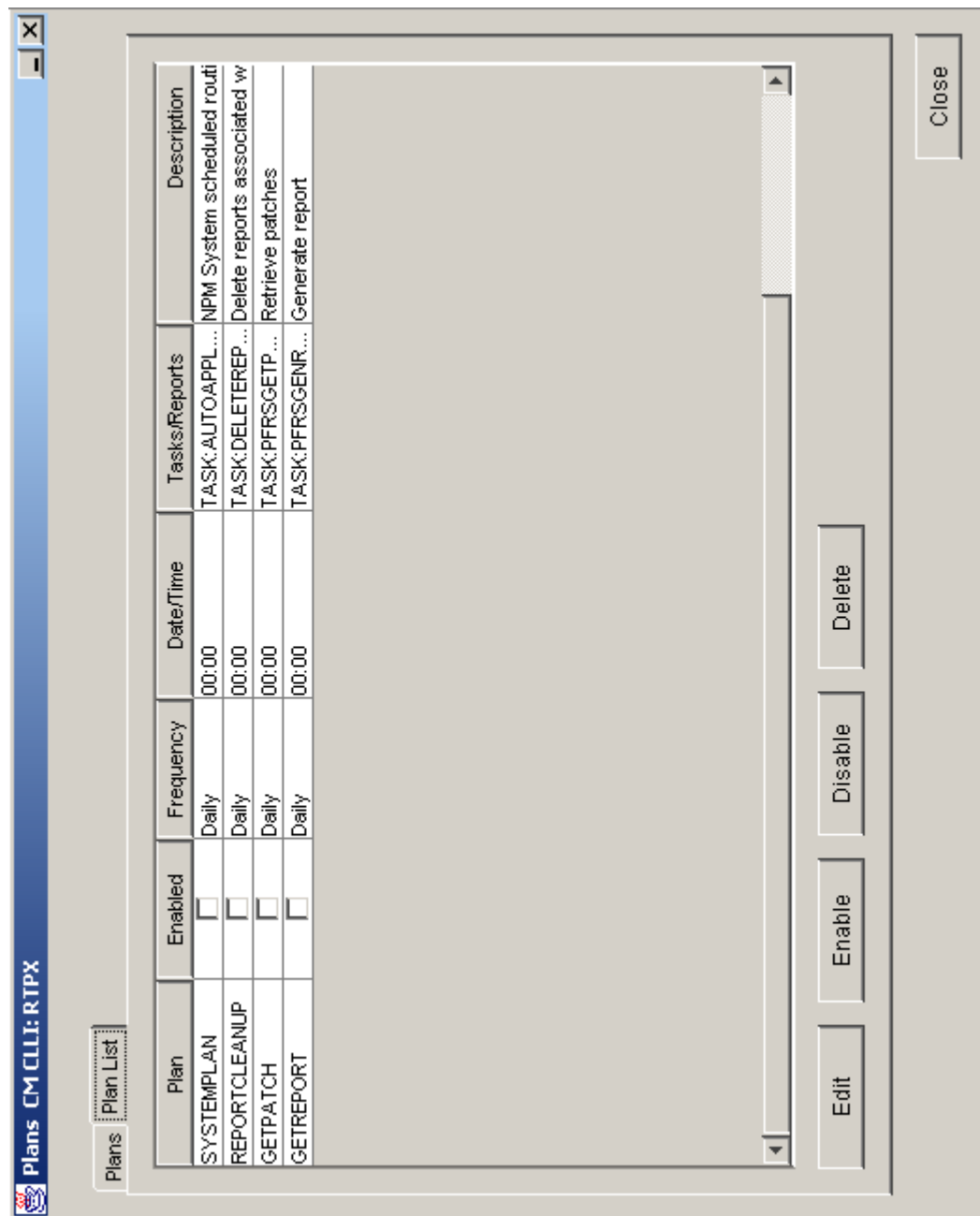
Notice the new “View” button on the bottom of the panel. System defined reports can only be viewed.

Figure 3 GUI name: Alarm - Alarm List



Notice the new “View” button on the bottom of the panel. System defined reports can only be viewed.

Figure 4 GUI name: Plan - Plan List



Notice the three new system defined plans that can be enabled and scheduled.

**Figure 5 GUI name: Preferences - PatchFile Retrieval Preferences**

Preferences CM CLI: RTPX

User Preferences Patch File Retrieval Preferences

These settings apply to the system and will effect all users.

Drop Box IP/Hostname:

Drop Box User ID:

Drop Box Password:

☐ Delete Patch Files from Drop Box after Retrieval

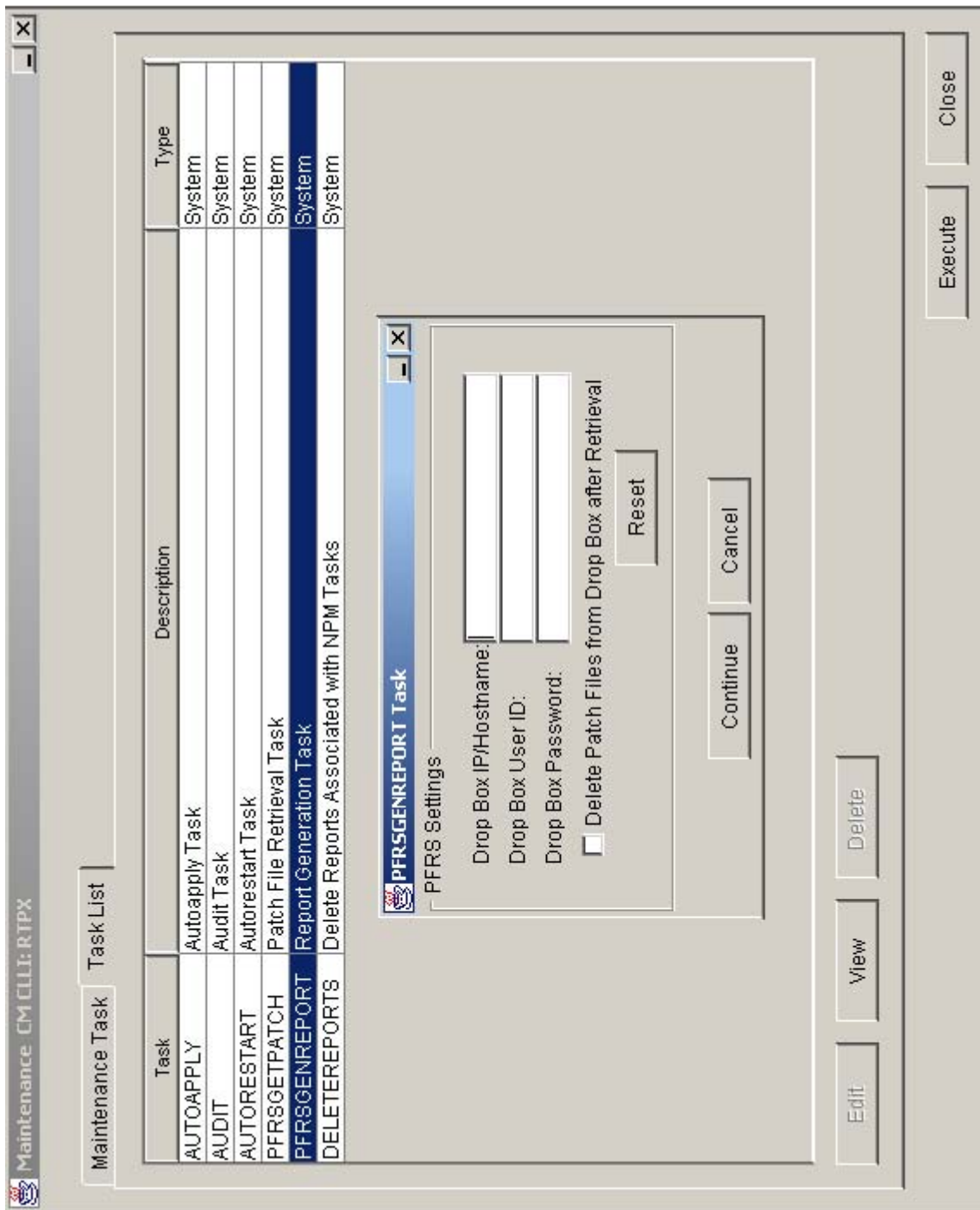
Reset

OK Cancel

This PatchFile Receipt Preference window allows the user to setup the drop off box information for the PatchFile Receipt System. The IP/Hostname, and user id will be verified and a warning message will be sent back to the user if the information cannot be verified. However, the information will still get put into and stored in the NPM database, since the user/customer may not have this remote drop off box configured at the time this information is input. If the information is still incorrect at execution time of either PFRSGENREPORT or PFRSGETPATCH task, an error will occur and an alarm will be set. This information can also be set through the NPM CLUI and will execute in the same manner.

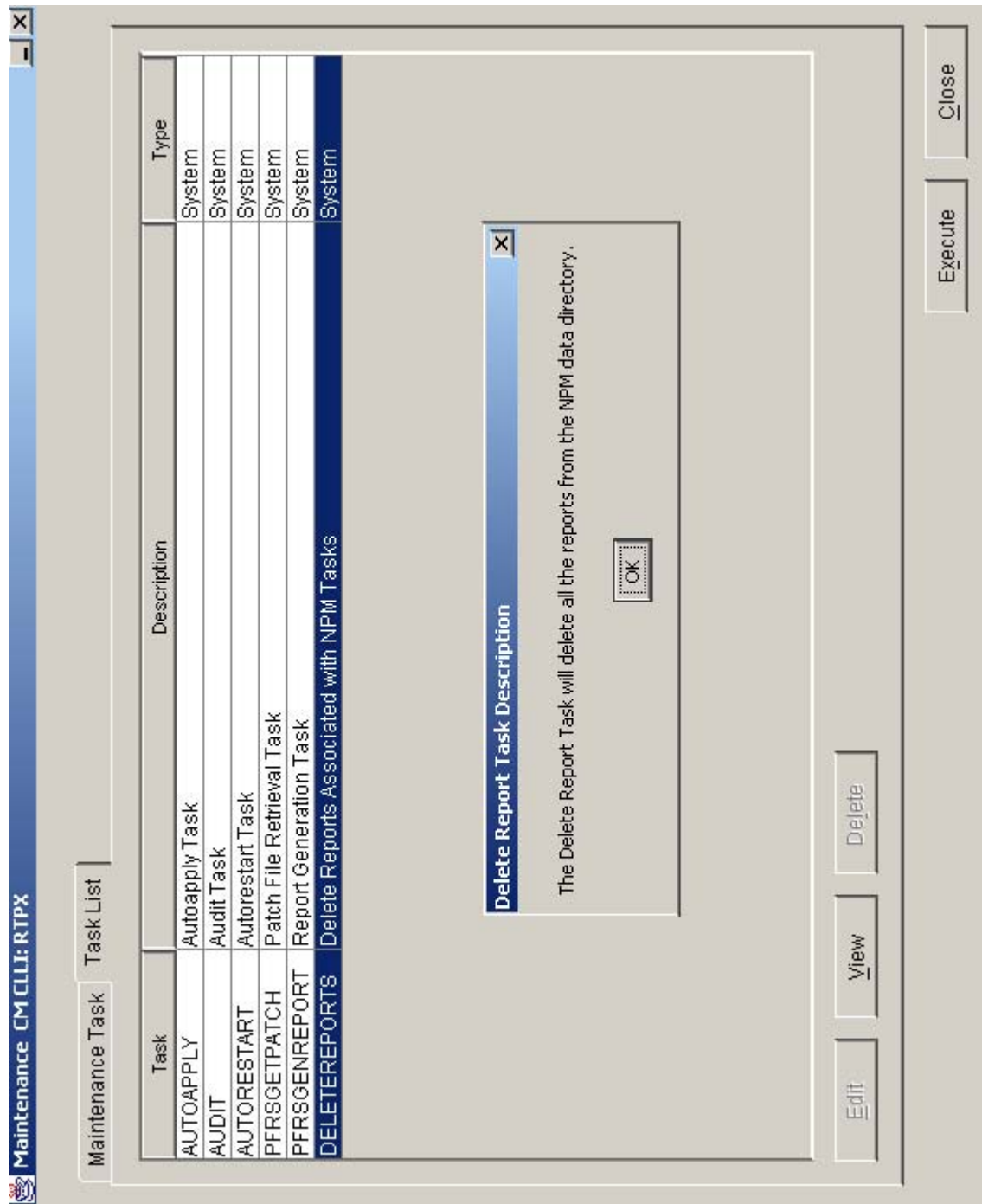


Figure 6 GUI name: PFRS TASK with preferences



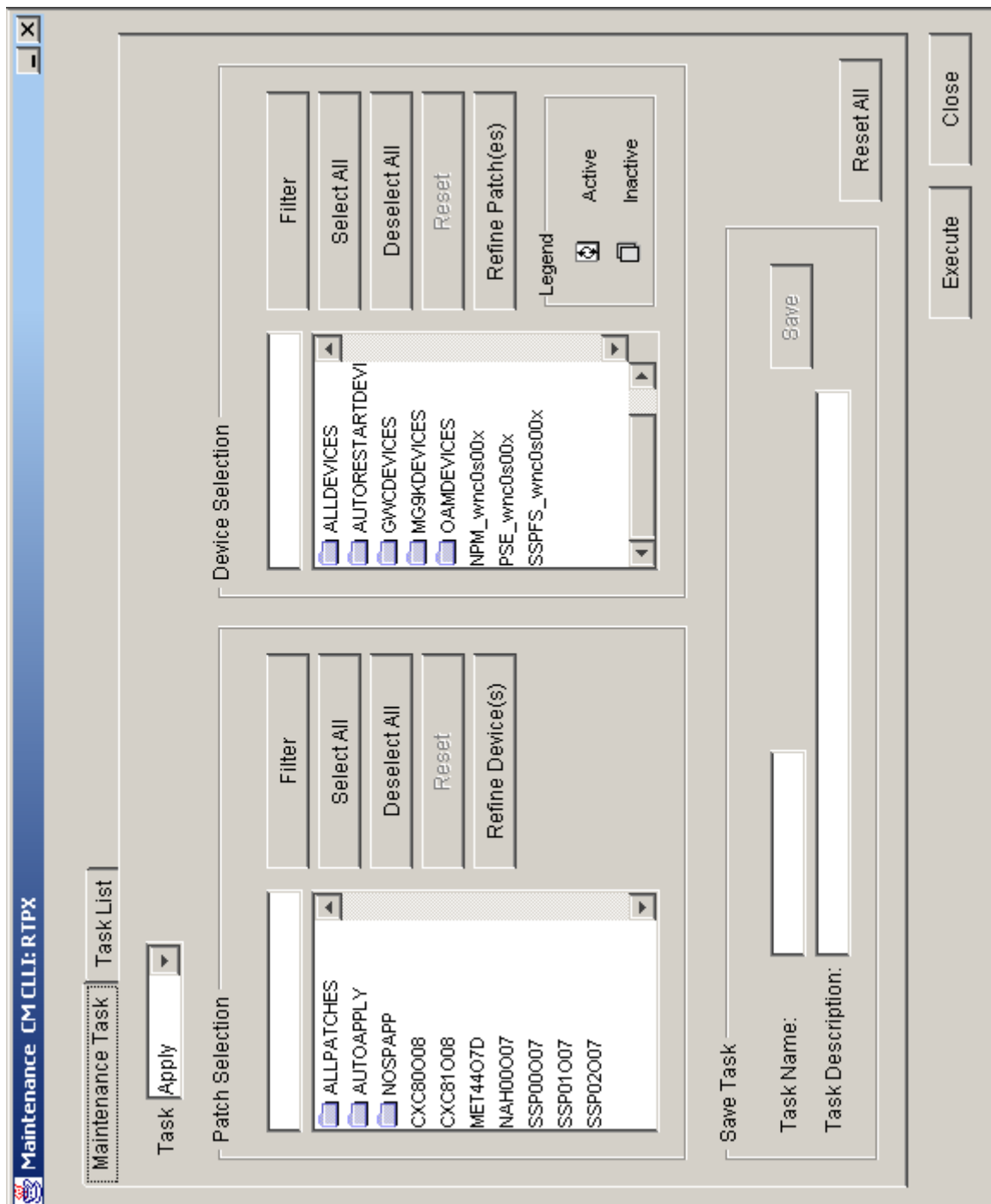
Notice the PFRS Preferences pop up window. This window is provided for each the PFRSGENREPORT and the PFRSGETPATCH task. This provides another option for the user to set up and execute either of these two tasks from the NPM GUI.

Figure 7 GUI name: Delete Task View



A new pop up window has been provided for tasks that do not contain either patches or devices. This pop up window provides the user a description of the task.

Figure 8 GUI name: Maintenance Task



Notice the new Refine Devices and Refine Patches buttons. These buttons narrow down either the devices or the patches for specific chosen patch or device.

### 3.3.3 CLUI Interface

The NPM CLUI provides the same functionality for the new PFRS access and task access as the GUI does. The following figures illustrate the commands in the NPM CLUI.

**Figure 9 NPM CLUI Command Examples**

```
npm>pfrsview

Retrieving PFRS settings...

Current PFRS Settings

IP address/Hostname : 47.142.164.252
Userid : FIELD
Delete Patches After Retrieval: N

npm>pfrsset 47.142.117.20 FIELD N
Enter password for drop box:
Setting PFRS preferences done

npm>qtask all

System retrieved...6
AUTOAPPLY: Autoapply Task (System Defined)
AUDIT: Audit Task (System Defined)
AUTORESTART: Autorestart Task (System Defined)
```

**Figure 10 NPM CLUI Command Examples**

```
npm>runtask PFRSGENREPORT
```

```
npm>
```

```
Reason : Passed
```

```
Detail : PFRS Gen Report was successful.
```

```
npm>pfrsset wnc0s00x FIELD N
```

```
Enter password for drop box:
```

```
Setting PFRS preferences done
```



# Baseline information

## Baseline information

This chapter provides information on all Logs/faults, and on all operational measurements (OMs), organized by network element. Some information appears in NE-specific Appendices to this document. Those appendices are referenced in the text of this chapter where appropriate.

### Logs/Faults information

A log report is a record of a message that your system generates whenever a significant event has occurred in the switch or one of its peripherals. Log reports include status and activity reports, as well as reports on hardware or software faults, test results, changes in state, and other events or conditions likely to affect the performance of the switch. Either a system action or a manual action can generate a log report.

**Note:** Some of the element managers use a graphical user interface (GUI), so they display faults on the workstation monitor screen rather than generating log reports.

Alarms are generated by the system when problems or conditions are detected that can change the performance or working state of a network or network element. Daily operation of the network requires monitoring for alarms and checking that functions continue without interruption. Alarms provide notification that a system hardware or software-related event has occurred.

### Using Syslog

In SN06 an alternative is introduced to log/fault delivery from each separate element management system. Syslog can be used to aggregate some of the individual fault/log streams into the SCC2/NT STD stream on the CS 2000 Core Manager/SDM.

The network will be using syslog in several ways:

- Alarms/Faults - custlog stream - Many element managers and network elements, including SDM Platform, CS 2000 SAM21 Manager, STORM, CS 2000 GWC Manager, UAS Manager, MDM (for PP15K MSS), and some CS 2000 Management Tools applications, use syslog as one mechanism for notify other systems of fault events. One consumer of those

fault events is the SCC2/NT STD log converter provided on the CS2000 Core Manager/SDM. The SCC2/NT STD log converter will collect events from those sources via the custlog format and merge those events into the SCC2/NT STD stream with the CS2000 Core fault events.

- Audit trail - Carrier VoIP is also using syslog to capture the user audit trail our network elements and element managers. The audit trail contains a history of significant user and OSS activity. Syslog is the only protocol which will contain the audit trail.
- Security log - Carrier VoIP is also using syslog to capture the security logs from our network elements and element managers. The security log contains both success and failure history of authentication and authorization activities. This stream will also contain security related events from IPSec/KCE and other key negotiation systems. Syslog is the only protocol which will contain the security log stream.
- Debug log - some components use syslog for diagnostic and debug information used by the Nortel support personnel. This stream is not exported beyond the EMSs and is not configured or documented for end user or customer access.

### **Alarm reporting for DMS and SPM-based equipment**

The alarm reporting system integrates event detection and alarm notification functions. An alarm becomes active when reduced service, reliability, or a test condition occurs in the network or network element. The alarm remains active until a system event or activity performed by operating company personnel clears the alarm condition. The alarm system includes audible notification and visual display through warning lights and the MAP terminal. Many alarms generate automatic logs reports when raised or cleared.

For DMS and SPM-based equipment, the MAP terminal displays alarm codes in the banner and the subsystem status summary field (SSSF). The alarm banner displays alarm codes that indicate the effect of the alarm event on the network or network element. The SSSF displays alarm codes that indicate equipment faults of system states.

### **Alarm reporting for Passport 15000**

The MDM collects Passport 15000 and MDM alarm and log data through Ethernet connections to each. The MDM includes both graphical and command-line user interfaces to perform the various network management activities. Within the MDM, device states, device subcomponents, and links are represented by a specific color. The mapping from state to color is user configurable. Alarms are presented on the MDM with a color to distinguish the alarm severity. The color to alarm severity mappings are configurable.

Alarms generated by the Passport 15000 are sent to the MDM. For the PT-AAL1 solution, the MDM sends alarms to the CS 2000 Core Manager for

conversion to SCC2 or DMS STD format and subsequent forwarding to the OSS. For the UA-AAL1 solution, alarms are made available to the OSS through the MDM's fault APIs. These alarms are viewable through MDM surveillance tools, which includes Alarm display, Network Viewer, and Component Information Viewer.

### **MDM alarm display**

The MDM tool provides a common format for viewing logs for Passport 15000 devices. The Alarm Display supports both Alarm Log and Active Alarm display modes, and provides both accept and reject filters to allow you to view a specific subset of alarms. This tool also provides access to diagnostic information for a selected alarm by using Alarm Help. In addition, the Alarm Display has an Alarm Acknowledgment utility that allows you to indicate that an alarm is being investigated. The indication shows the user who is responsible for the acknowledgement (or non- acknowledgement) and the reason for the acknowledgement (or non- acknowledgement).

For additional information about the MDM, refer to the following documents:

- 241-6001-011, *MDM Fault Management Guide*
- 241-6001-501, *MDM Proxy Alarms Reference Guide*
- 241-6001-801, *MDM Overview*

### **Log Delivery Service application**

The Log Delivery Service application collects logs generated by the Communications Server 2000 (CS2000) and from the CS2000 Core Manager log stream, formats these logs, and can deliver them as a single stream to the downstream Operational Support Systems (OSS).

The CS2000 log feed includes logs for itself and all peripherals managed by it, such as: MG 4000, IW-SPM, DPT-SPM and SPM. Logs are generated locally on the CS2000 Core Manager for its own faults and status changes and are merged with the CS2000 feed. The Log Delivery Service application provides log reports in ASCII text format at a single interface for inbound or outbound TCP/ connections.

### **Passport Log Streamer application**

In conjunction with the Log Delivery Service application, the Passport Log Streamer application allows the CS2000 Core Manager to also receive MDM and Passport 15000 logs. When Passport Log Streamer comes into service it will connect with the MDM and register for alarm events. All active alarms currently tracked by the MDM will be transferred to the CS2000 Core Manager at this time.



When the Passport Log Streamer receives an event, it converts the event into an SCC2 or DMS STD format and sends the log to the CS 2000 Core Manager Log Delivery Application.

### Log formats

The Log Delivery service provides reports in either Switching Control Center 2 (SCC2) or Standard (STD) format. Some of the high-level differences between SCC2 format logs and STD format logs are as follows:

- SCC2 has no CS2000 identifier as found in the top left hand corner of the STD log. This field is datafilled on the CS2000 in table OFCVAR, tuple LOG\_OFFICE\_ID.
- SCC2 logs do not contain the date in the header on which the log was generated.
- SCC2 logs only give the minutes past the hour in which the log was generated, while the STD log gives the hour, minutes, and seconds.
- A critical severity log is represented by \*C in SCC2 format, and by \*\*\* in STD format.
- If applicable, the SCC2 log will have the name of the component and/or peripheral generating the log in the log header.
- When Ecore\_FORMAT (table OFCVAR on the CS2K) is enabled, SCC2 formatted logs display the optional parameter NodeName on a new line immediately following the header. This new line is not indented and has the following format: Log from node <NodeName>.
- SCC2 headers (having less information) are less likely to have the Equipment Identifier field found in some logs wrapped to the next line. (See NT STD format definition section below).

See the following example to see the difference in the formats, using a CARR811 log.

#### Standard format:

```
ASN06SWITCH * CARR811 FEB24 00:45:05 3320 TBL CARRIER SPM 39
 CKT: 63 CarrName: SPM39_STS1P_1_VT15P_1_DS1P_28
 Carrier: STS1P 1 VT15P 28 DS1P 1
 UAS-N Threshold Crossing Alert: 10
 Accumulation Interval: 0:00:10 Period: 15 minutes
 Location: SPM 39 Type: SMG4 Fabric: ATM
```

#### SCC2 format:

```
* 45 CARR811 3320 TBL CARRIER SPM 39
 CKT: 63 CarrName: SPM39_STS1P_1_VT15P_1_DS1P_28
 Carrier: STS1P 1 VT15P 28 DS1P 1
 UAS-N Threshold Crossing Alert: 10
```

Accumulation Interval: 0:00:10      Period: 15 minutes  
Location: SPM 39    Type: SMG4      Fabric: ATM

### NT Standard log format and definitions

NT Standard log format:

<LogOfficeId>\_<NodeName>\_<POA><Threshold><LogName><ReportNumber>\_<DateIndicator>\_<TimeIndicator>\_<SequenceNumber>\_<EventType>\_<EventLabel>\_<EquipmentIdentifier>CR  
<LOG BODY>CR

where:

- The < and > denotes the beginning and end of a field.
- **Bold** text denotes optional fields that may or may not be there.
- CR = carriage return.
- <LOG BODY> = 0 to n lines of text - usually each line begins following an indentation of 8 spaces.
- \_ denotes a space delimiter between fields.

#### Office Identifier <LogOfficeId>:

Field Length/Format: variable length (1 to 12 characters)

Field Value(s): typically an 11-character Office CLI name

Comment: This field's value corresponds to what is datafilled in your switch's table OFCVAR, tuple LOG\_OFFICE\_ID. A maximum of 12 characters can be datafilled into the LOG\_OFFICE\_ID tuple. Normally though, the value of this tuple in customer sites matches that of the Office CLI name. The Office CLI name has a standard length of 11 characters. In the switch it is datafilled in table OFCENG, tuple OFFICE\_CLLI\_NAME. (So OFFICE\_CLLI\_NAME and LOG\_OFFICE\_ID would be datafilled the same). In a log sent downstream to an OSS, the Office Identifier field will be seen by the OSS as 1 word with no spaces. No padding of spaces will occur with this field to make it 12 characters. i.e. If the log\_office\_id value is 6 characters in length, the space following the field will be the delimiter to the next field.

#### Node Name:

Field Length/Format: fixed length (8 characters)

Field Value(s): Node name that is left justified within the 8 character field. Padding of spaces will occur to ensure 8 character length.

Comment: This optional field is generally not recommended for implementation. The value of the field is often "CM" which has low value and the extra 9

characters (8 + space) increases the length of the header. A longer header may result in line wrapping of the Equipment Identifier field which is present in some logs. A wrapped header is difficult for OSSs to accommodate.

**Alarm Level Indicator / Priority of Action (POA) / Severity:**

Field Length/Format: fixed length (3 characters)

Field Values: '\*\*\*' or '\*\*' or '\*' or ' ' (Note the right justification of the \*s).

**Threshold:**

Field Length/Format: 1 character field (Note: there are no space delimiters before/after)

Field Value(s): A + sign if the log is thresholded. A space if the log is not thresholded.

**Log Name/Report Name/Log Prefix:**

Field Length/Format: fixed length (4 characters)

Field Value(s): The log name is right justified within the 4 character field. Padding of spaces will occur at the beginning for names less than 4 characters. E.g. 'CARR' or ' SPM'. Note that the Log Name and the Report Number are considered a single entity. i.e. The SPM300 log.

**Report Number:**

Field Length/Format: fixed length (3 characters)

Field Value(s): The number will always be 3 digits. i.e. 100 to 999.

**Date Indicator:**

Field Length/Format: fixed length (5 characters); MMMDD where MMM is JAN through to DEC and DD is 01 through to 31

Field Value(s): E.g. DEC04

**Time Indicator:**

Field Length/Format: fixed length (8 characters); HH:MM:SS where HH is 00 through 23, MM is 00 through 59, and SS is 00 through 59

Field Value(s): E.g.: 20:39:13 or 00:00:00 or 23:59:59

**Sequence Number:**

Field Length/Format: fixed length (4 characters); NNNN where the range is 0000 through 9999

Field Value(s): E.g. 0000 or 2358 or 9999. Once 9999 is reached, the number will go back to 0000. In SDM, STD\_OLD and SCC2\_OLD formats should increment the sequence number by 1 and SCC2/STD formats increment the sequence number in the same fashion as the CS2K does. In IEMS, SCC2/STD formats increment the sequence number by 1.

**Event Type:**

Field Length/Format: fixed length (4 characters);

Field Value(s): Left justified text with spaces at the end to pad to 4 character length. Examples: 'INFO', 'TBL ', 'FLT ', 'OFFL', 'SYSB', ' ', and so on.

**Event Label:**

Field Length/Format: variable length of characters; can contain more than 1 word separated by spaces

Field Value(s): E.g.: “SDM BASE MAINTENANCE”, or “CARRIER”.

**Equipment Identifier:** (last field to be considered part of the header)

Field Length/Format: fixed length (4 characters) node type, followed by a space, followed by a numeric node number

Field Value(s): Node type portion is left justified and padded with spaces at the right if less than 4 characters. The node number portion is left justified. E.g. 'SPM 0', 'LIU7 43', 'SPM 71'.

Comment: This field is not found in all logs and should be considered rare. Known log types where this field is present are CARR and in some PM logs.

**Log Body:** (Not part of header. It follows the header).

Field Length/Format: Text in the log body usually follows an indentation of 8 spaces. Each line of text is variable in length.

Field Value(s): Can be anything but each unique log should typically always get sent out the door in the same format.

**Notes**

- Not all logs have an Equipment Identifier at the end of the header. There is no list of logs that have an Equipment Identifier and it would be an exhaustive task to determine all of which they are. Known log types that make use of the Equipment Identifier are CARR and PM. Since the Event Label can be any number of words separated by spaces, there is no obvious delimiter between the Event Label and the Equipment Identifier beyond the space that will be present. There are a couple things OSSs can do with this: take the Event Label and Equipment Identifier as just 1 string of

characters OR try to extract the Equipment Identifier out of the header independently of the Event Label. Note that the latter may not always be necessary because the body of the log may mention the Node as well. The presence of the Equipment Identifier in logs appears to be very rare and appears to be an old legacy thing that was done but isn't common practice anymore.

- For logs originating from the CS2000/XA-Core/DMS, Event Types and Event Labels for specific logs can be determined on the switch using the 'logutil' tool. In logutil, the 'listreps' and 'listroute' commands can be used to view that information. Note that the presence of a log in the tool's output list of logs does not mean that the log is actually active code where an OSS will see it downstream. Some are benign logs or development not yet completed that are sometimes listed there.

#### Example

```
LOGUTIL:
>listreps spm
Log Rep. Event Suppressed/
Name No. Class Type Event Label Thresholded Syslog

 SPM 650 0 PASS
 SPM 651 0 FAIL
 SPM 300 0 TBL Device Fault Report
 SPM 331 0 TBL Failed Device Pro...

 SPM 709 0 INFO SPM ISDNPROT DDM ...
 SPM 710 0 INFO SPM ISDNPROT DDM ...
XX report(s) printed
>listroute report spm 710
REPORT SPM 710 (SPM ISDNPROT DDM Audit) IS CLASS 0
ADDED:
DELETED:
```

- An actual SDM log sample file or feed should be analyzed for determination of a log's character by character format information. For determining things such as how many carriage returns there are between logs, or where spaces are, this is crucial. Note that a log header for a specific log very rarely changes in going from one software release to the next. The only fields that could change is the Severity, Event Type, Event Label and presence of an Equipment Identifier. Changes would be as a result of a feature change or resolve an issue with those fields' values.

### Audio Codes Media Server (AMS)--available logs/faults

The following table lists the AMS logs available. The MS2020 server is for ATM networks. For detailed information on logs, refer to NN10275-909, *Fault Management Log Reference*.

#### AMS Logs/Faults available

| Log/Fault | Description                                                                              |
|-----------|------------------------------------------------------------------------------------------|
| AMS300    | ac Board Resetting Cleared only by a acBoardEvBoardStarted trap; or ac Board Fatal Error |
| AMS301    | ac Board Configuration Error                                                             |
| AMS302    | ac Board Temperature Alarm                                                               |
| AMS303    | ac Feature Key Error                                                                     |
| AMS304    | ac Board Call Resources Alarm                                                            |
| AMS305    | ac Board Controller Failure Alarm                                                        |
| AMS306    | ac Board Ethernet Link Alarm                                                             |
| AMS307    | ac Board Overload Alarm                                                                  |
| AMS308    | ac Active Alarm Table Overflow                                                           |
| AMS309    | ac Atm Port Alarm                                                                        |
| AMS500    | ac Board Event Board Started. This trap is a signal to clear the active alarm table.     |
| AMS501    | cgw Administrative State Change                                                          |

### Audio Provisioning Server (APS) --available logs/faults

The following table lists the APS logs available. For detailed information on logs, refer to NN10275-909, *Fault Management Log Reference*.

#### APS Logs/Faults available

| Log/Fault | Description                                 |
|-----------|---------------------------------------------|
| APS398    | Indicates a raised alarm in the APS device. |
| APS399    | Indicates an alarm clear in the APS device. |

### Compact Call Agent (CCA)--available logs/faults

The following table lists the Compact Call Agent Logs/Faults available. These logs were also previously referred to as 3PC.

Call Agent supports SCC2 or NT STD formatted logs through SDM functionality, or it can be supported through IEMS. For details on the IEMS interface, refer to the section in this document titled "SN07 IEMS Functionality." For details on the SDM protocol/format, refer to FCAPS

documentation NN10023-111. For detailed information on logs, refer to NN10275-909, *Fault Management Log Reference*.

### CCA Logs/Faults available

| Log/Fault                                                                                                           | Description                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Network Element: Call Agent</b>                                                                                  |                                                                                                                                                                                  |
| For details on these Logs/Faults, refer to the Fault section of documentation related to Compact CS2K, NN10023-911. |                                                                                                                                                                                  |
| CCA300                                                                                                              | Response to a minor, major, or critical alarm; indicates that free space in RAM is low. Severity is determined by the amount of free space remaining.                            |
| CCA301                                                                                                              | Response to a minor, major, or critical alarm; indicates one or more time segments has exceeded the threshold. Severity is determined by the number of time segments affected.   |
| CCA302                                                                                                              | Response to a minor, major, or critical alarm; indicates that free space on the root file system is low. Severity is determined by the amount of free space remaining.           |
| CCA303                                                                                                              | Response to minor, major, or critical alarm; indicates that one or more software processes have terminated abnormally. Severity is determined by the number of process affected. |
| CCA304                                                                                                              | Response to a minor, major, or critical alarm; indicates that one or more Network File Systems is inaccessible. Severity is determined by the number of systems affected.        |
| CCA305                                                                                                              | Response to a minor, major, or critical alarm; indicates that time synch is lost to one or more NTP servers. Severity is determined by the number of servers affected.           |
| CCA309                                                                                                              | Response to a major or critical alarm; may be a PCI bus fault, an ECC memory fault, or a parity error. A critical alarm requires card replacement.                               |
| CCA315                                                                                                              | SOS application simplex                                                                                                                                                          |
| CCA316                                                                                                              | SOS application is out-of-service                                                                                                                                                |
| CCA322                                                                                                              | Image test failed                                                                                                                                                                |
| CCA331                                                                                                              | Unable to communicate to mate via ethernet/fiber                                                                                                                                 |
| CCA335                                                                                                              | Ethernet interface down                                                                                                                                                          |
| CCA336                                                                                                              | Unable to communicate to the network                                                                                                                                             |
| CCA351                                                                                                              | Response to major CON and APL alarms because the mate Call Agent unit is unavailable.                                                                                            |
| CCA355                                                                                                              | Response to a minor alarm; indicates the inactive unit is jammed to prevent a SWACT.                                                                                             |
| CCA362                                                                                                              | Response to a minor alarm; indicates at what point one or more REx tests has failed.                                                                                             |
| CCA365                                                                                                              | System REx has not started for over 7 days                                                                                                                                       |
| CCA375                                                                                                              | One unit has a different CPU type than the other                                                                                                                                 |
| CCA380                                                                                                              | One unit has a different committed patch file version than the other                                                                                                             |
| CCA600                                                                                                              | Indicates the alarm referenced in log CCA300 has been cleared.                                                                                                                   |
| CCA601                                                                                                              | Indicates the alarm referenced in log CCA301 has been cleared.                                                                                                                   |
| CCA602                                                                                                              | Indicates the alarm referenced in log CCA302 has been cleared.                                                                                                                   |
| CCA603                                                                                                              | Indicates the alarm referenced in log CCA303 has been cleared.                                                                                                                   |

**CCA Logs/Faults available**

| Log/Fault | Description                                                                              |
|-----------|------------------------------------------------------------------------------------------|
| CCA604    | Indicates the alarm referenced in log CCA304 has been cleared.                           |
| CCA605    | Indicates the alarm referenced in log CCA305 has been cleared.                           |
| CCA609    | Indicates the alarm referenced in log CCA309 has been cleared.                           |
| CCA615    | Alarm referenced in CCA315 has been cleared                                              |
| CCA616    | Alarm referenced in CCA316 has been cleared                                              |
| CCA620    | Image test started                                                                       |
| CCA621    | Image test finished                                                                      |
| CCA631    | Able to communicate via ethernet/fiber                                                   |
| CCA635    | Ethernet interface ok                                                                    |
| CCA636    | Able to communicate to the network                                                       |
| CCA651    | Indicates the alarm referenced in log CA351 is cleared and duplex operation is restored. |
| CCA655    | Indicates the alarm referenced in log CA355 is cleared.                                  |
| CCA660    | Response to a minor alarm; indicates that a REx test has started.                        |
| CCA661    | REx test finished                                                                        |
| CCA663    | REx test rejected                                                                        |
| CCA665    | Alarm referenced in CA365 has been cleared                                               |
| CCA670    | Swact failover started                                                                   |
| CCA671    | Swact failover finished                                                                  |
| CCA675    | Alarm referenced in CA375 has been cleared                                               |
| CCA680    | Alarm referenced in CA380 has been cleared                                               |

**CS2K Management Tools (CMT)--available logs/faults**

The following table lists the CS2000 Management Tools logs available. CS2K supports SCC2 or NT STD formatted logs through SDM functionality, or it can be supported through IEMS. For details on the IEMS interface, refer to the section in this document titled "SN07 IEMS Functionality." For details on these logs, refer to the Fault Management section of CS2K Management Tools, NN10325-900. For detailed information on logs, refer to



NN10275-909, *Fault Management Log Reference*.

### CS2K Management Tools Logs/Faults available

| Log/Fault | Description                                                                                                                                                                                                                                                                 |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CMT300    | Critical. Data is mismatched between the SESM server and the Core. The SESM audit, CS2K Data Integrity Audit, has 10 unresolved problems. To view and correct the problems, open the audit problem report from the Audit System found under the SESM Maintenance menu item. |
| CMT301    | Critical. The GWC element manager cannot download data to GWC on recovery so the process has terminated early, and the GWC remains out of service. To clear, determine and remedy the cause of the data download failure.                                                   |
| CMT302    | Critical. The SNMP poller cannot communicate to the network device. To clear, determine and remedy the cause of the SNMP timeout.                                                                                                                                           |
| CMT399    | Indicates a cleared alarm in the CMT device                                                                                                                                                                                                                                 |

### SAM21--available logs/faults

The following table lists the SAM21 Logs/Faults available. The Shelf Controller Unit (SCU) raises alarms on behalf of itself or on behalf of the cards in the I/O slots, power sleds, fan sleds and power supply. Therefore, the alarm IDs for some of the alarms will have the same label, but the slot location that is included in the body of the alarm will indicate the actual card that is having problem. Alarms with the label IPOA are the alarms raised by the SCU with the PMC ATM card.

SAM21 supports SCC2 or NT STD formatted logs through SDM functionality, or it can be supported through IEMS. For details on the IEMS interface, refer to the section in this document titled “SN07 IEMS Functionality.” For details on the logs/faults themselves, refer to the Fault Management section of SAM21 FCAPS documentation NN10089-911. For detailed information on logs, refer to NN10275-909, *Fault Management Log Reference*.

### SAM21 Logs/Faults available

| Log/Fault                              | Description                                                                                                                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Network Element: SAM21 Platform</b> |                                                                                                                                                                                                         |
| SCU310                                 | Shelf controller unit. CPU load is high<br>Major. The One minute load average is greater than 20.<br>Critical. The five minute load average is above 15, or the fifteen minute load average is above 7. |
| SCU332                                 | Shelf controller unit. Memory usage is high<br>Major. Total free memory has fallen below 15%.<br>Critical. Total free memory has fallen below 10%.                                                      |

**SAM21 Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCU349    | Shelf controller unit Disk usage is high.<br>Major. Total free space on the root file system has fallen below 10%.<br>Critical. Total free space on the root file system has fallen below 5%.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| SCU346    | Shelf controller unit. Large number of processes abnormally terminated<br>Major. More than 4 zombie processes in system.<br>Critical. More than 15 zombie processes in system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| SCU329    | Shelf controller unit. Loss of communications either to its mate or to the SDM.<br>Minor. The upper or lower serial cable connection is down.<br>Major. This shelf controller cannot ping its mate through the ethernet interface<br>Major. This shelf controller cannot ping the SDM, but can ping its mate<br>Major. Both the lower (upper) serial cable and the mate's Ethernet are not connected.<br>Major. This shelf controller cannot ping the SDM, but can ping its mate. The upper (lower) serial cable connection is down.<br>Major. Both serial cable connections are down.<br>Critical. Shelf cannot ping its mate or the SDM through the Ethernet interface.<br>Critical. Shelf cannot ping its mate or the SDM through the Ethernet interface. The upper (lower) serial cable connection is down.<br>Critical. This shelf controller cannot ping its mate through the Ethernet interface. Both serial cable connections are down. No synching of state changes are occurring.<br>Critical. The shelf cannot see out at all. |
| SCU335    | Major: Power Supply in Sled 1/2/3 has been removed. Most likely the whole sled has been removed.<br>Critical. Power Supply in Sled 1/2/3 is down. The power supply in that sled has failed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| SCU315    | Major. Fan in Sled 1/2/3 has been removed. Fan has been removed from the sled, or the entire sled has been removed.<br>Critical. Fan in Sled 1/2/3 is down Fan has failed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| SCU335    | Critical. Power feed 1/2 is down. Either the feed has failed, or the cable has been removed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SCU356    | Critical. Mate Shelf Controller Down. Operating in Simplex Mode. The inactive SC has been detached, or Mama on the active SC has not received a ping from the inactive SC in 20 seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| SCU315    | Major. Temperature in Sled 1/2/3 is High. Temperature in the sled has reached about 40 degrees.<br>Critical. Temperature in Sled 1/2/3 is High. Temperature in sled has reached about 50 degrees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**SAM21 Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCU301    | Critical. Extension Bridge in Slot 15/16 is Down/Up. Depending on the actual text, one or both of the Extension Bridges has been detached and/or removed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| SCU315    | Major. Diagnostic Failed during testing in a non-system card at the specified I/O Slot. A diagnostic test was run, and the board failed at least one of the tests.<br><br>Major. Diagnostic Failed due to SWACT in a non-system card at the specified I/O Slot. A diagnostic test was interrupted by a SWACT.<br><br>Major. Diagnostic Failed in a non-system card at the specified I/O Slot for a specified reason. The diagnostic failed due to the reason stated. (There are 11 possible statements.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SCU346    | Critical. Firmware Flashing could not connect to the non-system card at the specified I/O Slot. Either there is another process currently attached to the board, or the bus is too busy to allow the request. Auto Flash is now turned off on the SC for this slot.<br><br>Critical. Firmware Flashing failed at downloading firmware to the non-system card at the specified I/O Slot. The firmware file does not exist on the SDM or has incorrect parameters.<br><br>Critical. Firmware Flashing failed at validating firmware to the non-system card at the specified I/O Slot. The firmware file is corrupt on the SDM, or there was an error in the transfer.<br><br>Critical. Firmware Flashing failed at backing up the firmware to the non-system card at the specified I/O Slot. The copy operation from one bank to the other failed. Possible bad memory.<br><br>Critical. Firmware Flashing failed flash to the non-system card at the specified I/O Slot. Could not connect to the board after the flash.<br><br>Critical. Provision of a non-system card at the specified I/O Slot. Provisioning of the board failed due to some system problem. System may have been abnormally busy. |
| SCU500    | Reports a change in state of a card. The new state can be Unlocked, Enabled, or None.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| SCU501    | Reports an equipment insertion, specifying the shelf, card, and slot.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| SCU502    | Reports an equipment removal, specifying the shelf, card, and slot.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| IPOA301   | A system log in response to a loss of cell delineation (LCD) alarm from SC-IPoA card.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| IPOA302   | A system log in response to a SONET carrier fault of type AIS from the SC-IPoA card.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| IPOA304   | A system log in response to an ATM connection set fault detected by the SAM21 Element Manager.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**SAM21 Logs/Faults available**

| Log/Fault                                               | Description                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IPOA305                                                 | Minor: The combined traffic of all the SVCs connected to this Shelf Controller has reached 70% of the capacity of the ATM interface.<br>Major: The combined traffic of all the SVCs connected to this Shelf Controller has reached 80% of the capacity of the ATM interface.<br>Critical: The combined traffic of all the SVCs connected to this Shelf Controller has reached 90% of the capacity of the ATM interface. |
| IPOA801                                                 | A system log in response to an ATM CRC32 threshold fault.                                                                                                                                                                                                                                                                                                                                                               |
| SM21300                                                 | A system log in response to an alarm that there has been a loss of communication, and the remote network is down.                                                                                                                                                                                                                                                                                                       |
| LOS/LOF                                                 | These4 section, line and path faults indicate that SONET connectivity between the SC and the far end node is unavailable on one fiber.                                                                                                                                                                                                                                                                                  |
| AIS-L/RDI-L                                             |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| AIS-P/RDI-P                                             |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| LOP                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| ATM Overrun Count                                       | Indicates the number of times cells were dropped due to a shortage of buffer space.                                                                                                                                                                                                                                                                                                                                     |
| ATM Overrun Date                                        | Indicates the date of the last overrun.                                                                                                                                                                                                                                                                                                                                                                                 |
| CPU load high                                           | Major. The One minute load average is greater than 20. Critical. The five minute load average is above 15, or the fifteen minute load average is above 7.                                                                                                                                                                                                                                                               |
| BootServerUnavailable                                   | Indicates that the boot server cannot be reached. Severity may vary.                                                                                                                                                                                                                                                                                                                                                    |
| Memory usage high                                       | Major. Total free memory has fallen below 15%.<br>Critical. Total free memory has fallen below 10%.                                                                                                                                                                                                                                                                                                                     |
| Disk usage high                                         | Major. Total free space on the root file system has fallen below 10%.<br>Critical. Total free space on the root file system has fallen below 5%.                                                                                                                                                                                                                                                                        |
| Large number of processes abnormally terminated         | Major. More than 4 zombie processes in system.<br>Critical. More than 15 zombie processes in system.                                                                                                                                                                                                                                                                                                                    |
| Loss of Communications: Serial Connection 1 (2) is down | Minor. The upper (lower) serial cable connection is down.                                                                                                                                                                                                                                                                                                                                                               |
| Loss of Communications: Mate Ethernet is down           | Major. This shelf controller cannot ping its mate through the ethernet interface.                                                                                                                                                                                                                                                                                                                                       |
| Loss of Communications: Remote network is down.         | Major. This shelf controller cannot ping the SDM, but can ping its mate.                                                                                                                                                                                                                                                                                                                                                |

**SAM21 Logs/Faults available**

| Log/Fault                                                                               | Description                                                                                                                                                              |
|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Loss of Communications: Mate Ethernet, Serial Connection 1 (2) is down.                 | Major. Both the lower (upper) serial cable and the mate's Ethernet are not connected.                                                                                    |
| Loss of Communications: Remote network, Serial connection 1 (2) is down.                | Major. This shelf controller cannot ping the SDM, but can ping its mate. The upper (lower) serial cable connection is down.                                              |
| Loss of Communications: Serial Connection 1, Serial Connection 2 is down.               | Major. Both serial cable connections are down.                                                                                                                           |
| Loss of Communications: Local Ethernet interface is down.                               | Critical. Shelf cannot ping its mate or the SDM through the Ethernet interface.                                                                                          |
| Loss of Communications: Local Ethernet interface, Serial Connection 1 (2) is down       | Critical. Shelf cannot ping its mate or the SDM through the Ethernet interface. The upper (lower) serial cable connection is down.                                       |
| Loss of Communications: Mate Ethernet, Serial Connection 1, Serial Connection 2 is down | Critical. This shelf controller cannot ping its mate through the Ethernet interface. Both serial cable connections are down. No synching of state changes are occurring. |
| Loss of Communications: All Communications Paths Down                                   | Critical. The shelf cannot see out at all.                                                                                                                               |
| Power supply in Sled 1/2/3 has been removed.                                            | Major. Most likely the whole sled has been removed.                                                                                                                      |
| NFSMountsDown                                                                           | Raised for any mounts that remain down after the check and attempt to re-mount.                                                                                          |
| Power supply in Sled 1/2/3 is down.                                                     | Critical. The power supply in that sled has failed.                                                                                                                      |

**SAM21 Logs/Faults available**

| Log/Fault                                              | Description                                                                                                                                                                   |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fan in Sled 1/2/3 has been removed                     | Major. Fan has been removed from the sled, or the entire sled has been removed.                                                                                               |
| Fan in Sled 1/2/3 is down                              | Critical. Fan has failed.                                                                                                                                                     |
| Power Feed 1/2 is down.                                | Critical. Either the feed has failed, or the cable has been removed.                                                                                                          |
| Mate Shelf Controller Down. Operating in Simplex Mode. | The inactive SC has been delatched, or Mama on the active SC has not received a ping from the inactive SC in 20 seconds.                                                      |
| Temperature in Sled 1/2/3 is High                      | Major. Temperature in the sled has reached about 40 degrees.                                                                                                                  |
| Temperature in Sled 1/2/3 is High.                     | Critical. Temperature in sled has reached about 50 degrees.                                                                                                                   |
| Extension Bridge in Slot 15/16 is Down/Up.             | Critical. Depending on the actual text, one or both of the Extension Bridges has been detached and/or removed.                                                                |
| Diagnostic Failed at test case.                        | Major. A diagnostic test was run, and the board failed at least one of the tests.                                                                                             |
| Diagnostic Failed due to SWACT                         | Major. A diagnostic test was interrupted by a SWACT.                                                                                                                          |
| Diagnostic Failed, xxxxxx                              | Major. The diagnostic failed due to the reason stated. (There are 11 possible statements.)                                                                                    |
| Firmware Flashing could not connect to the board.      | Critical. Either there is another process currently attached to the board, or the bus is too busy to allow the request. Auto Flash is now turned off on the SC for this slot. |
| Firmware Flashing failed at downloading firmware       | Critical. The firmware file does not exist on the SDM or has incorrect parameters.                                                                                            |
| Firmware Flashing failed at validating firmware        | Critical. The firmware file is corrupt on the SDM, or there was an error in the transfer.                                                                                     |
| Firmware Flashing failed at backing up the firmware.   | Critical. The copy operation from one bank to the other failed. Possible bad memory.                                                                                          |
| Firmware Flashing failed flash                         | Critical. Could not connect to the board after the flash.                                                                                                                     |

**SAM21 Logs/Faults available**

| Log/Fault                                     | Description                                                                                                                                                                                                    |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Provision failed: process ended abnormally.   | Critical. Provisioning of the board failed due to some system problem. System may have been abnormally busy.                                                                                                   |
| Provision failed, could not connect to board. |                                                                                                                                                                                                                |
| Provision failed to set application type.     |                                                                                                                                                                                                                |
| Capacity Alarm Minor                          | The combined traffic of all the SVCs connected to this Shelf Controller has reached 70% of the capacity of the ATM interface.                                                                                  |
| Capacity Alarm Major                          | The combined traffic of all the SVCs connected to this Shelf Controller has reached 80% of the capacity of the ATM interface.                                                                                  |
| Capacity Alarm Critical                       | The combined traffic of all the SVCs connected to this Shelf Controller has reached 90% of the capacity of the ATM interface.                                                                                  |
| UnderlyingResourceUnavailable                 | UnderlyingResourceUnavailable is a minor alarm when it indicates that an application card is locked and is not available, and a major alarm when it indicates that an application card is being autorecovered. |

**CS2000--available logs/faults**

The following table lists the CS 2000 Logs/Faults available.

CS 2000 supports SCC2 or NT STD formatted logs through SDM functionality, or it can be supported through IEMS. The SDM would remain the CS2000 Core Manager but can forward the CS2000 logs to IEMS instead of directly to the OSS. For details on the IEMS interface, refer to the section in this document titled "SN07 IEMS Functionality." For details on the logs/faults themselves, refer to the Fault Management section of CS 2000 FCAPS documentation, NN10083-911. For information on XA-Core logs and faults, refer to NTP 297-8991-810, *XA-Core Reference Manual*. For detailed information on logs, refer to NN10275-909, *Fault Management Log Reference*.

**CS2000 Logs/Faults available**

| Log/Fault                      | Description                                                                                                |
|--------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Network Element: CS2000</b> |                                                                                                            |
| Alarm Data-base logs           | Report Alarm Log Sent when requested by the entity that is reporting an alarm.                             |
|                                | Clear Alarm Log Generated when a client clears an existing alarm in the alarms database managed by Alarmd. |

**CS2000 Logs/Faults available**

| Log/Fault    | Description                                                                                                                                                                                                                                                         |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Alarm Summary Log<br>Sent periodically by Alarmd to summarize the Alarms in the database managed by Alarmd.                                                                                                                                                         |
| ATM log      | ATM606 Deleted in SN07. Replaced by XPKT301 and XPKT302                                                                                                                                                                                                             |
| AUDT logs    | AUDT105 Trunk state incorrect.                                                                                                                                                                                                                                      |
|              | AUDT106 Call is forced down due to the release of a trunk.                                                                                                                                                                                                          |
|              | AUDT109 Trouble conditions detected.                                                                                                                                                                                                                                |
|              | AUDT110 Terminal trunk state is invalid.                                                                                                                                                                                                                            |
|              | AUDT116 Terminal state indicator (TSI) of an idle trunk is invalid.                                                                                                                                                                                                 |
|              | AUDT117 TSI (terminal state indicator) of a given call state and the CCB (call condense block) TSI do not match.                                                                                                                                                    |
|              | AUDT209 Generated whenever the audit process finds a problem with a multi CPTLB.                                                                                                                                                                                    |
| Baseln alarm | “Baseln” alarm is raised whenever any XA-Core Field Replaceable Unit (FRU) installed in the shelf is not at Hardware (HW) or Firmware (FW) baseline. Only the Major level is used.                                                                                  |
| C7UP logs    | C7UP100 No acknowledgment received from far-end office after circuit reset, group circuit reset, blocking or unblocking, group blocking or unblocking, or release messages. For field descriptions and actions, see Logs Reference Manual (Volume 1), 297-2621-840. |
|              | C7UP101 Unreasonable message received on trunk.                                                                                                                                                                                                                     |
|              | C7UP102 CCS7 connection is released due to abnormal condition.                                                                                                                                                                                                      |
|              | C7UP103 Blocked or unblocked circuit conditions.                                                                                                                                                                                                                    |
|              | C7UP104 Group blocking or unblocking conditions.                                                                                                                                                                                                                    |
|              | C7UP105 Unsuccessful ISDN call attempt.                                                                                                                                                                                                                             |
|              | C7UP106 Shortage of resources.                                                                                                                                                                                                                                      |
|              | C7UP107 Request for continuity check test by an IAM (Initial Address Message), a continuity check request (CCR) message, or a demand continuity test (DCT) from the MAP.                                                                                            |
|              | C7UP109 ISUP trunk state change to match far-end office trunk state.                                                                                                                                                                                                |
|              | C7UP110 Serious communication problem with far-end office.                                                                                                                                                                                                          |
|              | C7UP111 Outgoing call attempt failure.                                                                                                                                                                                                                              |
|              | C7UP112 Call in progress has received an unreasonable message in the current call state.                                                                                                                                                                            |
|              | C7UP113 ISUP trunk maintenance problem.                                                                                                                                                                                                                             |
|              | C7UP114 Response from far-end office not received from a REL (circuit release) or RSC (reset circuit) message.                                                                                                                                                      |



**CS2000 Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                            |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | C7UP119 ISUP has not received, from the far-end office, second GRS (circuit group reset), CGB (circuit group blocking), or CGU (circuit group unblocking) message.                     |
|           | C7UP120 ISUP invalid number in circuit-group message RANGE field (0 or a number greater than 23).                                                                                      |
|           | C7UP130 System has detected that the hop counter (HC) limit has been exceeded. For details, see Logs Reference Manual (Volume 2), 297-2621-840 and the CS2000 fault information.       |
|           | C7UP300 ISUP trunk time-out waiting for acknowledgement from first RLC (remote line controller).                                                                                       |
|           | C7UP301 System has received a release message with the value "Exchange Routing Error."                                                                                                 |
| CARR logs | CARR300 Carrier failure event occurred. Also applies to STS-1 carrier. For more information, see general SPM fault information.                                                        |
|           | CARR310 Carrier failure events are cleared. Also applies to an STS-1 carrier. For more information, see general SPM fault information.                                                 |
|           | CARR330 (Int'l only) A protection switch has occurred. A previously inactive carrier in the protection group takes over as the active carrier.                                         |
|           | CARR331 (Int'l only) A protection switch was attempted but failed.                                                                                                                     |
|           | CARR340 (Int'l only) The inactive carriers in a protection group have changed state in such a way that they cannot carry traffic. The protection group is now running in simplex mode. |
|           | CARR341 (Int'l only) Both carriers have become available and normal protection switching can occur.                                                                                    |
|           | CARR500 Carrier state change to InSv from ManB or SysB. For more information, see general SPM fault information.                                                                       |
|           | CARR501 Carrier state change to CBsy from ManB or SysB. For more information, see general SPM fault information.                                                                       |
|           | CARR510 Carrier state change to SysB from InSv or CBsy. For more information, see general SPM fault information.                                                                       |
|           | CARR511 Carrier state change to SysB from InSv or CBsy. For more information, see general SPM fault information.                                                                       |
|           | CARR512 OC3 carrier state change to CBsy from InSv, ManB, or SysB. For more information, see general SPM fault information.                                                            |
|           | CARR800 Threshold crossing alert (TCA) for a metered performance parameter has been cleared. For more information, see general SPM fault information.                                  |
|           | CARR810 TCA event for metered performance parameter has occurred. For more information, see general SPM fault information.                                                             |

**CS2000 Logs/Faults available**

| Log/Fault   | Description                                                                                                                                                                                        |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | CARR811 TCA event for non-metered performance parameter has occurred. Also applies to STS-1 carrier on MG4000. For more information, see general SPM fault information.                            |
| DQoS alarm  | This raises a DQoS link alarm when link failure occurs.                                                                                                                                            |
| EXT log     | EXT108 Generated upon raising and clearing of EXT alarm HIGH_MEM_BLOCKING.                                                                                                                         |
| EXT alarm   | HIGH_MEM_BLOCKING Appears at the MAPCI EXT alarm banner when there is a high memory blocking level detected in the system. Correlates to XACP300 log when raised, and to XACP500 log when cleared. |
| FPS log     | FPS100 Generated when the FPS counter of a subscriber is loaded.                                                                                                                                   |
| SFPS log    | SFPS100 Generated when a craft person enters an invalid LFPS password three times.                                                                                                                 |
| GAME logs   | GAME101 Created if the RSPTMOUT OM count is greater than zero. The log is created during the RSPTMOUT OM transfer period and records the RSPTMOUT OM count value.                                  |
|             | GAME102 Created if RSPTMOUT OM count becomes equal to the office parm T1_TIMER_EXPIRY_MSG_SUPPRESS threshold value.                                                                                |
| GIGE alarms | 301 LOS Loss of Signal, Critical                                                                                                                                                                   |
|             | 302 RFI Remote Failure Indication, Critical                                                                                                                                                        |
|             | 304 TEM Temperature Threshold Exceeded, Critical                                                                                                                                                   |
|             | 305 POW Low power indicated, Critical                                                                                                                                                              |
|             | 306 RxSD Receive Signal Degraded, Critical                                                                                                                                                         |
|             | 307 RxEED Receive Excessive Error Ratio, Critical                                                                                                                                                  |
|             | 308 TBC Transmit Bias Current, Critical                                                                                                                                                            |
|             | 309 LINT Link Initialization, Critical                                                                                                                                                             |
|             | 310 OPT Transmit Optical Power, Critical                                                                                                                                                           |
|             | 311 OPR Receive Optical Power, Critical                                                                                                                                                            |
|             | 312 GARP GARP Failure, Critical                                                                                                                                                                    |
|             | 313 LKINT Link Integrity Failure, Critical                                                                                                                                                         |
|             | 314 AUTONEG Auto Negotiation Failure, Critical                                                                                                                                                     |
|             | 315 NON PREFLINK Non-preferred Link is active, Critical                                                                                                                                            |
| GIGE logs   | GIGE301 Indicates a Communications Subsystem Failure, loss of signal.                                                                                                                              |
|             | GIGE302 Indicates a Communications Subsystem Failure, remote failure.                                                                                                                              |

**CS2000 Logs/Faults available**

| Log/Fault | Description                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
|           | GIGE303 Indicates a Communications Subsystem Failure, transmit failure.                                                                        |
|           | GIGE304 Indicates a Communications Subsystem Failure, temperature threshold exceeded.                                                          |
|           | GIGE306 Indicates a Communications Subsystem Failure, low power indicated.                                                                     |
|           | GIGE307 Indicates a Communications Subsystem Failure, transmit excessive error ratio.                                                          |
|           | GIGE308 Indicates a Communications Subsystem Failure, transmit bias current.                                                                   |
|           | GIGE309 Indicates a Communications Subsystem Failure, link initialization.                                                                     |
|           | GIGE310 Indicates a Communications Subsystem Failure, transmit optical power.                                                                  |
|           | GIGE311 Indicates a Communications Subsystem Failure, receive optical power.                                                                   |
|           | GIGE312 Indicates a Communications Subsystem Failure, GARP failure.                                                                            |
|           | GIGE313 Indicates a Communications Subsystem Failure, link integrity failure.                                                                  |
|           | GIGE314 Indicates a Communications Subsystem Failure, autonegotiation failure.                                                                 |
|           | GIGE315 Indicates a Communications Subsystem Failure, non-preferred link is active.                                                            |
| IAA logs  | IAA314 Generated whenever an IAA module fails to initialize. The reason text field may contain one of 7 possible strings.                      |
|           | IAA342 Generated whenever an IAA module cannot communicate with other IAA modules, i.e., EMDA.                                                 |
|           | IAA343 Generated when a PCEM processing error occurs. The reason text field may contain one of 6 possible strings.                             |
|           | IAA344 Generated when an IAA module cannot create an audit entry.                                                                              |
|           | IAA345 Generated when an IAA module detects a configuration problem. The reason text field may contain one of 2 possible strings.              |
|           | IAA346 Generated when an IAA cannot communicate to the downstream RKS pair or DF. The reason text field may contain one of 4 possible strings. |
|           | IAA347 Generated when an IAA module detects a problem when trying to manage its filesystem storage.                                            |
|           | IAA641 Generated when an IAA module goes into service.                                                                                         |
|           | IAA646 Generated when communications between the IAA and the downstream RKS pair or DF has been restored.                                      |
|           | IAA701 Generated when the data being process by the IAA is corrupted.                                                                          |
| ITN log   | ITN307 An INFO log to indicate that IP transmit failed.                                                                                        |
| LINE log  | LINE811 Generated when the SYSB_LINES alarm is raised or cleared.                                                                              |

**CS2000 Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LOST logs | LOST101                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when an outgoing message fails to find an open path to the destination or an incoming message fails checks done by the receiving application.                                                                                                                                                                                                                                                                               |
|           | LOST102                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when an incoming message cannot be forwarded to Call Processing because software resources (buffers) have been exhausted or the limit for outstanding messages has been exceeded and no additional messages can be enqueued.                                                                                                                                                                                                |
|           | LOST103                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when a message that originated from the CM is rebounded back to the CM for additional processing because a node intermediate along the path was unable to deliver the message to the final destination. The failure code instructs the CM to attempt to re-route the message over an alternate path but the original message contains the re-route inhibit flag                                                             |
|           | LOST104                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when an outgoing message fails a VID-to-TID translation or an incoming message fails sanity checks on the terminal identifier (TID).                                                                                                                                                                                                                                                                                        |
|           | LOST105                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when an outgoing message fails to find an open CM-MS link. Also generated when a message that originated from the CM is rebounded back to the CM for additional processing because a node intermediate along the path was unable to deliver the message to the final destination. The failure code instructs the CM to attempt to re-route the message over an alternate path but sanity checks fail on the original route. |
|           | LOST106                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when a message fails application sanity checks. Also generated when a message that originated from the CM is rebounded back to the CM for additional processing because a node intermediate along the path was unable to deliver the message to the final destination. The failure code indicates "unspecified reason."                                                                                                     |
|           | LOST107                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when an incoming message specifies an unassigned terminal identifier (TID).                                                                                                                                                                                                                                                                                                                                                 |
|           | LOST108                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when the buffer (containing an outgoing message) is reclaimed by a system audit. The message is deemed to be stale as the buffer has not been accessed for a long period of time.                                                                                                                                                                                                                                           |
|           | LOST109                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when a message that originated from the CM is rebounded back to the CM for additional processing because a node intermediate along the path was unable to deliver the message to the final destination. The failure code instructs the CM to attempt to re-route the message over an alternate path but all alternatives have been previously tried without success.                                                        |
|           | LOST110                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when Call Processing gets a failure indication on attempting to output a message).                                                                                                                                                                                                                                                                                                                                          |
|           | LOST111                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when an incoming message cannot be delivered. The specific failure reason is displayed in the log.                                                                                                                                                                                                                                                                                                                          |
|           | LOST112                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Generated when an outgoing message fails sanity checks on length or an incoming message fails sanity checks on length.                                                                                                                                                                                                                                                                                                                |

**CS2000 Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                        |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LOST113   | Generated when the needed software resources are again available. The log displays the number of discarded events during the period of exhausted resources                                                                                         |
| LOST114   | Generated when an incoming (BFP) message cannot be forwarded to Call Processing due to message buffer exhaustion. This is similar to the more generic LOST102 log                                                                                  |
| LOST115   | Generated when the (BFP) buffer (containing an incoming message) is reclaimed by a system audit. The message is deemed to be stale as the buffer has not been accessed for a long period of time. This is similar to the more generic LOST108 log. |
| LOST116   | Generated when an outgoing message encounters a failure. The specific failure reason is displayed in the log                                                                                                                                       |
| LOST117   | Generated when an outgoing message encounters a failure. The specific failure reason is displayed in the log.                                                                                                                                      |
| NWM logs  | NWM102                                                                                                                                                                                                                                             |
|           | NWM103                                                                                                                                                                                                                                             |
|           | NWM104                                                                                                                                                                                                                                             |
|           | NWM107                                                                                                                                                                                                                                             |
|           | NWM202                                                                                                                                                                                                                                             |
| SPFS logs | SPFS310                                                                                                                                                                                                                                            |
|           | SPFS350                                                                                                                                                                                                                                            |

**CS2000 Logs/Faults available**

| Log/Fault       | Description                                                                                                                                                                                                                                                                                                  |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STOR logs       | STOR605 (Critical) Output when the Store Audit has detected a corruption in the Bstree structures containing the information about the data address space STOR is responsible for.                                                                                                                           |
|                 | STOR606 Indicates that the Store Audit has found a corruption in the allocation information for data store which is dumped (such as DSPROT) and it is very likely that a attempt to perform a dump while in this state would fail.                                                                           |
|                 | STOR607 Generated when the Store Audit detects a mismatch between the Store Allocator's internal setting of an address' blocking attribute and the actual setting of the attribute in memory hardware.                                                                                                       |
| SYSB line alarm | SysB Lns SysB Lns is raised when any of 3 thresholds are exceeded for the number of LGRPs in SYSB. The severity depends on which threshold is crossed.                                                                                                                                                       |
| TOPS logs       | TOPS131 Generated when problems occur in the call flow for the activity TOPS Wireless Automated Directory Assistance Call (ADACC) with Release. SN07 adds additional text reasons to the Reason field and a new field, Wireless type, which indicates whether the log was generated on an IS-41 or GSM call. |
|                 | TOPS615 An INFO log to indicate the operator teams and the number of positions in each team with auto-compression turned on.                                                                                                                                                                                 |
|                 | AUD690 Generated when a TOPS calls ends unexpectedly with an IS41TOPS extension block attached. This feature was created as part of TOPS19 -- SN06.                                                                                                                                                          |
| TRK logs        | TRK101 Percentage of busy trunks in a trunk group exceeded the threshold value for a minor alarm.                                                                                                                                                                                                            |
|                 | TRK102 Major alarm threshold reached or exceeded.                                                                                                                                                                                                                                                            |
|                 | TRK103 Number of trunks in a trunk group exceeded threshold value for a critical alarm.                                                                                                                                                                                                                      |
|                 | TRK104 Percentage of busy trunks dropped below a threshold value.                                                                                                                                                                                                                                            |
|                 | TRK110 Trunk state change to SysB (system busy) LO (Lockout) from CPB (call processing busy).                                                                                                                                                                                                                |
|                 | TRK112 Request to take trunk off the lockout (LO) list and RTS (return to service) initiated by a manual request from the LTP MAP display level or by a system request.                                                                                                                                      |
|                 | TRK122 Both planes of the trunk equipment have lost accuracy detected by central control (CC).                                                                                                                                                                                                               |
|                 | TRK123 Peripheral processor (PP) has sent a wrong message to central control.                                                                                                                                                                                                                                |
|                 | TRK138 Call routed for treatment after system was call processing busy (CPB).                                                                                                                                                                                                                                |
|                 | TRK151 Blue Box Fraud (BBF) detection activated.                                                                                                                                                                                                                                                             |
|                 | TRK152 Blue Box Fraud (BBF) detection deactivated.                                                                                                                                                                                                                                                           |

**CS2000 Logs/Faults available**

| Log/Fault | Description                                                                                                                                                          |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRK153    | Blue Box Fraud (BBF) call detected.                                                                                                                                  |
| TRK154    | Blue Box Fraud (BBF) call disconnected to identify calling and called parties.                                                                                       |
| TRK155    | Emergency Service Bureau (ESB) originating the call is off-hook longer than the time designated in customer table TRKGRP.                                            |
| TRK164    | External call routed through local office to a distant office that has requested calling line identification (CLI).                                                  |
| TRK251    | UCS: trouble with an invalid authcode.                                                                                                                               |
| TRK255    | UCS: trouble with database.                                                                                                                                          |
| TRK257    | UCS: trouble translating a partition number to STS due to an invalid partition.                                                                                      |
| TRK258    | UCS: trouble translating STS to partition number, due to an invalid STS.                                                                                             |
| TRK355    | Trunk idle queue sanity trouble or rebuild.                                                                                                                          |
| TRK420    | UCS: invalid authcode.                                                                                                                                               |
| TRK424    | First call processing threshold error; failed diagnostic test; and call processing error threshold appears again within 15 minutes of the diagnostic test.           |
| TRKT logs | These logs are only generated if OFCVAR office parameter GENERATE_TRKT_LOGS is activated. Otherwise, TRK138 logs are generated with an appropriate treatment reason. |
| TRKT200   | ANI Database Failure.                                                                                                                                                |
| TRKT201   | ANI Account Status Not Allowed.                                                                                                                                      |
| TRKT202   | ANI Acct. Recently Disallowed.                                                                                                                                       |
| TRKT203   | Calling Card Invalid                                                                                                                                                 |
| TRKT204   | Calling Card Time-out                                                                                                                                                |
| TRKT205   | General No Circuit                                                                                                                                                   |
| TRKT206   | Reorder                                                                                                                                                              |
| TRKT207   | Restricted Date Time                                                                                                                                                 |
| TRKT208   | Storage Overflow Reorder                                                                                                                                             |
| TRKT209   | Start Signal Time-out                                                                                                                                                |
| TRKT210   | Start Signal Time-out                                                                                                                                                |
| TRKT211   | Vacant Code                                                                                                                                                          |
| TRKT212   | Vacant Country Code                                                                                                                                                  |
| TRKT213   | Trigger Block                                                                                                                                                        |
| TRKT214   | (Under development)                                                                                                                                                  |

**CS2000 Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                                    |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UNB log   | UNB306 Output if the PIC or LATA fields are deleted.                                                                                                                                                                                                           |
| VAMP log  | VAMP901 SN07 modifies it to display the new Business Customer ID parameter, and to make possible an additional value in the Digits Type subfield of the AMA Digits parameter.                                                                                  |
|           | VAMP902 Output when the VPTrace CI tool is enabled and an outbound message is sent through the VAMP framework to the SCP. The VAMP902 log might display the subscription type through the SUBINFO field. SN07 adds CARRIER as a possible value for this field. |
| XAC logs  | XAC300 Low Shared Memory (SM) condition. Accompanied by LowSM alarm.                                                                                                                                                                                           |
|           | XAC302 Low Processor Element (PE) condition. Accompanied by LowPE alarm.                                                                                                                                                                                       |
|           | XAC303 MScomm (Message Switch Communication) problem. Accompanied by MScomm alarm.                                                                                                                                                                             |
|           | XAC304 TOD (Time of Day clock) problem. Accompanied by TOD alarm.                                                                                                                                                                                              |
|           | XAC305 RTIF (Reset Terminal Interface) problem. Accompanied by RTIF alarm.                                                                                                                                                                                     |
|           | XAC306 Disk problem. Accompanied by DISK alarm.                                                                                                                                                                                                                |
|           | XAC307 Tape problem. Accompanied by TAPE alarm.                                                                                                                                                                                                                |
|           | XAC308 Image Test failure. Accompanied by Image alarm.                                                                                                                                                                                                         |
|           | XAC309 Loss of communication between the AMDI packet and any MG4000.                                                                                                                                                                                           |
|           | XAC310 Card manual busy.                                                                                                                                                                                                                                       |
|           | XAC312 IOP fault. Accompanied by IOPflt alarm. Modified in SN07 to display the new CMIC and RTIF port device and CMIC and RTIF packets and links.                                                                                                              |
|           | XAC320 FLT. SysBTh Alarm Raised.                                                                                                                                                                                                                               |
|           | XAC321 WgSlot (Shelf Audit Failure - Card Configuration). Accompanied by WgSlot alarm.                                                                                                                                                                         |
|           | XAC322 PETrbl. Accompanied by PETrbl alarm.                                                                                                                                                                                                                    |
|           | XAC323 SMTrbl. Accompanied by SMTrbl alarm.                                                                                                                                                                                                                    |
|           | XAC324 IOTrbl. Accompanied by IOTrbl alarm.                                                                                                                                                                                                                    |
|           | XAC325 RIBKEY detected. Accompanied by RIBKey alarm.                                                                                                                                                                                                           |
|           | XAC326 MS Link configuration mismatch.                                                                                                                                                                                                                         |
|           | XAC327 WgSlot (Card inserted into wrong slot). Accompanied by WgSlot alarm.                                                                                                                                                                                    |
|           | XAC329 Loss of communication with XA-Core or loss of Ethernet link redundancy. Associated with the following OM groups: XETHRMJU, XETHRCRU, XETHR, XETHRPRT, and XETHRLNK.                                                                                     |
|           | XAC330 FW version mismatch. Accompanied by FWvers alarm.                                                                                                                                                                                                       |
|           | XAC333 FW loading failure.                                                                                                                                                                                                                                     |



**CS2000 Logs/Faults available**

| Log/Fault | Description                                                                                                                    |
|-----------|--------------------------------------------------------------------------------------------------------------------------------|
| XAC337    | Raised when the Baseln alarm is first raised, or the Baseln alarm is still raised and the non-baseline component list changes. |
| XAC400    | XA-Core summary report.                                                                                                        |
| XAC413    | REx schedule failure. Accompanied by RExSch alarm.                                                                             |
| XAC415    | Routine exercise report. SN07 adds "not at baseline" as a reason for not running the SREx test.                                |
| XAC420    | INFO. SysBTh Ctrl Change.                                                                                                      |
| XAC600    | LowSM condition cleared.                                                                                                       |
| XAC601    | MemLim condition cleared.                                                                                                      |
| XAC602    | LowPE condition cleared.                                                                                                       |
| XAC603    | MScomm alarm cleared.                                                                                                          |
| XAC604    | TOD alarm cleared.                                                                                                             |
| XAC605    | RTIF alarm cleared.                                                                                                            |
| XAC606    | DISK alarm cleared.                                                                                                            |
| XAC607    | Tape alarm cleared.                                                                                                            |
| XAC608    | Image alarm cleared.                                                                                                           |
| XAC609    | AMDl link condition cleared.                                                                                                   |
| XAC610    | Card returned to service. Modified in SN07 to display the new CMIC and RTIF port device and CMIC and RTIF packets and links.   |
| XAC612    | IOP alarm cleared.                                                                                                             |
| XAC613    | REx schedule report.                                                                                                           |
| XAC614    | XATrap alarm cleared.                                                                                                          |
| XAC615    | REx started.                                                                                                                   |
| XAC618    | Split (Split mode entered).                                                                                                    |
| XAC619    | Split mode exited.                                                                                                             |
| XAC620    | INFO. SysBTh Alarm Cleared.                                                                                                    |
| XAC622    | PETrbl alarm cleared.                                                                                                          |
| XAC623    | SMTTrbl alarm cleared.                                                                                                         |
| XAC624    | IOTrbl alarm cleared.                                                                                                          |
| XAC625    | RIBKEY removed.                                                                                                                |
| XAC626    | MS Link configuration restored.                                                                                                |
| XAC627    | WgSlot cleared (card removed).                                                                                                 |
| XAC628    | Output when provisioning or deprovisioning.                                                                                    |

**CS2000 Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | XAC629 Loss of communication restored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | XAC630 FWvers cleared.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | XAC631 FW soaking started. Accompanied by FWsoak alarm.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|           | XAC632 FW soaking completed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|           | XAC633 FW loading started.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|           | XAC634 FW loading completed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|           | XAC635 FW soaking in progress.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | XAC637 Raised when the Baseln alarm is cleared, due to an empty list of non-baseline components.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|           | XAC640 Manual Test Report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|           | XAC641 Alarm enable/disable notification.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|           | XAC801 MemLim (Memory Limit). Accompanied by MemLim alarm.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|           | XAC814 XATrap. Accompanied by XATrap alarm.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| XACP logs | XACP300 Generated every minute that the EXT alarm HIGH_MEM_BLOCKING is active.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | XACP500 Generated once when the memory blocking level has returned to normal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|           | XACP600 Summarizes the minute-by-minute memory blocking level; generated once every 15 minutes. If all 15 minutes had normal blocking levels, the log has only one line of output stating that all 15 minutes had normal blocking levels. If at least one minute out of 15 reported high blocking levels, the log output reports each minute separately.                                                                                                                                                                                                                                                                                     |
| XAUD logs | XAUD395, 397, 400, 401, 430, 432, 432, 434, 500, 501, 708, 709, 714, 715, 723, 724, 725, 979, 980, 981, 982, 977, 978 These call processing resource dump logs are generated whenever a call processing resource is recovered by the audit process running on the XA-Core. The only difference in the logs is the amount of data dumped. In SN07, the location and number of bits used to represent the extension block's format code in the header (within the hex dump of the log) has changed for all extension block logs. The only noticeable difference to the customer will be the number following the XAUD string in the log title. |

**CS2000 Logs/Faults available**

| Log/Fault                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--|
| XAUD logs                  | <p>In SN07, the XAUD logs are re-numbered to correspond to the AUD log numbering scheme. Here is a list of the old and new XAUD log numbers.</p> <table> <tr> <td>old XAUD600 is now XAUD397</td><td>old XAUD732 is now XAUD500</td></tr> <tr> <td>old XAUD601 is now XAUD395</td><td>old XAUD733 is now XAUD501</td></tr> <tr> <td>old XAUD602 is now XAUD432</td><td>old XAUD940 is now XAUD708</td></tr> <tr> <td>old XAUD609 is now XAUD434</td><td>old XAUD941 is now XAUD709</td></tr> <tr> <td>old XAUD700 is now XAUD400</td><td>old XAUD946 is now XAUD714</td></tr> <tr> <td>old XAUD701 is now XAUD401</td><td>old XAUD947 is now XAUD715</td></tr> <tr> <td>old XAUD730 is now XAUD430</td><td>old XAUD955 is now XAUD723</td></tr> <tr> <td>old XAUD731 is now XAUD431</td><td></td></tr> </table> | old XAUD600 is now XAUD397 | old XAUD732 is now XAUD500 | old XAUD601 is now XAUD395 | old XAUD733 is now XAUD501 | old XAUD602 is now XAUD432 | old XAUD940 is now XAUD708 | old XAUD609 is now XAUD434 | old XAUD941 is now XAUD709 | old XAUD700 is now XAUD400 | old XAUD946 is now XAUD714 | old XAUD701 is now XAUD401 | old XAUD947 is now XAUD715 | old XAUD730 is now XAUD430 | old XAUD955 is now XAUD723 | old XAUD731 is now XAUD431 |  |
| old XAUD600 is now XAUD397 | old XAUD732 is now XAUD500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |
| old XAUD601 is now XAUD395 | old XAUD733 is now XAUD501                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |
| old XAUD602 is now XAUD432 | old XAUD940 is now XAUD708                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |
| old XAUD609 is now XAUD434 | old XAUD941 is now XAUD709                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |
| old XAUD700 is now XAUD400 | old XAUD946 is now XAUD714                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |
| old XAUD701 is now XAUD401 | old XAUD947 is now XAUD715                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |
| old XAUD730 is now XAUD430 | old XAUD955 is now XAUD723                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |
| old XAUD731 is now XAUD431 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |
| XNET logs                  | <p>XNET600 Connection between nodes has been replaced.</p> <p>XNET601 New connection between nodes failed.</p> <p>XNET602 Connection between nodes does not exist, and attempts to connect them failed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |
| XPKT logs                  | <p>XPKT301 Generated for ATM external network connection failures that fail during initial call setup.</p> <p>XPKT302 Generated for ATM external network connection failures that occur for established connections.</p> <p>XPKT806 A major alarm raised on a per-node basis when the number of XPT301logs for that node crosses (i.e. reaches or exceeds) RAISE_THRESHOLD number of XPT301 logs within RAISE_CYCLE number of minutes, where RAISE_THRESHOLD and RAISE_CYCLE are office parameters provisionable on a per-node class basis.</p> <p>XPKT807 Generated when the “exceeded threshold” alarm from XPKT806 is cleared.</p>                                                                                                                                                                           |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            |  |

**GWC--available logs/faults**

The following table lists the GWC Logs/Faults available.

GWC supports SCC2 or NT STD formatted logs through SDM functionality, or it can be supported through IEMS. For details on the IEMS interface, refer to the section in this document titled “SN07 IEMS Functionality.” For details on the logs/faults themselves, refer to the Fault Management section of GWC FCAPS documentation, NN10090-911. For detailed information on Carrier VoIP logs, refer to NN10275-909, *Fault Management Log Reference*.

**GWC Logs/Faults available**

| Log/Fault                              | Description                                                                                                                                                                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Network Element: GWC (PGC load)</b> |                                                                                                                                                                                                                                           |
|                                        | The PM180, 181, 185, and 177 faults are first sent to the core and are then sent northbound from the CS2000 Core Manager in SCC2 format. The remaining faults are sent from the GWC to the GWC EM and are then sent northbound via CORBA. |

**GWC Logs/Faults available**

| Log/Fault                                                                                                                                                                                                | Description                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DPTM500                                                                                                                                                                                                  | Changed: the reason field of this log is changed to say "Packet Network" not "ATM Network."                                                                                                                                                                                                    |
| DPTM501                                                                                                                                                                                                  | Changed: the reason field of this log is changed to say "Packet Network" not "ATM Network."                                                                                                                                                                                                    |
| PM180                                                                                                                                                                                                    | Indicates a software error (SWERR) has occurred.                                                                                                                                                                                                                                               |
| PM181                                                                                                                                                                                                    | Generates for a variety of GWC-to-core-related communications issues. Modified in SN07 to indicate that the ABI of an ABI-hosted XPM is attempting to or successfully exit(s) ESA.                                                                                                             |
| PM185                                                                                                                                                                                                    | Indicates that the GWC has trapped.                                                                                                                                                                                                                                                            |
| PM777                                                                                                                                                                                                    | Indicates a hardware fault. Reason text identifies the suspected hardware.                                                                                                                                                                                                                     |
| M3UAxxx                                                                                                                                                                                                  | Indicates an M3UA signaling link from the GWC to the ISP has become unavailable.                                                                                                                                                                                                               |
| The remaining faults are sent from the GWC to the GWC EM and are then sent northbound via CORBA. The following alarms are generated by the GWC, except for the first one generated by the alarm browser. |                                                                                                                                                                                                                                                                                                |
| SNMP Timeout                                                                                                                                                                                             | Critical; indicates a communications subsystem failure.                                                                                                                                                                                                                                        |
| Test                                                                                                                                                                                                     | This is a test alarm generated from pmdebug interface. Severity level changed in SN06; can have a severity level of critical, major, minor or warning                                                                                                                                          |
| Active unit disabled                                                                                                                                                                                     | Critical; indicates a unit is out of service and not available.                                                                                                                                                                                                                                |
| Standby unit disabled                                                                                                                                                                                    | Critical; indicates a unit is out of service and not available.                                                                                                                                                                                                                                |
| Core communication lost                                                                                                                                                                                  | Major if active unit; Minor if inactive unit. No response received to Core heartbeat.                                                                                                                                                                                                          |
| Mate unit communication lost                                                                                                                                                                             | Minor; no response received to mate heartbeat.                                                                                                                                                                                                                                                 |
| Gateway communication lost                                                                                                                                                                               | A gateway has stopped responding to heartbeat.                                                                                                                                                                                                                                                 |
| EM communication lost                                                                                                                                                                                    | Major. No response received for Persistent Data Verification SNMP Trap; EM not responding. Problem may be "EM not present, provisioned data loaded from local flash," OR "EM audit indicates provisioned inservice data is old, need manual intervention to recover." Cleared with a busy RTS. |
| FLASH error                                                                                                                                                                                              | Minor. Error in writing Flash; erase of Flash sector failed. Cleared with hardware replacement.                                                                                                                                                                                                |
| Datasync alarm                                                                                                                                                                                           | The GWC does not contain the latest provisioned data. This alarm may be raised by the GWC EM noting the problem and sending a message to the GWC to raise the alarm.                                                                                                                           |
| Unit Out of Service                                                                                                                                                                                      | Critical if active unit; minor if inactive unit. The GWC Profile failed to validate, probably because no profile is available to activate. Cleared with a GWC reload.                                                                                                                          |
| GWC Alarm Logs                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                |

**GWC Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GWC300    | Active unit disabled. Critical; indicates a unit is out of service and not available.                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| GWC301    | Standby unit disabled. Indicates a unit is out of service and not available. Minor if the unit is ManB, but Major if the unit is SysB.                                                                                                                                                                                                                                                                                                                                                                                  |
| GWC302    | Core communication lost. Major if active unit; Minor if inactive unit. No response received to Core heartbeat.                                                                                                                                                                                                                                                                                                                                                                                                          |
| GWC303    | Mate unit communication lost. Minor; no response received to mate heartbeat.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| GWC304    | Gateway communication lost. A gateway has stopped responding to heartbeat. This log is triggered only for gateways that have 64 or more endpoints.                                                                                                                                                                                                                                                                                                                                                                      |
| GWC305    | This is a test alarm generated from pmdebug interface. Severity level changed in SN06; can have a severity level of critical, major, minor or warning                                                                                                                                                                                                                                                                                                                                                                   |
| GWC306    | DQOSMTC_DQoSLinkLoss. A DQoS/COPS connection failure has occurred. Cleared by DCCNXMGR (via DCALARM) when the connection is reestablished or the connection is deleted via provisioning                                                                                                                                                                                                                                                                                                                                 |
| GWC307    | <p>EM communication lost. Major. No response received for Persistent Data Verification SNMP Trap; EM not responding. Problem may be "EM not present, provisioned data loaded from local flash," OR "EM audit indicates provisioned inservice data is old, need manual intervention to recover." Cleared with a busy RTS.</p> <p>Datasync alarm The GWC does not contain the latest provisioned data. This alarm may be raised by the GWC EM noting the problem and sending a message to the GWC to raise the alarm.</p> |
| GWC308    | FLASH error Minor. Error in writing Flash; erase of Flash sector failed. Cleared with hardware replacement.                                                                                                                                                                                                                                                                                                                                                                                                             |
| GWC309    | Security_SA_capacity. Minor or Major. Security.Association alarms are nearing capacity. Cleared by the security alarms application which monitors the resource level and clears the alarm when the alarm condition has been cleared on the GWC. Currently alarms are only managed on the active GWC unit (i.e., data is not mirrored to the inactive unit), and for this reason during a SWACT alarms are automatically cleared on the unit dropping activity.                                                          |
| GWC310    | Security_SA_fail. Major. The number of Security Association alarms has exceeded the threshold. Cleared by the security alarms application which monitors the resource level and cleared the alarm when the alarm condition as been cleared on the GWC. Currently alarms are only managed on the active GWC unit (i.e., data is not mirrored to the inactive unit), and for this reason during a SWACT alarms are automatically cleared on the unit dropping activity.                                                   |
| GWC311    | Provisioned GWC Profile not yet activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| GWC312    | QOS connection alarm. An alarm is generated whenever a message cannot be sent to the server. The alarm is cleared as soon as the QoS report application is able to send QoS reports to the server.                                                                                                                                                                                                                                                                                                                      |

**GWC Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GWC313    | Major. RMGC can't process all coming requests. RMGC can't process all coming requests. It is in the processing error category. The probable cause is the resource at or nearing capacity. |
| GWC398    | SNMP Timeout Critical; indicates a communications subsystem failure.                                                                                                                      |
| GWC399    | Is the clear log for all GWC alarms and for CMT alarms. This log is triggered only for gateways that have 64 or more endpoints.                                                           |
| GWC506    | Generated for any of 3 events: Time to Live Expired, Gateway Unregistration by CS2K Successful, or Gateway Initiated Unregistration Successful.                                           |
| GWC507    | Generated to indicate Gateway Registration Successful.                                                                                                                                    |

**SPM--available logs/faults**

The following table lists the SPM family Logs/Faults available through Carrier VoIP. Those marked with an asterisk (\*) are new or changed due to SN06.2 feature development.

The SPM family supports SCCS/ASCII or NT STD/ASCII through SDM functionality. For details on this protocol/format, and on the logs/faults themselves, refer to the Fault Management section of the appropriate SPM FCAPS documentation.

- SPM: NN10075-911
- DPT-SPM: NN10080-911 (ATM)
- IW-SPM: NN10078-911 (ATM)
- MG 4000: NN10076-911

**General SPM Logs/Faults available**

| Log/Fault                                                                                                                                                                        | Description                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Network Element: SPM (all variants)                                                                                                                                              |                                                                                                         |
| <b>NOTE:</b> ATM, CARR, CCMT, DPTM, IWBM, and SPM logs marked with an asterisk (*) are enhanced in SN06 per 89007340 to add an extra line that shows location, type, and fabric. |                                                                                                         |
| ATM300                                                                                                                                                                           | Generated when a Loss of Cell Delineation (LCD) major alarm condition is raised on an SPM with ATM RMs. |
| ATM500                                                                                                                                                                           | The system's ATM ILMI status has changed.                                                               |
| ATM501                                                                                                                                                                           | The system's ATM signaling status has changed.                                                          |
| ATM600                                                                                                                                                                           | The ATM framework has gained a registered ATM address.                                                  |
| ATM601                                                                                                                                                                           | The ATM framework has been de-registered by the ATM network.                                            |
| ATM604                                                                                                                                                                           | System software cannot recover the ATM Framework (ATM RM will be busied and RTS'ed)                     |
| ATM605                                                                                                                                                                           | ATM overload event.                                                                                     |

**General SPM Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                              |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ATM606    | ATM service failure. This log is not generated by GWC DPTs or on a BICC GWC.                                                                                                                                                                             |
| ATM800    | A trouble log that indicates possible degradation of service related to ATM Performance Monitoring thresholds.                                                                                                                                           |
| ATMBCN    | This alarm is raised when the ATM framework cannot support bearer connections. The alarm causes the SPM to show at the PM portion of the alarm banner as "SPM *C*." This alarm complements the ATMFWD alarm currently displayed beneath the APPL banner. |
| BITS300   | A clock sync critical alarm has been raised for one of these: MTIE Performance, Alarm Indication Signal, Loss of Signal, or Out of Frame. Correlates with BITS600.                                                                                       |
| BITS301   | A clock sync non-critical alarm has been raised for one of these: Timing Link Degradation, Bipolar Violation, or Cyclic Redundancy Check. Correlates with BITS601.                                                                                       |
| BITS500   | BITS link state change capturing old/new states and reason for change (including degradation of carrier (LOS, LOF)).                                                                                                                                     |
| BITS600   | BITS Fault Report Cleared; critical alarm from BITS300 is cleared.                                                                                                                                                                                       |
| BITS601   | BITS Fault Report cleared; non-critical alarm from BITS301 is cleared.                                                                                                                                                                                   |
| BITS610   | Reference Quality Change to a new SSM state. Reference quality change logs (Stratum 1.3E.) - not periodic.                                                                                                                                               |
| BITS612   | BITS Reference Switch; indicates the reason for the reference switch.                                                                                                                                                                                    |
| C7UP109   | A CQ state change has occurred.                                                                                                                                                                                                                          |
| C7UP113   | Indicates ISUP maintenance trouble.                                                                                                                                                                                                                      |
| C7UP114   | Generated for an ISUP alert.                                                                                                                                                                                                                             |
| C7UP120   | An invalid range field exists.                                                                                                                                                                                                                           |
| C7UP130   | The HOP counter has expired.                                                                                                                                                                                                                             |
| C7UP301   | The HC value is not sufficient.                                                                                                                                                                                                                          |
| CARR300   | A carrier failure event cleared. Correlates to alarms AIS, APSAM, APSCHMM, APSIC, APSMM, BERSD, BERSF, LOF, LOP, LOS, PLM, RAI, RFI, SIMPLEX, TIM. Correlates with CARR310.                                                                              |
| CARR310   | A carrier failure event has occurred. Correlates to alarms AIS, APSFC, APSFEPLF, APSLCK, APSMAN, BERSD, BERSF, LOF, LOP, LOS, PLM, RAI, RFI, SIMPLEX, TIM.                                                                                               |
| CARR315   | A trouble log that includes the actual fault description text sent by the MG9K.                                                                                                                                                                          |
| CARR330   | A protection switch has occurred. A previously inactive carrier in the protection group takes over as the active carrier.                                                                                                                                |
| CARR331   | A protection switch was attempted but failed.                                                                                                                                                                                                            |
| CARR340   | The inactive carriers in a protection group have changed state in such a way that they cannot carry traffic. The protection group is now running in simplex mode.                                                                                        |
| CARR341   | Both carriers have become available and normal protection switching can occur.                                                                                                                                                                           |



**General SPM Logs/Faults available**

| Log/Fault | Description                                                                                                                                                   |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CARR500   | A carrier changes to an in service (InSv) state from manual busy (ManB) or system busy (SysB). Correlates to a MANB and SYSB alarm. Correlates with CARR511.  |
| CARR501   | A carrier changes to central-side busy (CBsy) from ManB or SysB. Correlates to a MANB and SYSB alarm.                                                         |
| CARR510   | A carrier changes to ManB from InSv, SysB, or CBsy. Correlates to a MANB and SYSB alarm.                                                                      |
| CARR511   | Carrier state change to SysB from InSv or CBsy. Correlates to a SYSB alarm.                                                                                   |
| CARR512   | OC3 carrier state change to CBsy from InSv, ManB, or SysB. Correlates to a MANB and SYSB alarm.                                                               |
| CARR800   | Threshold crossing alert (TCA) for a metered performance parameter has been cleared.                                                                          |
| CARR801   | Indicates that maintenance limits have been re-set.                                                                                                           |
| CARR810   | TCA event for metered performance parameter has occurred. Correlates with CARR800.                                                                            |
| CARR811   | TCA event for non-metered performance parameter has occurred. Also applies to STS-1 carrier on MG4000.                                                        |
| CCMT301   | Core PVC segment fault. Correlates with CCMT601.                                                                                                              |
| CCMT302   | Peer Connection fault. Correlates with CCMT602.                                                                                                               |
| CCMT501   | An INFO log that indicates a CoreConnection State Change.                                                                                                     |
| CCMT502   | An INFO log that indicates a Peer Connection State Change.                                                                                                    |
| CCMT601   | An INFO log that indicates a Core PVC Segment Fault cleared.                                                                                                  |
| CCMT602   | An INFO log that indicates a Peer Connection Fault cleared.                                                                                                   |
| DPTM500   | The state of DPT Terminals changed to IDL state from any other state. In SN06, the reason field is changed to say "Packet Network" instead of "ATM Network."  |
| DPTM501   | The state of DPT Terminals changed to SYSB state from any other state. In SN06, the reason field is changed to say "Packet Network" instead of "ATM Network." |
| DPTM502   | The state of DPT Terminals changed to MANB state from any other state.                                                                                        |
| DPTM503   | The state of DPT Terminals changed to PMB state from any other state.                                                                                         |
| DPTM504   | The state of DPT Terminals changed to INB state from any other state.                                                                                         |
| DPTM550   | Generated when a DPT range with BICC, i.e. ISUPPLUS, signalling changes state.                                                                                |
| DPTM560   | Generated when a DPT group with SIPT signalling changes state.                                                                                                |
| DPTM700   | Bulk downloading or dynamic update of DPT data failed, so there is a data mismatch in the CM and MG4K. Correlates with DPTM701.                               |
| DPTM701   | The DDM audit process cleared a DPT data mismatch between the core and the node.                                                                              |
| DPTM702   | Indicates a call is rejected because the DPT SOC limit is reached.                                                                                            |



**General SPM Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DPTM800   | Office-wide DPT terminal usage exceeds the level 1 threshold of 70%. Logs DPT800-803 are associated with OM group DPTOFC, registers DPUSAG and DPUSAG2; and OM group DPTNODE, registers DPTUSAG and DPTUSAG2.                                                                                                                                                                                   |
| DPTM801   | Office-wide DPT terminal usage drops below the level 1 threshold of 70%.                                                                                                                                                                                                                                                                                                                        |
| DPTM802   | Office-wide DPT terminal usage exceeds the level 2 threshold of 90%.                                                                                                                                                                                                                                                                                                                            |
| DPTM803   | Office-wide DPT terminal usage drops below the level 2 threshold of 85%.                                                                                                                                                                                                                                                                                                                        |
| ENET308   | ISTb state occurs or is cleared on a PSLINK. Correlates to an ISTB alarm. Associated with OM group ENLKERR.                                                                                                                                                                                                                                                                                     |
| EAD100    | EADAS_PLANNED_DOWN                                                                                                                                                                                                                                                                                                                                                                              |
| EAD101    | EADAS_MPC_COMMUNICATION_TRBL                                                                                                                                                                                                                                                                                                                                                                    |
| EAD102    | EADAS_CLASS_DISABLED                                                                                                                                                                                                                                                                                                                                                                            |
| EAD103    | EADAS/NM TRKGRP CHANGE AUDIT OVERFLOW                                                                                                                                                                                                                                                                                                                                                           |
| EAD104    | EADAS/NM TRKGRP REF AUDIT OVERFLOW                                                                                                                                                                                                                                                                                                                                                              |
| EAD107    | NETMINDER_PLANNED_DOWN                                                                                                                                                                                                                                                                                                                                                                          |
| EAD108    | NETMINDER_MPC_COMMUNICATION_TRBL                                                                                                                                                                                                                                                                                                                                                                |
| EAD109    | EADAS/DC BUFFER OVERFLOW                                                                                                                                                                                                                                                                                                                                                                        |
| EAD110    | EADAS_CLASS_DISABLED                                                                                                                                                                                                                                                                                                                                                                            |
| EAD111    | EADAS_PLANNED_DOWN                                                                                                                                                                                                                                                                                                                                                                              |
| EAD112    | NETMINDER_PLANNED_DOWN                                                                                                                                                                                                                                                                                                                                                                          |
| EAD113    | EADAS_SESSION_STATUS                                                                                                                                                                                                                                                                                                                                                                            |
| EAD114    | NETMINDER_SESSION_STATUS                                                                                                                                                                                                                                                                                                                                                                        |
| ENET311   | The SPM ATM node is SYSB, and a network error has caused it to be isolated from the ENET links or the MS ports. Correlates to a SYSBNA alarm.                                                                                                                                                                                                                                                   |
| EXT102    | Generated whenever an FSP alarm is raised or cleared against any PM in the office; when the FSP is raised because of particular frame failures on a remotely located MG 4000 node, EXT102 log is generated along with an SPM619 log; when the FSP alarm raised because of particular frame failures on a remotely located MG 4000 is cleared, EXT102 log is generated along with an SPM619 log. |
| IOAU112   | Information log related to changes in System REX controller operation or schedule.                                                                                                                                                                                                                                                                                                              |
| IWBM500   | One of the following is out of service: C-side link, STS3cP carrier, ATM network state, or the ATM address state for the IW bridge software.                                                                                                                                                                                                                                                    |
| IWBM501   | The out-of-service item in IWBM500 has returned to service.                                                                                                                                                                                                                                                                                                                                     |
| IWBM502   | Indicates that a BSY command is being requested for a set of IW SPM bridge terminals.                                                                                                                                                                                                                                                                                                           |
| IWBM503   | Indicates that an RTS command is being requested for a set of IW SPM bridge terminals.                                                                                                                                                                                                                                                                                                          |
| IWBM504   | Indicates that an OFFL command is being requested for a set of IW SPM bridge terminals.                                                                                                                                                                                                                                                                                                         |

**General SPM Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                                                                                                                               |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IWBM505   | Indicates that a FRLS command is being requested for a set of IW SPM bridge terminals.                                                                                                                                                                                                                                                                    |
| IWBM600   | Connectivity Mismatch: the IW bridge receives an invalid terminal ID during an attempt to free a bridge. An INFO log.                                                                                                                                                                                                                                     |
| IWBM601   | Automatic system audit finds a problem and performs a corresponding action. An INFO log.                                                                                                                                                                                                                                                                  |
| IWBM602   | No IDL bridges are available. An INFO log.                                                                                                                                                                                                                                                                                                                |
| IWBM603   | An IWBM audit is being performed. An INFO log.                                                                                                                                                                                                                                                                                                            |
| IWBM700   | A maintenance action is being performed. An INFO log.                                                                                                                                                                                                                                                                                                     |
| IWBM800   | Number of available IW bridges exceeds the first threshold (70%) when attempting to retrieve an IW-bridge ID from the IW bridge manager.                                                                                                                                                                                                                  |
| IWBM801   | Number of available IW bridges falls to less than 65% of bridges in the pool in use. This log always occurs after IWBM 800.                                                                                                                                                                                                                               |
| IWBM802   | Number of available IW bridges exceeds the second threshold (90%) when attempting to retrieve an IW-bridge ID from the IW bridge manager.                                                                                                                                                                                                                 |
| IWBM803   | Number of available IW bridges falls to less than 85% of bridges in the pool in use. This log always occurs after IWBM 802.                                                                                                                                                                                                                               |
| Link300   | A transport resource fault indicating a mis-connected DS512 link.                                                                                                                                                                                                                                                                                         |
| NODE300   | A mismatch fault has occurred. The integrated node maintenance (INM) generates this log when a trouble condition is present with the node. The log indicates INM recovery actions when the node state is system busy.                                                                                                                                     |
| NODE302   | Reports a software alarm.                                                                                                                                                                                                                                                                                                                                 |
| NODE303   | Generated to report the Wrong Application Data on the SPM.                                                                                                                                                                                                                                                                                                |
| NODE326   | Generated to report a hardware fault on the SPM.                                                                                                                                                                                                                                                                                                          |
| NODE500   | System node state change. Correlates to a SYSB alarm.                                                                                                                                                                                                                                                                                                     |
| NODE600   | An INFO log to notify of a system recovery action.                                                                                                                                                                                                                                                                                                        |
| NODE601   | An INFO log that provides system status notification.                                                                                                                                                                                                                                                                                                     |
| PM231     | Indicates that a PM failed to acknowledge an audit request to add or delete a channel connection.                                                                                                                                                                                                                                                         |
| PM232     | Indicates that a PM operation from an audit request to add or delete a channel connection has succeeded.                                                                                                                                                                                                                                                  |
| PM233     | Indicates that a PM operation from an audit request to add or delete a channel connection has failed. The request is from Special Connection Table Control Facility (SPECCONN) to add or delete a channel connection. The subsystem generates the modified log when the operation to update to the correct status fails for two consecutive audit cycles. |
| PM234     | Indicates that a PM failed to acknowledge an audit request to add or delete a channel connection.                                                                                                                                                                                                                                                         |

**General SPM Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                                                                                 |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PM236     | Generated when the system finds integrity, does not find integrity, or loses integrity. Displayed when one of the following scenarios occurs: the system makes a special connection; integrity was lost or not found; or the SPECCONN audit acted on a special connection that has the status of NO_IINTEG. |
| PRSM400   | A DPT SPM ATM loadfile containing DPT SPM ATM PRSU fixes has been datafilled in table PMLOADS.                                                                                                                                                                                                              |
| SMG500    | MG 4000 module state change.                                                                                                                                                                                                                                                                                |
| SOC802    | A warning log that the current configuration of the number of DPT ports is not authorized by Nortel, due to a conflict between the SOC limit and the setting of office parameter DPT_MAX_PORTS.                                                                                                             |
| SPM300    | A device fault has occurred. Correlates to a MANB, PROTFAIL, SYSB, and NOSPARE alarm.                                                                                                                                                                                                                       |
| SPM301    | Device patching operation failed. SPARTS patching log. An SPM patch is missing after an RTS occurred. Correlates to the PATCHFAIL, VCXO70, and VCXO90 alarms.                                                                                                                                               |
| SPM310    | The CM has received performance data from the DPT SPM ATM as a result of the DPT SPM ATM-based automatic monitoring process.                                                                                                                                                                                |
| SPM311    | A software exception report (SWER) has occurred, OR one of the BITS links is out-of-service. Correlates to an LOR alarm.                                                                                                                                                                                    |
| SPM312    | A TBL trap has occurred on the CEM.                                                                                                                                                                                                                                                                         |
| SPM313    | A fault has been recorded in the Module Information Memory (MIM) of the DPT SPM ATM.                                                                                                                                                                                                                        |
| SPM314    | A generic IMC fault report to indicate a change in IMC status.                                                                                                                                                                                                                                              |
| SPM330    | The two CEMs have either come into datasync or have gone out of datasync. Correlates to an ISTB alarm.                                                                                                                                                                                                      |
| SPM331    | A device had a protection switch failure. Modified to place IP RM in the circuit pack field. Correlates to a MANB, PROTFAIL, SYSB, ISTB, and NOSPARE alarm.                                                                                                                                                 |
| SPM332    | The synchronization reference source was switched by manual action, switched by system action, or lost the last synchronization reference in the OC-3 protection group.                                                                                                                                     |
| SPM333    | Indicates an SPM Rex test failure.                                                                                                                                                                                                                                                                          |
| SPM334    | An alternate synchronization source is not available and the timing configuration no longer conforms to SONET specifications. Correlates to a CLKOOS alarm.                                                                                                                                                 |
| SPM335    | Spare alarm; no spare devices are currently available in this protection group.                                                                                                                                                                                                                             |
| SPM336    | The clock oscillator tuning range has reached 90% of the maximum range. Correlates to a VCXO90 alarm.                                                                                                                                                                                                       |
| SPM337    | SPM has entered Holdover. Correlates with SPM637.                                                                                                                                                                                                                                                           |
| SPM338    | SPM has been in Holdover over 24Hours. Correlates with SPM638.                                                                                                                                                                                                                                              |
| SPM339    | The clock oscillator tuning range has reached 70% of the maximum range. Correlates to a VCXO70 alarm.                                                                                                                                                                                                       |
| SPM340    | A CM warm switch of activity (SWACT) failed.                                                                                                                                                                                                                                                                |

**General SPM Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                            |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPM341    | A SyncRM has entered into 3E Holdover state due to a clock mode change. Correlates with SPM641.                                                                                                                                        |
| SPM342    | A SyncRM has entered into 3E Holdover 24 State. Correlates with SPM642.                                                                                                                                                                |
| SPM344    | The SyncRM Loss of BITS Redundancy (LOR) alarm has been set. Correlates with SPM644.                                                                                                                                                   |
| SPM350    | There is the potential for resource exhaustion of a particular resource type. Correlates to the COTLOW, DTMFLOW, MFLOW, TONESLOW, and ECANLOW alarms. The log also generates when the alarm is cleared.                                |
| SPM352    | Both of the Sync RMs are in holdover, so the SPM has entered Stratum 3E Holdover. Alarm ST3EHLDOVR is raised. Correlates with SPM652.                                                                                                  |
| SPM353    | Both of the Sync RMs are in holdover for 24 hours, so the SPM has entered Stratum 3E Holdover24. Alarm ST3EHLDOVR24 is raised. Correlates with SPM653.                                                                                 |
| SPM354    | Both of the Sync RMs are out-of-service, so the SPM has entered SMC holdover. Alarm SMCHLDOVR is raised. Correlates with SPM654.                                                                                                       |
| SPM355    | Both of the Sync RMs are out-of-service for 24 hours, so the SPM has entered SMC holdover24. Alarm SMCHLDOVR24 is raised. Correlates with SPM655.                                                                                      |
| SPM356    | One of the Sync RMs is out-of-service, so the SPM has lost clock unit redundancy. Alarm SPMLOCR is raised. Correlates with SPM656.                                                                                                     |
| SPM357    | The MG4K is experiencing non-critical faults on more than two of the four BITS Links, and input timing signals have degraded. Alarm SPMTLD is raised. Correlates with SPM657.                                                          |
| SPM358    | A tuple change from EXTERNAL to LINE, or from LINE to EXTERNAL, is performed, and the SPM clock reference change failed. Correlates with SPM658.                                                                                       |
| SPM370    | A log report of an SPM health monitor event. Connection errors have been corrected by the DLC Audit. Correlates with SPM670, the clearing log.                                                                                         |
| SPM500    | A SyncRM device state change has occurred with new state and reason for change (e.g. SYSB, MANB). Modified to place IP RM in the circuit pack field. Correlates to a MANB, PROTFail, SYSB, and ISTB alarm.                             |
| SPM501    | The clock mode has changed from sync, freerun, holdover, or acquire to sync, freerun, holdover, or acquire. Correlates to a HLDOVR or HLDOVR24 alarm.                                                                                  |
| SPM502    | An ATM connection has changed state, and a corresponding alarm condition has occurred or been cleared.                                                                                                                                 |
| SPM503    | A carrier on an SPM goes out of service and signals the ATM Maintenance of the carrier state change. Also generated when the carrier returns to service.                                                                               |
| SPM504    | Both of the associated ATM Resource Module devices on an SPM go out of service, and Integrated Device Maintenance signals ATM Maintenance of the state change. The log also generates when at least one ATM device returns to service. |
| SPM510    | PM Timing Mode change indicating line to external and vice versa.                                                                                                                                                                      |
| SPM610    | Generated whenever an SPM node SSM value changes.                                                                                                                                                                                      |

**General SPM Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                         |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPM611    | A reference node switch has occurred, either manually or through the system.                                                                                                                                                        |
| SPM619    | Provides particular frame failure and frame location information of remote MG 4000                                                                                                                                                  |
| SPM630    | A successful protection switch of activity occurred for an ATM RM. Modified to place IP RM in the circuit pack field. Correlates to a MANB, SYSB, and ISTB alarm.                                                                   |
| SPM632    | Generated when the REX test on the SPM is successful.                                                                                                                                                                               |
| SPM633    | Generated when the REX test has started on an SPM node.                                                                                                                                                                             |
| SPM637    | The clock mode has changed from Holdover to Sync. Correlates with the HLDOVR alarm.                                                                                                                                                 |
| SPM638    | The SPM recovers from the 24-hour Holdover state; the clock mode changes from Holdover to Sync. Correlates to the HLDOVR24 alarm.                                                                                                   |
| SPM641    | A SyncRM has exited 3E Holdover state.                                                                                                                                                                                              |
| SPM642    | A SyncRM has exited 3E Holdover 24 state.                                                                                                                                                                                           |
| SPM644    | The SyncRM Loss of BITS Redundancy (LOR) alarm has been cleared.                                                                                                                                                                    |
| SPM645    | Link Protocol & Messaging Interface Controller (LPMIC) Event Report. This log is generated on every CEM and transported to the core. The log is generated periodically and whenever the number of events crosses a threshold value. |
| SPM650    | A successful in-service loading procedure has occurred. Modified to place IP RM in the circuit pack field.                                                                                                                          |
| SPM651    | An in-service loading procedure has failed. Modified to place IP RM in the circuit pack field.                                                                                                                                      |
| SPM652    | SPM has exited Stratum 3E Holdover. Alarm ST3EHLDOVR is cleared.                                                                                                                                                                    |
| SPM653    | SPM has exited Stratum 3E Holdover24. Alarm ST3EHLDOVR24 is cleared.                                                                                                                                                                |
| SPM654    | SPM has exited SMC Holdover. Alarm SMCHLDOVR is cleared.                                                                                                                                                                            |
| SPM655    | SPM has exited SMC Holdover24. Alarm SMCHLDOVR24 is cleared.                                                                                                                                                                        |
| SPM656    | SPM loss of clock unit redundancy cleared. Alarm SPMLOCR is cleared.                                                                                                                                                                |
| SPM657    | Input timing signals degradation cleared. Alarm SPMTLD is cleared.                                                                                                                                                                  |
| SPM658    | A PM timing mode change has occurred with explicit reason (e.g. line to external due to manual request).                                                                                                                            |
| SPM660    | A continuous performance-monitored trunk member was involved in an answered echo canceller call. This log reports the performance data.                                                                                             |
| SPM661    | A continuous monitoring ON/OFF command or an SPMECMON AUTO command has successfully completed.                                                                                                                                      |
| SPM670    | An INFO log to report that the health monitor "CallCount PTS no setup fault" has been cleared. Correlates with SPM370, the raise log.                                                                                               |
| SPM680    | Indicates low MBM Application Buffers.                                                                                                                                                                                              |
| SPM681    | Indicates low MBM Application Buffer Pools.                                                                                                                                                                                         |

**General SPM Logs/Faults available**

| Log/Fault                | Description                                                                                                                                                                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPM684                   | Indicates that the erase flash command has initiated, is completed, has failed, or has been rejected.                                                                                                                                                         |
| SPM700                   | A DDM audit has failed for an SPM subgroup.                                                                                                                                                                                                                   |
| SPM701                   | A DDM audit has successfully updated an SPM subgroup.                                                                                                                                                                                                         |
| SPM702                   | A DDM dynamic update has failed for an SPM subgroup.                                                                                                                                                                                                          |
| SPM703                   | A DDM audit has updated an SPM trunk member in a with a data entry for a trunk that failed to be added during a dynamic update.                                                                                                                               |
| SPM704                   | A DDM dynamic update has failed for an SPM trunk member.                                                                                                                                                                                                      |
| SPM705                   | A trunk has been set to a lockout (LO) or SysB state. Correlates to SPM706.                                                                                                                                                                                   |
| SPM706                   | A trunk has returned to service from a LO state.                                                                                                                                                                                                              |
| SPM707                   | A dynamic update has failed for the ISDNPARM table.                                                                                                                                                                                                           |
| SPM708                   | The DDM audit has updated the ISDNPARM table.                                                                                                                                                                                                                 |
| SPM709                   | A dynamic update has failed for the ISDNPROT table.                                                                                                                                                                                                           |
| SPM710                   | The DDM audit has updated the ISDNPROT table.                                                                                                                                                                                                                 |
| SPRF670                  | Generated every 15 minutes by the SPMACT tool. The logs are a compilation of the tool's results. Each line of the log corresponds to a performance measurement taken every minute by the tool.                                                                |
| SPRF671                  | Generated every 15 minutes by the SPUSAGE tool to summarize samples taken every minute of the call-processing events that occur in the SPM.                                                                                                                   |
| XAC329                   | Enhanced to provide more detailed reason text description for a number of failure scenarios in IRM, including a link state change. A customized text string is added for each IRM error code to help determine the causes resulting from link failure events. |
| XNET600                  | MG 4000 module state change.                                                                                                                                                                                                                                  |
| XNET601                  | MG 4000 module state change.                                                                                                                                                                                                                                  |
| XNET602                  | MG 4000 module state change.                                                                                                                                                                                                                                  |
| Bearer connections alarm | An alarm for bearer connections is added to the list of alarms in table MNNODE.                                                                                                                                                                               |
| FSP alarm                | The Major FSP Alarm displayed on the MAP terminal under the EXT alarm banner is updated to include in the count any failures from remote MG4K nodes.                                                                                                          |
| Sync RM alarms           |                                                                                                                                                                                                                                                               |
| LOS                      | Sync RM cannot detect a signal from the BITS timing link. Cleared when a signal is detected.                                                                                                                                                                  |
| OOF                      | Sync RM cannot detect a DS1 frame for a given BITS timing link. Cleared when a DS1 frame is detected.                                                                                                                                                         |

**General SPM Logs/Faults available**

| Log/Fault                          | Description                                                                                                                                                                                                                                                                                                                                |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIS                                | Sync RM detects an AIS on an incoming BITS timing reference signal from BITS, or crossover from alternate SPM reference node. Cleared when incoming BITS timing reference signal does not have an alarm.                                                                                                                                   |
| MTIE2                              | MTIE performance for input signal exceeds the GR-253 requirement mask threshold, indicating an unusable signal. Cleared when MTIE is below GR-253 requirement mask threshold.                                                                                                                                                              |
| TLD                                | MTIE performance for input signal exceeds the GR-253 requirement mask threshold, indicating a degraded signal. Cleared when the MTIE Level 1 degradation disappears from timing reference.                                                                                                                                                 |
| BPV                                | Incoming signal has BPV alarm, indicating a degraded signal. Cleared when BPV disappears from timing reference.                                                                                                                                                                                                                            |
| CRC                                | SyncRM detects a CRC from incoming signal, indicating a degraded signal. Cleared when the CRC disappears from the timing reference.                                                                                                                                                                                                        |
| LOR                                | SyncRM cannot detect the DS1 frame from BITS timing links or signal from Mate SyncRM, indicating that redundancy is lost. This alarm will be raised at the RM level if any service affecting fault exists on a single BITS link or if one BITS link is manually taken out of service (MBsy or Offl). Cleared when a DS1 frame is detected. |
| HLDOVR                             | SyncRM has gone into the holdover mode because both BITS timing links were lost. Cleared when SyncRM exits holdover mode.                                                                                                                                                                                                                  |
| PM Level Alarms                    |                                                                                                                                                                                                                                                                                                                                            |
| PM ST3E Holdover                   | Major; both SyncRMs are in stratum 3E holdover.                                                                                                                                                                                                                                                                                            |
| PM ST3E Holdover 24 Hour           | Critical; both SyncRMs are in stratum 3E holdover for more than 24 hours.                                                                                                                                                                                                                                                                  |
| PM SMC Holdover                    | Major; both SyncRMs are unavailable and the CEM is in SMC holdover for more than 24 hours.                                                                                                                                                                                                                                                 |
| PM SMC Holdover 24 Hour            | Critical; both SyncRMs are unavailable and the CEM is in SMC holdover.                                                                                                                                                                                                                                                                     |
| SPM Loss of Clock Unit redundancy  | Major; one of the SyncRMs is OOS.                                                                                                                                                                                                                                                                                                          |
| Timing mode change failure         | Critical; the crafts person-initiated timing mode change failed.                                                                                                                                                                                                                                                                           |
| Node Timing Degradation (NTD)      | Major; The MG4000 is experiencing non-critical faults on three or more input BITS links (input timing signals).                                                                                                                                                                                                                            |
| RM Level Alarms (Sync Unit Alarms) |                                                                                                                                                                                                                                                                                                                                            |
| SYSB                               | Major; SyncRM has gone into SYSB state due to a critical fault (a loss of communications or hardware fault).                                                                                                                                                                                                                               |
| MANB                               | Major; SyncRM has gone into MANB state due to manual maintenance request.                                                                                                                                                                                                                                                                  |
| ISTB                               | Minor; SyncRM has gone into trouble state due to a non-critical fault, typically the failure of internal diagnostics or BITS carrier-related problems.                                                                                                                                                                                     |



**General SPM Logs/Faults available**

| Log/Fault                                        | Description                                                                                                                         |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Loss of Reference Source Redundancy              | Major; SyncRM has critical fault on one of two reference signals.                                                                   |
| Stratum 3E Holdover                              | Major; SyncRM has gone into stratum 3E holdover mode as a result of faults on both reference signals.                               |
| Stratum 3E Holdover 24 Hour                      | Critical; SyncRM has gone into stratum 3E holdover mode as a result of faults on both reference signals.                            |
| Clock Synchronization Level Alarms (BITS alarms) |                                                                                                                                     |
| MTIE Exceeded                                    | Minor; the MTIE performance for the input signal has exceeded the requirement mask threshold indicating an unusable signal.         |
| Loss of Signal (LOS)                             | Major; the SyncRM cannot detect a signal on the timing reference.                                                                   |
| Out of Frame (OOF)                               | Major; SyncRM cannot detect DS1 frame. This alarm masks AIS alarm for a given timing reference.                                     |
| Alarm Indication Signal (AIS)                    | Major; SyncRM has detected an AIS on an incoming timing reference signal from the BITS link. This alarm is masked by the LOF alarm. |
| Timing Link Degradation (TLD)                    | Major; this is a non-service affecting alarm and would be masked by all other SyncRM BITS Alarms                                    |
| Bipolar Violation (BPV)                          | Minor; this is a non-service affecting alarm and would be masked by all other SyncRM BITS Alarms                                    |
| Cyclic Redundancy Check (CRC)                    | Minor; this is a non-service affecting alarm and would be masked by all other SyncRM BITS Alarms                                    |

**Stormia (STM)-available logs/faults**

The following table lists the STM logs available. STM logs will only be present in the HLR market. For detailed information on logs, refer to NN10275-909, *Fault Management Log Reference*.

**STM logs available**

|        |                                             |
|--------|---------------------------------------------|
| STM398 | Indicates an alarm in an STM device.        |
| STM399 | Indicates a cleared alarm in an STM device. |

**MG9000--available logs/faults**

The following table lists the MG 9000 Faults available.  
 MG 9000 supports SCC2 or NT STD formatted logs through SDM functionality, or it can be supported through IEMS. For details on the IEMS interface, refer to the section in this document titled “SN07 IEMS Functionality.”. For details on the logs/faults themselves, refer to the Fault Management section of MG 9000 FCAPS documentation, NN10074-911. For



detailed information on Carrier VoIP logs, refer to NN10275-909, *Fault Management Log Reference*.

#### MG 9000 Logs/Faults available

| <b>Network Element: MG 9000 (UEMG-17)</b> |                                                                                                                                                                                                                                                                                     |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fault                                     | Description                                                                                                                                                                                                                                                                         |
| BW300                                     | Reserved bandwidth used on the indicated shelf has exceeded the Bandwidth Congestion Threshold. Correlates with Warning alarm bwResBandwShelfFault.                                                                                                                                 |
| BW301                                     | Reserved bandwidth use on the network interface has exceeded the Bandwidth Congestion Threshold. The alarm is cleared when reserved bandwidth on the network interface is 10% less than the threshold. Correlates with Warning alarm bwResBandwTotalFault.                          |
| BW302                                     | Reserved bandwidth dedicated to switched lines connections on the network interface has exceeded the Bandwidth Congestion Threshold with respect to the amount of bandwidth configured the network interface for switched lines. Correlates with Warning alarm bwResBandwSloaFault. |
| BW304                                     | An overall cell queue congestion alarm has occurred when overall atm cell queue is at least 90% full, or the alarm has been cleared. Correlates with Warning alarm bwSwitchFabricTotalFault.                                                                                        |
| BW305                                     | A CBR cell queue congestion alarm has occurred or been cleared. To occur, atm cell queue for this service type is at least 90% full. Correlates with Warning alarm bwSwitchFabricCbrFault.                                                                                          |
| BW306                                     | An RT-VBR cell queue congestion alarm has occurred or been cleared. To occur, atm cell queue for this service type is at least 90% full. Correlates with Warning alarm bwSwitchFabricRtVbrFault.                                                                                    |
| BW307                                     | An NRT-VBR cell queue congestion alarm has occurred or been cleared. To occur, atm cell queue for this service type is at least 90% full. Correlates with Warning alarm bwSwitchFabricNrtVbrFault.                                                                                  |
| BW308                                     | A UBR cell queue congestion alarm has occurred or been cleared. To occur, atm cell queue for this service type is at least 90% full. Correlates with Warning alarm bwSwitchFabricUbrFault.                                                                                          |
| BW309                                     | A UBR-plus cell queue congestion alarm has occurred or been cleared. To occur, atm cell queue for this service type is at least 90% full. Correlates with Warning alarm bwSwitchFabricUbrPlusFault.                                                                                 |
| BW310                                     | A control channel cell queue congestion alarm has occurred or been cleared. To occur, atm cell queue for this service type is at least 90% full. Correlates with Warning alarm bwSwitchFabricControlFault.                                                                          |
| BW311                                     | Reserved bandwidth dedicated to ABI lines connections on the network interface has exceeded the Bandwidth Congestion Threshold with respect to the amount of bandwidth configured the network interface for switched lines. Correlates with Warning alarm bwResBandwAbiFault.       |
| CES305                                    | No cells are being received from the ATM network. Correlates with alarm Loss of cells.                                                                                                                                                                                              |

**MG 9000 Logs/Faults available**

|                                    |                                                                                                                                                                                                                       |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ESA alarm                          | “Unable to communicate with community peer” is generated by a node in SN08 when it cannot communicate with a peer node in the community. The IP Address of the unreachable node will be displayed in the alarm.       |
| ESA Alarm                          | Fault type “Failed to enter ESA” is created in SN07 for the ESA alarm (Critical). This alarm is displayed at MG9000 Element Manager and MG9000 LCI.                                                                   |
| nnESADownloadFault alarm           | SN07 creates alarm “nnESADownloadFault” to indicate a failure to download ESA data to given VMG. This alarm will only be generated for autonomous download attempts. This was indicated by a log in previous releases |
| ESA120                             | An ESA Data Generation INFO log. An ESA120 log is generated if the CS2000 successfully generates an MG9000 ESA data file in SFDEV. The file generation is initiated every 24 hours or from a manual command.          |
| ESA121                             | An ESA Data Generation FAIL log. An ESA121 log is generated if the CS2000 fails to generate an MG9000 ESA data file in SFDEV. The file generation is initiated every 24 hours or from a manual command.               |
| ESA300                             | Communication between GWC and GW is lost. Entered ESA mode. Correlates with Critical alarm Entered ESA.                                                                                                               |
| ESA302                             | (Critical) is generated when the EM is unable to download ESA data to a VMG.                                                                                                                                          |
| ESA601                             | Correlates with the alarm nnESAFault. This alarm indicates that the MG 9000 finds an internal ESA data mapping inconsistency after the ESA data downloading is completed.                                             |
| ESA602                             | Correlates with the alarm nnESARetrieveFault, generated by the EM for ESA Data Retrieval failure.                                                                                                                     |
| HWMismatch alarm                   | The Hardware Mismatch alarm indicates an incorrect replacement card has been installed.                                                                                                                               |
| LINE162                            | INFO only. Indicates call attempts denied due to MG9K Overload. It is an XA-Core info log.                                                                                                                            |
| Authorization Failed” Security Log | Generated when a user attempts to perform an unauthorized action.                                                                                                                                                     |
| MG9K Server Log                    | A warning log generated when the MG9K server is either starting up or shutting down.                                                                                                                                  |
| MGAUxxx                            | Generated when audit task starts.                                                                                                                                                                                     |
| MGAUxxx                            | Generated when audit task is paused.                                                                                                                                                                                  |
| MGAUxxx                            | Generated when audit task is resumed.                                                                                                                                                                                 |
| MGAUxxx                            | Generated when audit task is completed with a summary of corrections.                                                                                                                                                 |
| MGAUxxx                            | Generated when audit schedule is deleted.                                                                                                                                                                             |
| MGAUxxx                            | Generated when audit could not correct a mismatch.                                                                                                                                                                    |
| MGCA301                            | Loss of signal. Correlates with Critical alarm los (on OC3) or Minor alarm los (on DS1).                                                                                                                              |
| MGCA302                            | Alarm indication signal. Correlates with Critical alarm ais (on OC3) or Minor alarm ais (on DS1).                                                                                                                     |

**MG 9000 Logs/Faults available**

|         |                                                                                                                                                                                                                                                          |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MGCA303 | Loss of frame. Correlates with Critical alarm lof (on OC3) or Minor alarm lof (on DS1).                                                                                                                                                                  |
| MGCA304 | Remote alarm indication. Correlates with Minor alarm rai (on DS1).                                                                                                                                                                                       |
| MGCA305 | BitErrorRate S F. Correlates with Critical alarm bersf (on OC3).                                                                                                                                                                                         |
| MGCA306 | BitErrorRate SigDegrade. Correlates with Major alarm bersd (on OC3).                                                                                                                                                                                     |
| MGCA307 | Remote defect indication. Correlates with Minor alarm rdi (on OC3).                                                                                                                                                                                      |
| MGCA308 | Path label mismatch. Correlates with Minor alarm plm (on OC3).                                                                                                                                                                                           |
| MGCA309 | Loss of pointer. Correlates with Minor alarm lop (on OC3).                                                                                                                                                                                               |
| MGCA310 | Unequipped. Correlates with Minor alarm uneq (on OC3).                                                                                                                                                                                                   |
| MGCA312 | IMA link- Loss of IMA Frame. Correlates with Minor alarm imaLinkLif.                                                                                                                                                                                     |
| MGCA313 | IMA link- Loss of delayed synchronization. Correlates with Minor alarm imaLinkLods.                                                                                                                                                                      |
| MGCA314 | IMA link- Remote failure indication. Correlates with Minor alarm imaLinkRfi.                                                                                                                                                                             |
| MGCA315 | IMA link- Transmit misconnect. Correlates with Minor alarm imaLinkTxMisConnect.                                                                                                                                                                          |
| MGCA316 | IMA link- receive misconnect. Correlates with Minor alarm imaLinkRxMisConnect.                                                                                                                                                                           |
| MGCA317 | IMA link- transmit fault. Correlates with Minor alarm imaLinkTxFault.                                                                                                                                                                                    |
| MGCA318 | IMA link- receive fault. Correlates with Minor alarm imaLinkRxFault.                                                                                                                                                                                     |
| MGCA319 | IMA link- transmit unusable far end. Correlates with Minor alarm imaLinkTxUnusableFe.                                                                                                                                                                    |
| MGCA320 | IMA link- receive unusable far end. Correlates with Minor alarm imaLinkRxUnusableFe.                                                                                                                                                                     |
| MGCA321 | IMA group startup far end. Correlates with Major alarm imaGroupStartupFe.                                                                                                                                                                                |
| MGCA322 | IMA group configuration abort. Correlates with Critical alarm imaGroupCfgAbort.                                                                                                                                                                          |
| MGCA323 | IMA group configuration abort far end. Correlates with Major alarm imaGroupCfgAbortFe.                                                                                                                                                                   |
| MGCA324 | IMA group insufficient links. Correlates with Critical alarm imaGroupInsuffLinks.                                                                                                                                                                        |
| MGCA325 | IMA group insufficient links far end. Correlates with Major alarm imaGroupInsuffLinksFe.                                                                                                                                                                 |
| MGCA326 | IMA group blocked far end. Correlates with Minor alarm imaGroupBlockedFe.                                                                                                                                                                                |
| MGCA327 | IMA group timing synchronization. Correlates with Major alarm imaGroupTimingSynch.                                                                                                                                                                       |
| MGCA328 | ABI Loss of Clock on DS512 optical link. Correlates with Critical alarm abiLossOfClock.                                                                                                                                                                  |
| MGCA329 | ABI Loss of Frame on DS512 optical link. Correlates with Critical alarm abiLossOfFrame.                                                                                                                                                                  |
| MGCA330 | ABI Loss of Signal (low light level) on DS512 optical link. Correlates with Critical alarm abiLowLightLevel.                                                                                                                                             |
| MGCA331 | ABI Channel parity error on DS512 optical link. Correlates with Minor alarm abiChannelParityError.                                                                                                                                                       |
| MGCA332 | SDH Path Trace Identifier Mismatch Alarm (only applies to SDH and not SONET). The Path Trace Identifier being seen by the OC3 card at the carrier Path level does not match what has been provisioned for that carrier. Correlates with Minor alarm tim. |

**MG 9000 Logs/Faults available**

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MGCA333 | AlarmIndicationSignal (ds3ais) generates log MGCA333 when an AlarmIndicationSignal fault is received from the Gateway.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| MGCA334 | LossofFrame (ds3lof) generates log MGCA334 when a LossOfFrame fault is received from the Gateway.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| MGCA335 | RemoteAlarmIndication (ds3rai) generates log MGCA335 when a RemoteAlarmIndication fault is received from the Gateway.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MGEM300 | Generated when MG9000 EM is not able to make connection to the Element Manager Database. Correlates with Major alarm EmDbUnavailable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MGEM301 | In SN06, the NE301 log name changed to MGEM301. Generated when the MG 9000 Manager loses SNMP communication with the MG 9000. Correlates with Critical alarm CommsLostToNE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| MGEM302 | In SN06, NE302 log name changed to MGEM302. The MG9000 Manager has added a new MG9000 and tries to discover the NE. It will check the MG9000 EM IP address provisioned at the MG9000 and if it is incorrect will raise this alarm. Correlates with Major alarm invalidEMIPAddress.                                                                                                                                                                                                                                                                                                                                                                   |
| MGEM303 | In SN06, the NE303 log name changed to MGEM303. The description of this log is restored faults: "Faults seen while active." Diagnostics will not clear restored faults. The card with the restored faults may not be in the same state it was in before the restart that caused the faults to be restored. The MG9000 sends too many alarms within a 5 second window. When this happens the MG9000 Manager will request this particular MG9000 stop sending Alarms and display this particular alarm. This condition will clear when the number of alarm within 5 sec falls below a set number. Correlates with Critical alarm AlarmsBeingThrottled. |
| MGEM679 | Feature A00002045 (UA-AAL1) introduces the log MGEM 679 ABI Card Switch Mastership requested.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| MGEM704 | Indicates that an attempt to correct the database has failed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| MGEM705 | Indicates that the Database is unavailable and correction failed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| MGEM714 | Raised each time the MG9K Upgrade Tool is executed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| NE300   | In SN06, the NE300 log (corresponding to all NorNode Faults) split into several logs (grouped according to the clearing procedures). Log NE300 should only be generated if the GW is running on pre-SN06 loads and the MGEM is running on SN06+ loads. It is purely for backward compatibility.                                                                                                                                                                                                                                                                                                                                                      |
| NE301   | The NE301 log (Critical) is generated when an incorrect replacement card has been installed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| NE302   | This log indicates software faults of any severity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| NE303   | This log indicates restored faults: "Faults seen while active." Diagnostics will not clear restored faults. The card with the restored faults may not be in the same state it was in before the restart that caused the faults to be restored.                                                                                                                                                                                                                                                                                                                                                                                                       |
| NE304   | This log indicates faults that are ambiguous with regard to the card that is causing the fault. Usually, the alarm on card A indicates that there is a problem on card A, card B, or the link in between card A and B.                                                                                                                                                                                                                                                                                                                                                                                                                               |

**MG 9000 Logs/Faults available**

|         |                                                                                                                                                                                                                                                                                                                           |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NE305   | This log indicates serial device faults of any severity.                                                                                                                                                                                                                                                                  |
| NE306   | This log indicates GLAN-related faults of any severity. The GLAN hub is located on the active ITP in the shelf where the fault appears.                                                                                                                                                                                   |
| NE307   | This log indicates ABI faults of any severity.                                                                                                                                                                                                                                                                            |
| NE308   | This log indicates inband messaging faults of any severity.                                                                                                                                                                                                                                                               |
| NE309   | This log indicates clock sync faults of any severity.                                                                                                                                                                                                                                                                     |
| NE310   | This log indicates unused hardware faults of any severity.                                                                                                                                                                                                                                                                |
| NE311   | This log indicates time of day faults of any severity - attempts to access the provisioned time server have failed.                                                                                                                                                                                                       |
| NE312   | This log indicates cable faults of any severity -- one of the cables to the ITPs has been connected in an unsupported way.                                                                                                                                                                                                |
| NE313   | This log indicates an activity cable fault of any severity; the activity control cable is a small cable on the front of the ABI cards that is used for activity determination.                                                                                                                                            |
| NE314   | This log indicates backplane faults of any severity; the carriers between the two DCC cards cannot communicate.                                                                                                                                                                                                           |
| NE315   | This log indicates bandwidth fault of any severity; some of the carriers are not providing bandwidth.                                                                                                                                                                                                                     |
| NE316   | This log indicates line alarms of any severity.                                                                                                                                                                                                                                                                           |
| NE317   | This log indicates shelf faults of any severity.                                                                                                                                                                                                                                                                          |
| NE318   | This log indicates proxy alarms of any severity; the card referred to in the alarm text (description) is not communicating.                                                                                                                                                                                               |
| NE319   | This log indicates MTA alarms of any severity.                                                                                                                                                                                                                                                                            |
| NE320   | This log indicates data audit faults of any severity; data audit required.                                                                                                                                                                                                                                                |
| NE503   | ABI Switch Mastership.                                                                                                                                                                                                                                                                                                    |
| NE504   | ABI State Change Trap.                                                                                                                                                                                                                                                                                                    |
| NE609   | A software image log generated whenever a user executes an image request.                                                                                                                                                                                                                                                 |
| OVLD808 | (Critical) Indicates that an external messaging link has closed and cannot send/receive message.                                                                                                                                                                                                                          |
| OVLD809 | (Major) Indicates that the message loss is high enough such that the message link is in a degraded service state.                                                                                                                                                                                                         |
| OVLD810 | (Minor) Indicates message retransmissions are high enough that system is starting to see performance degradation.                                                                                                                                                                                                         |
| PM720   | This INFO log report is produced whenever an unsolicited maintenance message is received in the Core from a GWC indicating that a certain number of service ports are to be placed in or out of service. These service ports represent the capability of the subtending UAS to process announcement and conference calls. |
| SHLF301 | SIC talk battery A alarm occurs. Correlates with Critical alarm shelfTalkBatteryA.                                                                                                                                                                                                                                        |

**MG 9000 Logs/Faults available**

|         |                                                                                                     |
|---------|-----------------------------------------------------------------------------------------------------|
| SHLF302 | SIC talk battery B alarm occurs. Correlates with Critical alarm shelfTalkBatteryB.                  |
| SHLF303 | SIC signal battery A alarm occurs. Correlates with Major alarm shelfSignalBatteryA.                 |
| SHLF304 | SIC signal battery B alarm occurs. Correlates with Major alarm shelfSignalBatteryB.                 |
| SHLF305 | SIC signal battery A fuse alarm occurs. Correlates with Major alarm shelfSignalBatteryAfuse.        |
| SHLF306 | SIC signal battery B fuse alarm occurs. Correlates with Major alarm shelfSignalBatteryBfuse.        |
| SHLF308 | BIP signal battery A1 alarm occurs. Correlates with Major alarm bipSignalBatteryA1.                 |
| SHLF309 | BIP signal battery A2alarm occurs. Correlates with Major alarm bipSignalBatteryA2.                  |
| SHLF310 | SIC talk battery B1 alarm occurs. Correlates with Major alarm bipSignalBatteryB1.                   |
| SHLF311 | BIP signal battery B2 alarm occurs. Correlates with Major alarm bipSignalBatteryB2.                 |
| SHLF312 | BIP talk battery A alarm occurs. Correlates with Minor alarm bipTalkBatteryA.                       |
| SHLF313 | BIP talk battery B alarm occurs. Correlates with Minor alarm bipTalkBatteryB.                       |
| SHLF314 | BIP filter A fail alarm occurs. Correlates with Minor alarm bipFilterA.                             |
| SHLF315 | BIP filter B fail alarm occurs. Correlates with Minor alarm bipFilterB.                             |
| SHLF316 | BIP scan point 1 is activated. Correlates with alarm bipScanPoint1.                                 |
| SHLF317 | BIP scan point 2 is activated. Correlates with alarm bipScanPoint2.                                 |
| SHLF318 | BIP scan point 3 is activated. Correlates with alarm bipScanPoint3.                                 |
| SHLF319 | BIP scan point 4 is activated. Correlates with alarm bipScanPoint4.                                 |
| SHLF320 | BIP scan point 5 is activated. Correlates with alarm bipScanPoint5.                                 |
| SHLF321 | BIP scan point 6is activated. Correlates with alarm bipScanPoint6.                                  |
| SHLF322 | BIP scan point 7is activated. Correlates with alarm bipScanPoint7.                                  |
| SHLF323 | BIP scan point 8is activated. Correlates with alarm bipScanPoint8.                                  |
| SHLF324 | BIP scan point 9is activated. Correlates with alarm bipScanPoint9.                                  |
| SHLF325 | BIP scan point 10is activated. Correlates with alarm bipScanPoint10.                                |
| SHLF326 | BIP scan point 11 is activated. Correlates with alarm bipScanPoint11.                               |
| SHLF327 | Talk Battery A1 Power Feed. Correlates with Major alarm bipTalkBatteryA1.                           |
| SHLF328 | Talk Battery A Power Feed. Correlates with Major alarm bipTalkBatteryA2.                            |
| SHLF329 | Talk Battery B1 Power Feed. Correlates with Major alarm bipTalkBatteryB1.                           |
| SHLF330 | Talk Battery B2 Power Feed. Correlates with Major alarm bipTalkBatteryB2.                           |
| SHLF332 | BIP environmental control unit 0 temperature alarm occurs. Correlates with Minor alarm bipEcuTemp0. |
| SHLF333 | BIP environmental control unit 1 temperature alarm occurs. Correlates with Minor alarm bipEcuTemp1. |

**MG 9000 Logs/Faults available**

|         |                                                                                                        |
|---------|--------------------------------------------------------------------------------------------------------|
| SHLF334 | BIP environmental control unit 0 fan alarm occurs. Correlates with Minor alarm bipEcuFan0.             |
| SHLF335 | BIP environmental control unit 1 fan alarm occurs. Correlates with Minor alarm bipEcuFan1.             |
| SHLF336 | BIP remote alarm cut off alarm occurs. Correlates with alarm bipRemoteAlarmcutoff.                     |
| SHLF337 | BIP local alarm cut off alarm occurs. Correlates with alarm bipLocalAlarmcutoff.                       |
| SHLF338 | BIP ABS fuse fail alarm occurs. Correlates with Major alarm bipAbsFusefail.                            |
| SHLF339 | BIP ABS battery power supply alarm occurs. Correlates with Critical alarm bipAbsPowerSupply.           |
| SHLF341 | Presence of BIP's Current-Sense Card A. Correlates with Major alarm bipCsApresence.                    |
| SHLF342 | Presence of BIP's Current-Sense Card B. Correlates with Major alarm bipCsBpresence.                    |
| SHLF343 | Presence of BIP's Alarm Relay Card. Correlates with Major alarm bipAlmRelayPresence.                   |
| SHLF344 | Current-Sense Card A Shelf 0 High Threshold exceeded. Correlates with Minor bipCSAshf0HighThres alarm. |
| SHLF345 | Current-Sense Card A Shelf 1 High Threshold exceeded. Correlates with Minor alarm bipCSAshf1HighThres. |
| SHLF346 | Current-Sense Card A Shelf 2High Threshold exceeded. Correlates with Minor alarm bipCSAshf2HighThres.  |
| SHLF347 | Current-Sense Card A Shelf 3High Threshold exceeded. Correlates with Minor bipCSAshf3HighThres alarm.  |
| SHLF348 | Current-Sense Card B Shelf 0 High Threshold exceeded Correlates with Minor bipCSBshf0HighThres alarm.  |
| SHLF349 | Current-Sense Card B Shelf 1 High Threshold exceeded. Correlates with Minor bipCSBshf1HighThres alarm. |
| SHLF350 | Current-Sense Card B Shelf 2 High Threshold exceeded. Correlates with Minor bipCSBshf2HighThres alarm. |
| SHLF351 | Current-Sense Card B Shelf 3 High Threshold exceeded. Correlates with Minor bipCSBshf3HighThres alarm. |
| SHLF352 | Current High Temperature Threshold exceeded. Correlates with Minor bipTempHighThres alarm.             |
| SHLF353 | Current-Sense Card A Shelf 0 Low Threshold exceeded. Correlates with Minor bipCSAshf0LowThres alarm.   |
| SHLF354 | Current-Sense Card A Shelf 1 Low Threshold exceeded. Correlates with Minor bipCSAshf1LowThres alarm.   |
| SHLF355 | Current-Sense Card A Shelf 2 Low Threshold exceeded. Correlates with Minor bipCSAshf2LowThres alarm.   |
| SHLF356 | Current-Sense Card A Shelf 3 Low Threshold exceeded. Correlates with Minor bipCSAshf3LowThres alarm.   |



**MG 9000 Logs/Faults available**

|         |                                                                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| SHLF357 | Current-Sense Card B Shelf 0 Low Threshold exceeded. Correlates with Minor bipCSBshf0LowThres alarm. Correlates with Minor bipCSBshf1LowThres alarm. |
| SHLF358 | Current-Sense Card B Shelf 1 Low Threshold exceeded. Correlates with Minor bipCSBshf1LowThres alarm.                                                 |
| SHLF359 | Current-Sense Card B Shelf 2 Low Threshold exceeded. Correlates with Minor bipCSBshf2LowThres alarm.                                                 |
| SHLF360 | Current-Sense Card B Shelf 3 Low Threshold exceeded. Correlates with Minor bipCSBshf3LowThres alarm.                                                 |
| SHLF361 | Current Low Temperature Threshold exceeded. Correlates with Minor bipTempLowThres alarm.                                                             |
| SHLF362 | Status of the Signal Battery Fuse. Correlates with Major bipSignalBatteryFuse alarm.                                                                 |
| SHLF363 | Status of Talk Battery A Fuse. Correlates with Major bipTalkBatteryAFuse alarm.                                                                      |
| SHLF365 | Status of Cooling Unit 0 Fuse. Correlates with Minor bipEcuFuse0 alarm.                                                                              |
| SHLF366 | Status of Cooling Unit 1 Fuse. Correlates with Minor bipEcuFuse1 alarm.                                                                              |
| SHLF367 | Status of the End-Aisle Fuse. Correlates with Minor bipEndAisleFuse alarm.                                                                           |
| SHLF368 | BIP Signal Distribution Point 1. Correlates with bipSignalDistribution1 alarm.                                                                       |
| SHLF369 | BIP Signal Distribution Point 2. Correlates with bipSignalDistribution2 alarm.                                                                       |
| SHLF370 | BIP Signal Distribution Point 3. Correlates with bipSignalDistribution3 alarm.                                                                       |
| SHLF371 | BIP Signal Distribution Point 4. Correlates with bipSignalDistribution4 alarm.                                                                       |
| SHLF372 | BIP Visual Critical. Correlates with bipVisualCritical alarm.                                                                                        |
| SHLF373 | BIP Visual Major. Correlates with bipVisualMajor alarm.                                                                                              |
| SHLF374 | BIP Visual Minor. Correlates with bipVisualMinor alarm.                                                                                              |
| SHLF375 | BIP Audible Critical. Correlates with bipAudibleCritical alarm.                                                                                      |
| SHLF376 | BIP Audible Major. Correlates with bipAudibleMajor alarm.                                                                                            |
| SHLF377 | BIP Audible Minor. Correlates with bipAudibleMinor alarm.                                                                                            |
| SHLF378 | BIP Alarm CutOff LED. Correlates with bipAlarmCutOffLED alarm.                                                                                       |
| SHLF379 | BIP Talk Battery A Fail LED. Correlates with bipTalkBatteryFailALED alarm.                                                                           |
| SHLF380 | BIP Talk Battery B Fail LED. Correlates with bipTalkBatteryFailBLED alarm.                                                                           |
| SHLF381 | BIP Critical LED Bank. Correlates with bipCriticalLEDbank alarm.                                                                                     |
| SHLF382 | BIP Major LED Bank. Correlates with bipMajorLEDbank alarm.                                                                                           |
| SHLF383 | BIP Minor LED Bank. Correlates with bipMinorLEDbank alarm.                                                                                           |
| SHLF384 | BIP Environmental Control Unit 0 LED. Correlates with bipEcu1LED alarm.                                                                              |
| SHLF385 | BIP Environmental Control Unit 1 LED. Correlates with bipEcu2LED alarm.                                                                              |
| SHLF386 | BIP Alarm Processor Card Fail LED. Correlates with bipAlarmFailedLED alarm.                                                                          |



**MG 9000 Logs/Faults available**

|         |                                                                                                                                                                                                                                                         |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SHLF387 | BIP Aisle Alarm. Correlates with bipAisleAlarm alarm.                                                                                                                                                                                                   |
| SHLF388 | BIP Frame Alarm. Correlates with bipFrameFail alarm.                                                                                                                                                                                                    |
| SHLF389 | Presence of BIP's Alarm Relay Card LED. Correlates with bipAlmRelayLed alarm.                                                                                                                                                                           |
| SHLF390 | Status of Current-Sense Card A LED. Correlates with bipCsAled alarm.                                                                                                                                                                                    |
| SHLF391 | Status of Current-Sense Card B LED. Correlates with bipCsBled alarm.                                                                                                                                                                                    |
| SHLF392 | Generated when a shelfCompatibility fault is received from the MG9kEM server.                                                                                                                                                                           |
| SHLF393 | Generated when a cardDiscovery fault is received from the MG9kEM server.                                                                                                                                                                                |
| SHLF501 | A catch-all INFO log for all shelf events. Changed in SN06 to show a Severity of Indeterminate, which means no priority has been assigned to the related BIP event. If a severity had been datafilled, then SHLF383 would generate instead of SHLF 501. |
| SWLN301 | Line in Fault occurred or is cleared. Correlates with Minor lineFault alarm.                                                                                                                                                                            |
| SWLN302 | Hazardous Voltage line fault occurred or is cleared. Correlates with Minor alarm lineProtectionFault.                                                                                                                                                   |
| SWLN303 | Line in Babbling state line fault occurred or is cleared. Correlates with Minor alarm lineBabbleState.                                                                                                                                                  |
| SYS100  | Generated each time a MG9000 EM client attempts to log in to the system.                                                                                                                                                                                |
| TRK203  | INFO only. Indicates that a connection was denied due to GW overload.                                                                                                                                                                                   |
| UPGD600 | INFO only. Generated when an upgrade or a downgrade is needed. When the DCC card version is not the same as the element managers release version, this log is generated.                                                                                |
| UPGD601 | INFO only. Generated when an export is started.                                                                                                                                                                                                         |
| UPGD602 | INFO only. Generated when an export is completed.                                                                                                                                                                                                       |
| UPGD603 | INFO only. Generated when an Import of the NE is started.                                                                                                                                                                                               |
| UPGD604 | INFO only. Generated when an import is completed.                                                                                                                                                                                                       |
| VC301   | Minor: atmVcl Alarm indication signal. Correlates with Minor alarm vclTpAis.                                                                                                                                                                            |
| VC302   | Minor: atmVcl Remote Detection Indicator. Correlates with Minor alarm vclTpRdi.                                                                                                                                                                         |
| VC303   | Minor: loss of continuity, vcl. Correlates with Minor alarm vclLoc.                                                                                                                                                                                     |
| VC304   | Minor: atmVcc Alarm indication signal. Correlates with Minor alarm vccTpAis.                                                                                                                                                                            |
| VC305   | Minor: atmVcc Remote Detection Indicator. Correlates with Minor alarm mvccTpRdi.                                                                                                                                                                        |
| VC306   | Minor: loss of continuity, vcc. Correlates with Minor alarm vccLoc.                                                                                                                                                                                     |
| VMG300  | Generated when Root Termination goes out of service (Communication between Gateway and GWC is lost and ESA is not enabled). Correlates with Critical alarm VMG OOS.                                                                                     |
| VMG600  | Indicates that termination data was successfully provisioned in all appropriate areas except for the database.                                                                                                                                          |
| VMG601  | Indicates that an attempt to correct termination data in the database has passed.                                                                                                                                                                       |

**MG 9000 Logs/Faults available**

|         |                                                                                                                                                                               |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| XDSL301 | Generated when a loss of signal - local modem fault occurs. Correlates with minor alarm losATUC.                                                                              |
| XDSL302 | Generated when a loss of frame - local modem fault occurs. Correlates with minor alarm lofATUC.                                                                               |
| XDSL303 | Generated when a loss of power - local modem fault occurs. Correlates with minor alarm lprATUC.                                                                               |
| XDSL304 | Generated when a loss of link - local modem fault occurs. Correlates with minor alarm loiATUC.                                                                                |
| XDSL305 | Generated when a loss of signal - remote modem fault occurs. Correlates with minor alarm losATUR.                                                                             |
| XDSL306 | Generated when a loss of frame - remote modem fault occurs. Correlates with minor alarm lofATUR.                                                                              |
| XDSL307 | Generated when a loss of power - remote modem fault occurs. Correlates with minor alarm lprATUR.                                                                              |
| XDSL308 | Generated when a loss of link - remote modem fault occurs. Correlates with minor alarm loiATUR.                                                                               |
| XDSL309 | Generated when a no modem present fault occurs. Correlates with minor alarm aturNotPresent.                                                                                   |
| XDSL310 | Generated when a local modem clock failure occurs. Correlates with critical alarm noClock.                                                                                    |
| XDSL311 | Generated when a protocol error occurs. Correlates with critical alarm handshakeFail.                                                                                         |
| XDSL312 | Generated when a configuration error occurs. Correlates with critical alarm linkMismatch.                                                                                     |
| XDSL313 | Generated when an ATM traffic dropped at WAC upstream fault occurs. Correlates with critical alarm vpiNonzero.                                                                |
| XDSL314 | Generated when a loss of sync of ATM cells - upstream fault occurs. Correlates with critical alarm lclATUC.                                                                   |
| XDSL315 | Generated when a loss of sync of ATM cells - downstream fault occurs. Correlates with critical alarm lclATUR.                                                                 |
| XDSL316 | Generated when a local modem critical failure - not responding, in Kernel mode, download failure, or message corrupted fault occurs. Correlates with critical alarm failATUC. |
| XDSL317 | Generated when a general hardware fault indication - circuit fault occurs. Correlates with critical alarm circuitHardwareFault.                                               |
| xDSL602 | ATURs transmit rate has changed (RADSL mode only).                                                                                                                            |
| xDSL800 | Loss of Framing 15-minute interval threshold reached.                                                                                                                         |
| xDSL801 | Loss of Signal 15-minute interval threshold reached.                                                                                                                          |
| xDSL802 | Loss of Power 15-minute interval threshold reached.                                                                                                                           |
| xDSL803 | Errored Second 15-minute interval threshold reached.                                                                                                                          |

**MG 9000 Logs/Faults available**

|                                                          |                                                                                                                        |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| xDSL805                                                  | Loss of Framing 15-minute interval threshold reached.                                                                  |
| xDSL806                                                  | Loss of Signal 15-minute interval threshold reached.                                                                   |
| xDSL807                                                  | Loss of Power 15-minute interval threshold reached.                                                                    |
| xDSL808                                                  | Errored Second 15-minute interval threshold reached.                                                                   |
| xDSL809                                                  | A DSL Interface exceeds the specified threshold on a given performance measurement.                                    |
| The following items describe the MG9K Clock Sync alarms. |                                                                                                                        |
| Loss of Phase Lock                                       | Minor: Phase PLD [altera 7064b] detected a minimum phase difference greater than eight nano seconds.                   |
| Loss of Frame Pulse Lock                                 | Minor: Frame pulse alignment did not get established with the active card -- it should occur in the inactive card only |
| Loss of My Clock                                         | Minor: The high and low levels of the SYNC PLL clock are not toggling.                                                 |
| Loss of Mate Clock                                       | Minor: The high and Low levels of the mate clock are not toggling.                                                     |
| Loss of Clock Output                                     | Major: Phase PLD reference clock oscillator not toggling.                                                              |
| Single Reference Failure                                 | Minor: Single monitored reference source has been lost.                                                                |
| All Reference Failure                                    | Major: Absolute and Delta reference source signals have been lost.                                                     |
| Single Sync Unit Failure                                 | Major: Stratum 3 unit on ITP failed.                                                                                   |
| Clock Stability                                          | Clock mode can be Acquiring, Acquired, Hold Over, or Free Run.                                                         |
| Signal LOS                                               | Minor: Single/All source reference occurred due to loss of signal.                                                     |
| Signal LOF                                               | Minor: Single/All source(s) reference occurred due to out of frame.                                                    |
| PM Level Alarms                                          |                                                                                                                        |
| PM ST3E Holdover                                         | Major; both SyncRMs are in stratum 3E holdover.                                                                        |
| PM ST3E Holdover 24 Hour                                 | Critical; both SyncRMs are in stratum 3E holdover for more than 24 hours.                                              |
| PM SMC Holdover                                          | Major; both SyncRMs are unavailable and the CEM is in SMC holdover for more than 24 hours.                             |
| PM SMC Holdover 24 Hour                                  | Critical; both SyncRMs are unavailable and the CEM is in SMC holdover.                                                 |
| SPM Loss of Clock Unit redundancy                        | Major; one of the SyncRMs is OOS.                                                                                      |

**MG 9000 Logs/Faults available**

|                                                                                                    |                                                                                                                                     |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Timing mode change failure                                                                         | Critical; the crafts person-initiated timing mode change failed.                                                                    |
| Node Timing Degradation (NTD)                                                                      | Major; The MG4000 is experiencing non-critical faults on three or more input BITS links (input timing signals).                     |
| RM Level Alarms (Sync Unit Alarms)                                                                 |                                                                                                                                     |
| SYSB                                                                                               | Major; SyncRM has gone into SYSB state due to a critical fault.                                                                     |
| MANB                                                                                               | Major; SyncRM has gone into MANB state due to manual maintenance request.                                                           |
| ISTB                                                                                               | Minor; SyncRM has gone into trouble state due to a non-critical fault                                                               |
| Loss of Reference Source Redundancy                                                                | Major; SyncRM has critical fault on one of two reference signals.                                                                   |
| Stratum 3E Holdover                                                                                | Major; SyncRM has gone into stratum 3E holdover mode as a result of faults on both reference signals.                               |
| Stratum 3E Holdover 24 Hour                                                                        | Critical; SyncRM has gone into stratum 3E holdover mode as a result of faults on both reference signals.                            |
| Clock Synchronization Level Alarms (BITS alarms)                                                   |                                                                                                                                     |
| MTIE Exceeded                                                                                      | Minor; the MTIE performance for the input signal has exceeded the requirement mask threshold indicating an unusable signal.         |
| Loss of Signal (LOS)                                                                               | Major; the SyncRM cannot detect a signal on the timing reference.                                                                   |
| Out of Frame (OOF)                                                                                 | Major; SyncRM cannot detect DS1 frame. This alarm masks AIS alarm for a given timing reference.                                     |
| Alarm Indication Signal (AIS)                                                                      | Major; SyncRM has detected an AIS on an incoming timing reference signal from the BITS link. This alarm is masked by the LOF alarm. |
| Timing Link Degradation (TLD)                                                                      | Major; this is a non-service affecting alarm and would be masked by all other SyncRM BITS Alarms                                    |
| Bipolar Violation (BPV)                                                                            | Minor; this is a non-service affecting alarm and would be masked by all other SyncRM BITS Alarms                                    |
| Cyclic Redundancy Check (CRC)                                                                      | Minor; this is a non-service affecting alarm and would be masked by all other SyncRM BITS Alarms                                    |
| MG9K alarms Unable to communicate with RADIUS Server.                                              |                                                                                                                                     |
| Secure link Down with GWC.                                                                         |                                                                                                                                     |
| Packet Discard (depends on the threshold set).                                                     |                                                                                                                                     |
| Overload Controls--these alarms will now also apply to the ABI & ITP Card as well as the DCC Card. |                                                                                                                                     |
| SAD: Discard Policy, or Loop failed.                                                               |                                                                                                                                     |
| IKE: Main mode failed, or Quick mode failed, or Packet discarded.                                  |                                                                                                                                     |
| IPSec Security: Decryption error or Authentication error.                                          |                                                                                                                                     |

**MG 9000 Logs/Faults available**

|                           |                                                                                                                                         |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| MG9K security alarms      | Non-responsive RADIUS Server                                                                                                            |
|                           | Expired Links to Security Peers                                                                                                         |
|                           | Replayed Packet threshold                                                                                                               |
|                           | Packet Discard threshold                                                                                                                |
| MG9K security events logs | IKE negotiation errors                                                                                                                  |
|                           | IP packet authentication failures                                                                                                       |
|                           | Packet discard                                                                                                                          |
| IPSec Syslog messages     | Replayed packets                                                                                                                        |
|                           | There is a wide variety of IKE failure messages generated to syslog. Refer to feature A00005561 in this document for the complete list. |

**PNM--available logs/faults**

The following table lists the PNM logs/faults available. PNM supports SCC2 or NT STD formatted logs through SDM functionality, or it can be supported through IEMS. For details on the IEMS interface, refer to the section in this document titled “SN07 IEMS Functionality.” For detailed information on logs, refer to NN10275-909, *Fault Management Log Reference*.

**PNM Logs/Faults available**

| Log/Fault                                                                                                                                                                                                   | Description                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Feature A00002007 (UA-AAL1) introduces threshold faults. The following new faults, which have a Warning severity, are raised when a threshold is crossed and cleared when the threshold criteria is exited: |                                                                                                                         |
| OVLD300                                                                                                                                                                                                     | Associated with the fault ovldDetectionAlarm which has a severity of MINOR or MAJOR, based on the rate of call denials. |
| OVLD800                                                                                                                                                                                                     | ovldRscMonPduRateFault                                                                                                  |
| OVLD801                                                                                                                                                                                                     | ovldRscMonCbvMsgRFault                                                                                                  |
| OLVD802                                                                                                                                                                                                     | ovldRscMonConnQueFault                                                                                                  |
| OVLD803                                                                                                                                                                                                     | ovldRscMonCpuUtilFault                                                                                                  |
| MGEM304                                                                                                                                                                                                     | The activity A00003089 (UA-AAL1) provides MGEM304. Generation of this log indicates a Communications Subsystem failure. |

**PNM Logs/Faults available**

| Log/Fault                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Description                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| MGEM679                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | The log is generated when a user attempts to update the frame location information. |
| <p>The following alarm logs are modified to include the provisioned frame location information.</p> <p>CES305, MGCA301, MGCA302, MGCA303, MGCA304, MGCA305, MGCA306, MGCA307, MGCA308, MGCA309, MGCA310, MGCA312, MGCA313, MGCA314, MGCA315, MGCA316, MGCA317, MGCA318, MGCA319, MGCA320, MGCA321, MGCA322, MGCA323, MGCA324, MGCA325, MGCA326, MGCA327, MGCA328, MGCA329, MGCA330, MGCA331, MGCA332, VC301, VC302, VC303, VC304, VC305, VC306, SHLF301, SHLF302, SHLF303, SHLF304, SHLF305, SHLF306, SHLF307, SHLF308, SHLF309, SHLF310, SHLF311, SHLF312, SHLF313, SHLF314, SHLF315, SHLF316, SHLF317, SHLF318, SHLF319, SHLF320, SHLF321, SHLF322, SHLF323, SHLF324, SHLF325, SHLF326, SHLF327, SHLF328, SHLF329, SHLF330, SHLF332, SHLF333, SHLF334, SHLF335, SHLF336, SHLF337, SHLF338, SHLF339, SHLF340, SHLF341, SHLF342, SHLF343, SHLF344, SHLF345, SHLF346, SHLF347, SHLF348, SHLF349, SHLF350, SHLF351, SHLF352, SHLF353, SHLF354, SHLF355, SHLF356, SHLF357, SHLF358, SHLF359, SHLF360, SHLF361, SHLF362, SHLF363, SHLF364, SHLF365, SHLF366, SHLF367, SHLF368, SHLF369, SHLF370, SHLF371, SHLF372, SHLF373, SHLF374, SHLF375, SHLF376, SHLF377, SHLF378, SHLF379, SHLF380, SHLF381, SHLF382, SHLF383, SHLF384, SHLF385, SHLF386, SHLF387, SHLF388, SHLF389, SHLF390, SHLF391, SWLN301, SWLN302, SWLN303, XDSL301, XDSL302, XDSL303, XDSL304, XDSL305, XDSL306, XDSL307, XDSL308, XDSL309, XDSL310, XDSL311, XDSL312, XDSL313, XDSL314, XDSL315, XDSL316, XDSL317, BW300, BW301, BW302, BW304, BW305, BW306, BW307, BW308, BW309, BW310, BW311, NE301, NE302, NE303, NE304, NE305, NE306, NE307, NE308, NE309, NE310, NE311, NE312, NE313, NE314, NE315, NE316, NE317, NE318, NE320, MGEM300, MGEM301, MGEM302, MGEM303, MGC300, MGC301, MGC30x, TEST302, TEST303, TEST304, ESA300, VMG300, VMG301, VMG302, VMG303, VMG304, OVLD300</p> |                                                                                     |

**NPM--available logs/faults**

The following table lists the Network Patch Manager (NPM) Logs/Faults available. For detailed information on Carrier VoIP logs, refer to NN10275-909, *Fault Management Log Reference*.

NPM supports SCC2 or NT STD formatted logs through SDM functionality, or it can be supported through IEMS. For details on the IEMS interface, refer to the section in this document titled “SN07 IEMS Functionality.” For details on the logs, refer to the Fault section of the FCAPS documentation on CS 2000 Management Tools, NN10084-911.

**NPM Logs/Faults available**

| Log/Fault                                     | Description                                                                                                                 |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Network Element: Network Patch Manager</b> |                                                                                                                             |
| NPM360                                        | Reports that an alarm has been raised.                                                                                      |
| NPM370                                        | Reports when an alarm has been cleared.                                                                                     |
| NPM400                                        | Reports the results of attempted apply, remove, and audit commands.                                                         |
| NPM600                                        | Reports when the NPM server has been started, either by reboot or manually.                                                 |
| NPM601                                        | File failure; reports general problems that could be service affecting. The log contains lines of trouble information text. |
| NPM603                                        | There are problems between the database and the device during a device audit.                                               |

**NPM Logs/Faults available**

| Log/Fault         | Description                                                                                                                        |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------|
| NPM605            | General trouble log; reports general problems that could be service affecting. The log contains lines of trouble information text. |
| NPM610            | Provides information related to the execution of a task.                                                                           |
| NPM660            | Reports problems when a plan fails to execute.                                                                                     |
| NPM680            | Reports problems when a plan is automatically executed.                                                                            |
| NPM System Alarms |                                                                                                                                    |
| Alarm name        | Description                                                                                                                        |
| ACT_NOT_APP       | Activated patch not applied to all applicable devices.                                                                             |
| ACT_NOT_ACT       | Active patch applied to all applicable devices but not activated in all devices.                                                   |
| DEBUG_APP         | Debug patches applied. Minor.                                                                                                      |
| DISABLED_APPLIED  | Applied patches that can be enabled, but are disabled. Major.                                                                      |
| DNR_NOT_APP       | Do Not Remove (DNR) patches not applied. Critical.                                                                                 |
| EMG_NOT_APP       | Emergency patches not applied. Critical.                                                                                           |
| ENABLED_REMOVED   | Patches which can be enabled but are not enabled. Major.                                                                           |
| GEN_NOT_APP       | General patches not applied. (No severity)                                                                                         |
| LTD_NOT_APP       | Limited patches not applied. (No severity)                                                                                         |
| OBS_NOT_REMOVED   | Obsolete patches not removed. Major.                                                                                               |
| OBE_NOT_REMOVED   | Obsolete emergency patches not removed. Critical.                                                                                  |
| REMOVED_PATCHES   | Removed patches when are not category OBS, OBE, or DBG. (No severity)                                                              |
| PATCH_ONHOLD      | Patches on hold. Minor.                                                                                                            |
| DEVICE_ONHOLD     | Devices on hold. Minor.                                                                                                            |
| REL_GEN_NOT_APP   | A Major alarm raised when a released patch has not been applied. Relates to log NPM360.                                            |
| PFRSGETPATCH      | A Major alarm raised when the PFRS GENREPORT task has failed. Relates to log NPM360.                                               |
| PFRSGENREPORT     | A Major alarm raised when the PFRS GETPATCH task has failed. Relates to log NPM360.                                                |

**CS2000 Core Manager--available logs/faults**

The following table lists the CS2000 Core Manager Logs/Faults available. For detailed information on logs, refer to NN10275-909, *Fault Management Log Reference*.

The CS 2000 Core Manager supports SCC2 or NT STD formatted logs through SDM functionality, or it can be supported through IEMS. For details on the IEMS interface, refer to the section in this document titled “SN07 IEMS

Functionality.” For details on the faults themselves, refer to the Fault Management section of CS 2000 FCAPS documentation, NN10082-911.

### CS2000 Core Manager Logs/Faults available

| Log/Fault                                                                                       | Description                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Network Element: CS2000 Core Manager</b>                                                     |                                                                                                                                                                                                                                                         |
| For details on previously existing Logs/Faults, refer to the SDM15 release of NTP 297-5051-840. |                                                                                                                                                                                                                                                         |
| CBM upgrade log                                                                                 | The CBM upgrade log is generated for any CBM upgrade failure.                                                                                                                                                                                           |
| SDM267                                                                                          | Indicates a change in the condition of a CBM link                                                                                                                                                                                                       |
| SDM300                                                                                          | The connection from the CS2000 Core Manager to the CM or operating company LAN server(s) is down.                                                                                                                                                       |
| SDM301                                                                                          | The maintenance system detects the logical volume mirroring status.                                                                                                                                                                                     |
| SDM302                                                                                          | Use of a system resource exceeds the threshold. Associated with log SDM602.                                                                                                                                                                             |
| SDM303                                                                                          | A process has failed more than 3 times in a day, or some other application fault has occurred. Associated with log SDM603 which indicates a clearing of the alarm. CR's Q00537118 and Q00600912 also impact this log for consistent formatting changes. |
| SDM304                                                                                          | Log Delivery application has failed to reconnect to a device.                                                                                                                                                                                           |
| SDM306                                                                                          | Table access software versions on the CM side and the SDM side are not compatible. Associated with a Minor alarm.                                                                                                                                       |
| SDM308                                                                                          | An I-tape or S-tape backup has failed.                                                                                                                                                                                                                  |
| SDM309                                                                                          | Fault detected on HW device or user took HW device OOS.                                                                                                                                                                                                 |
| SDM315                                                                                          | Corruption of file detected during data dictionary download.                                                                                                                                                                                            |
| SDM317                                                                                          | DCE subsystem has detected a problem.                                                                                                                                                                                                                   |
| SDM318                                                                                          | OM report failed to complete within one report interval. Associated with a Major alarm.                                                                                                                                                                 |
| SDM321                                                                                          | Reports that a split-system upgrade is in progress. Associated with a Minor alarm.                                                                                                                                                                      |
| SDM325                                                                                          | The connection to a network management component in a given domain has been lost. Log reports may be lost as a result.                                                                                                                                  |
| SDM328                                                                                          | Indicates that the signal on receive/ transmit fibre to OC3 card is faulty or not present. Associated with Major alarm OC3 Card Fault.                                                                                                                  |
| SDM329                                                                                          | Indicates a probable link equipment malfunction. Associated with Minor alarm Minor Link Fault.                                                                                                                                                          |
| SDM332                                                                                          | Indicates the status of an unsuccessful SDM system audit. An INFO log.                                                                                                                                                                                  |
| SDM336                                                                                          | Indicates that a response to CBM 800 heartbeat is not received from the core. Associated with major alarm Core Heartbeat                                                                                                                                |
| SDM337                                                                                          | Indicates that the patch failed signature checking.                                                                                                                                                                                                     |
| SDM500                                                                                          | The SDM node control process has restarted.                                                                                                                                                                                                             |
| SDM501                                                                                          | The node control process updated SDM run state to INSV.                                                                                                                                                                                                 |



**CS2000 Core Manager Logs/Faults available**

| Log/Fault | Description                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SDM502    | The node control process updated SDM run state to MANB. Logs SDM502-505 are included in the CS2000 Core Manager Log Delivery stream, but do not appear on the RMI.                                                                                                                                                                                                                          |
| SDM503    | The node control process updated SDM run state to SYSB.                                                                                                                                                                                                                                                                                                                                     |
| SDM504    | The node control process updated SDM run state to ISTB.                                                                                                                                                                                                                                                                                                                                     |
| SDM505    | The node control process updated SDM run state to OFFL from MANB.                                                                                                                                                                                                                                                                                                                           |
| SDM550    | An SDM Node Status Change has occurred.                                                                                                                                                                                                                                                                                                                                                     |
| SDM600    | An SDM maintenance connection has been re-established.                                                                                                                                                                                                                                                                                                                                      |
| SDM601    | Logical volume mirroring is re-established.                                                                                                                                                                                                                                                                                                                                                 |
| SDM602    | A system resource is below the threshold.                                                                                                                                                                                                                                                                                                                                                   |
| SDM603    | The SDM303 alarm has been cleared. Or a state change has occurred that does not require manual intervention to clear. CR Q00600912 also impacts this log for consistent formatting changes.                                                                                                                                                                                                 |
| SDM604    | CM had too little time to format log(s) and log(s) is/are lost.                                                                                                                                                                                                                                                                                                                             |
| SDM608    | I-tape or S-tape process has completed.                                                                                                                                                                                                                                                                                                                                                     |
| SDM609    | A hardware device has returned to the INSV state.                                                                                                                                                                                                                                                                                                                                           |
| SDM615    | Log Thresholding is in effect for logs managed by exception application. Exception reports may be inaccurate                                                                                                                                                                                                                                                                                |
| SDM616    | An unauthorized connection attempt is detected by the Log Delivery application. The connection is refused.                                                                                                                                                                                                                                                                                  |
| SDM617    | A DCE problem has been cleared.                                                                                                                                                                                                                                                                                                                                                             |
| SDM618    | Logical volume /var is 98 percent full. Log files in /var/adm have been deleted.                                                                                                                                                                                                                                                                                                            |
| SDM619    | OM Access Service detected a corrupt OM group during an OM schema download.                                                                                                                                                                                                                                                                                                                 |
| SDM620    | Reports current system performance data at set times.                                                                                                                                                                                                                                                                                                                                       |
| SDM621    | The split-system upgrade is finished.                                                                                                                                                                                                                                                                                                                                                       |
| SDM622    | Max file size reached for a file device handled by GDD.                                                                                                                                                                                                                                                                                                                                     |
| SDM625    | The connection to a Network Management component in a given domain has been re-established.                                                                                                                                                                                                                                                                                                 |
| SDM626    | An INFO log only. Generated whenever the OMDD application starts and it detects that the tuple number option has been changed state since the last time the application was launched. The log is used to inform the OSS of the state change which inherently signifies a change in the OMDD CSV files. The log will indicate the new (current) state as being either ACTIVATED or DISABLED. |
| SDM627    | Indicates a change in the condition of a CBM link.                                                                                                                                                                                                                                                                                                                                          |
| SDM630    | Indicates the SDM REX Test start and complete time. An INFO log.                                                                                                                                                                                                                                                                                                                            |
| SDM632    | Indicates the status of a successful SDM system audit. An INFO log.                                                                                                                                                                                                                                                                                                                         |
| SDM633    | A CBM info log that indicates a change in the condition of a CBM link.                                                                                                                                                                                                                                                                                                                      |

**CS2000 Core Manager Logs/Faults available**

| Log/Fault                      | Description                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SDM634                         | Indicates that the OC3 Card Fault alarm raised with SDM328 has been cleared.                                                                                                                                                                                                                                                                      |
| SDM635                         | Indicates that the Minor Link Fault alarm raised with SDM329 has been cleared.                                                                                                                                                                                                                                                                    |
| SDM636                         | Indicates that the heartbeat alarm raised with SDM336 has been cleared.                                                                                                                                                                                                                                                                           |
| SDM637                         | Indicates that patch check status is cleared by the user.                                                                                                                                                                                                                                                                                         |
| SDM650                         | Link maintenance requests a report on a failed link maintenance action.                                                                                                                                                                                                                                                                           |
| SDM700                         | Reports a Warm, Cold, or Reload restart on the core.                                                                                                                                                                                                                                                                                              |
| SDM739                         | Indicates file transfers between the FTP Client and the CORE and to show user log-ons to the CORE.                                                                                                                                                                                                                                                |
| <b>SDMB logs (SDM billing)</b> |                                                                                                                                                                                                                                                                                                                                                   |
| SDMB300                        | Memory allocation failed for SDM billing system.                                                                                                                                                                                                                                                                                                  |
| SDMB310                        | Indicates a communication problem with the SDM Billing System.                                                                                                                                                                                                                                                                                    |
| SDMB315                        | A software-related problem has occurred.                                                                                                                                                                                                                                                                                                          |
| SDMB316                        | A billing-related process has been manually killed.                                                                                                                                                                                                                                                                                               |
| SDMB320                        | A billing-backup problem affecting more than one file.                                                                                                                                                                                                                                                                                            |
| SDMB321                        | A billing-backup problem affecting one file.                                                                                                                                                                                                                                                                                                      |
| SDMB350                        | The billing application has reached a death threshold (a process has died > 3 times < 1 minute apart) and there is a request to restart.                                                                                                                                                                                                          |
| SDMB355                        | A disk-related problem has occurred, such as problems writing to disk (related to alarm DSKWR) or with disk utilization (related to alarm LODSK).                                                                                                                                                                                                 |
| SDMB365                        | A new version of the billing application does not support a stream format on an active stream present in previous load.                                                                                                                                                                                                                           |
| SDMB367                        | Value has been set on a trappable MIB object.                                                                                                                                                                                                                                                                                                     |
| SDMB370                        | CDR-to-BAF conversion encountered a problem that prevented it from converting CDR to BAF; BAF record lost.                                                                                                                                                                                                                                        |
| SDMB375                        | Generated when a problem occurs during the transfer of a file to the data processing management system (DPMS). It may be problems and alarms related to FTP, RTB (real-time billing), AFT (automatic file transfer), or Secure File Transfer Protocol. SN07 modifies it so that it is generated when an error occurs in SBA secure file transfer. |
| SDMB380                        | The file transfer mode for the stream indicated has an invalid value.                                                                                                                                                                                                                                                                             |
| SDMB390                        | A schedule-related problem has occurred.                                                                                                                                                                                                                                                                                                          |
| SDMB400                        | Generated every hour for every active stream to list all current active alarms.                                                                                                                                                                                                                                                                   |
| SDMB530                        | The configuration or status of a stream has changed.                                                                                                                                                                                                                                                                                              |
| SDMB531                        | Configuration for backup volumes was changed correctly.                                                                                                                                                                                                                                                                                           |
| SDMB550                        | The billing application has shut down.                                                                                                                                                                                                                                                                                                            |
| SDMB600                        | Generic information for the overall SDM Billing System.                                                                                                                                                                                                                                                                                           |

**CS2000 Core Manager Logs/Faults available**

| Log/Fault             | Description                                                                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SDMB610               | A communications-related problem has been resolved.                                                                                                                                          |
| SDMB620               | A backup-related problem has been resolved.                                                                                                                                                  |
| SDMB621               | A new backup file is being started.                                                                                                                                                          |
| SDMB625               | Recovery has started on a backup file.                                                                                                                                                       |
| SDMB650               | The billing application is restarting one or more processes.                                                                                                                                 |
| SDMB655               | Indicates file state changes and disk utilization, OR disk utilization has dropped below a threshold, OR the billing application cannot move a file to the closeSentProcessed directory.     |
| SDMB665               | A software problem on the CM prevents the downloading (synch) of FLEXCDR data at the SDM.                                                                                                    |
| SDMB675               | An information log that identifies a event related to the transfer of billing files. An event may be a normal operation, a problem, or the resolution of a problem related to SDMB375.       |
| SDMB680               | Information not related to the file system or creating links needs to be communicated to the customer.                                                                                       |
| SDMB690               | Indicates that an SBAIF alarm and the fault that caused it have cleared.                                                                                                                     |
| SDMB691               | Generates when a problem occurs with the scheduled transfer of billing files and when that fault clears. It also generates when a file transfer schedule is manually deactivated or deleted. |
| SDMB820               | A backup has hit a threshold.                                                                                                                                                                |
| SDM security log      | An Authentication and Authorization Security Syslog, generated when a security event occurs on a SDM.                                                                                        |
| SDM patch check alarm | This minor alarm is generated under the "sdmmtc sys" level, raised upon a patch signature check failure.                                                                                     |

### **Media Gateway15000 (previously Passport 15000--available logs/faults**

Refer to *Appendix D: Media Gateway 15000 and MDM Alarm Log Summary* to find an explanation of the SCC2 logs format that Passport and MDM alarm logs use and for complete list of faults. The Media Gateway 15000 supports SCCS or NT STD formatted logs through SDM functionality, or it can be supported through IEMS. For details on the IEMS interface, refer to the section in this document titled "IEMS Functionality."

For details on the logs refer to NTPs NN10092-911 and NN10198-912.

## **Ethernet Routing Switch 8600 (previously Passport 8600)--available traps/faults**

Ethernet Routing Switch 8600 (previously Passport 8600) supports SCC2 format through SDM functionality and the IEMS interface. The following section discusses log delivery through SDM functionality. For details on the IEMS interface, refer to the section in this document titled “SN07 IEMS Functionality.”

### **SDM Functionality**

The table on page 1498 provides the list of Ethernet Routing Switch 8600 (previously Passport 8600) and Multiservice Data Manager (MDM) alarm logs as they would be delivered when Ethernet Routing Switch 8600 (previously Passport 8600) traps are required in SCC2 format from the Supernode Data Manager (SDM) in a Carrier VoIP solution.

The SCC2 log report for Ethernet Routing Switch 8600 (previously Passport 8600) and MDM alarms comprises a one-line header, followed by seven lines of body text, as per the following example:

```
37 PPES300 8169 TBL
 time: 2002 01 11 15 37 06
 event: clear
 compId: PP8600 OTWAON8600A IF 101
 severity: cleared
 faultCode: C0000002
 alarmType: communications
 commentData: Link up trap interface:101.
```

The header is of format:

```
aabb\ccccdddeffgg\hhhh
```

Each field, as applicable for Ethernet Routing Switch 8600 (previously Passport 8600) and MDM alarms, is described in the following table.

**Ethernet Routing Switch 8600 (previously Passport 8600) and MDM SCC2 Header Field Description**

| Field | Description                                                                                                                                                                       | Applicable Log Values                                                                                                                                                                       |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| aa    | Alarm severity<br>Passport/MDM alarm log severity                                                                                                                                 | "C" = critical alarm<br>"***" = major alarm<br>"* " = minor and warning and indeterminate alarm<br>" " = clear alarm<br>Two characters, left justified, padded with blanks.                 |
| bb    | Minute indicator<br>Two numeric character indicator representing the minutes after the hour.<br>Generated by SDM at time SDM receives the alarm log from MDM.                     | Ranges from 00 to 59, right justified, padded with zeros.                                                                                                                                   |
| \     | single space                                                                                                                                                                      | " "                                                                                                                                                                                         |
| cccc  | Log Name<br>Assigned by SDM. Based upon the first four digits ("Index Group") of the eight-digit Passport or MDM alarm identifier.                                                | Four characters, left justified, padded with blanks.<br>"PPES" for index groups beginning with C000, C122, and some fault codes in group 0999.<br>"MDM" for some fault codes in group 0999. |
| ddd   | Log Number<br>Three numeric characters representing the Passport or MDM Alarm Type. Note that the Alarm Type "debug" is not translated as a fault, but rather as information log. | "300" = communications<br>"301" = quality of service<br>"302" = processing<br>"303" = equipment<br>"304" = environmental<br>"305" = security<br>"306" = operator<br>"307" = unknown         |
| e     | A single space for all Passport and MDM alarm logs.                                                                                                                               | " "                                                                                                                                                                                         |
| ff    | Global Sequence Number<br>Generated by SDM. Two numeric characters, incremented by SDM upon receipt of every alarm log.                                                           | Ranges from 00 to 99, right justified, padded with zeros.                                                                                                                                   |

**Ethernet Routing Switch 8600 (previously Passport 8600) and MDM SCC2 Header Field Description**

| Field                              | Description                                                                                                                                                                      | Applicable Log Values                                                                                                                                                               |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| gg                                 | Device Sequence Number<br>Generated by SDM. Two numeric characters, incremented by SDM upon receipt of every device specific alarm log from MDM (originated by Passport or MDM). | Ranges from 00 to 99, right justified, padded with zeros.                                                                                                                           |
| \                                  | single space                                                                                                                                                                     | " "                                                                                                                                                                                 |
| hhhh                               | Event Type<br>Assigned by SDM. String assigned for all Passport and MDM alarm logs.                                                                                              | "TBL "<br>Four characters, left justified, padded with blanks.                                                                                                                      |
| Lines<br>2, 3, 4,<br>5, 6, 7,<br>8 | Body Text<br>Seven textual lines, each of form<br><AlarmFieldName>: <AlarmFieldValue>                                                                                            | "time: "<br>"event: "<br>"compld: "<br>"severity: "<br>"faultCode: "<br>"alarmType: "<br>"commentData: "<br>Comment data is truncated so that entire log does not exceed 900 bytes. |

The following table presents the list of Ethernet Routing Switch 8600 (previously Passport 8600) alarm logs and their corresponding SCC2 header format.

Component Name indicates the managed object against which the alarm Log is generated. This table contains the CLI format of a component name. The “compId” field in SCC2 format contains this information (with the module’s <nodename> pre-pended). Also, “compId” follows the MDM API-style format (with component type and instance separated by a space instead of a slash, and ‘\$’ appearing in place of a null instance value). Variables (usually instance value ranges) are denoted by <> and the reader should reference the

Alarms NTPs 241-6003-110 and 241-6001-501 for further information.

### Ethernet Routing Switch 8600 (previously Passport 8600) Log Mapping to SCC2 Headers

| Ethernet<br>Routing Switch<br>8600 (previously<br>Passport 8600)<br>Fault Code | Component Name                                                | SCC2 Header                                             |
|--------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------|
| 0999 0001                                                                      | PP8600/<device name>                                          | *Cbb MDM 303 ffgg TBL                                   |
| 0999 0002                                                                      | PP8600/<device name>                                          | *Cbb PPES306 ffgg TBL                                   |
| 0999 0003                                                                      | PP8600/<device name>                                          | aabb PPES306 ffgg TBL where:<br>aa = "*"C, "*" "        |
| 0999 0013                                                                      | PP8600/<device name><br><component type>/<component instance> | **bb PPES307 ffgg TBL                                   |
| C000 0000                                                                      | PP8600/<device name>                                          | * bb PPES306 ffgg TBL                                   |
| C000 0001                                                                      | PP8600/<device name>                                          | * bb PPES306 ffgg TBL                                   |
| C000 0002                                                                      | PP8600/<device name> IF/<If Index>                            | **bb PPES300 ffgg TBL                                   |
| C000 0004                                                                      | PP8600/<device name> SECURITY \$                              | * bb PPES305 ffgg TBL                                   |
| C122 0001                                                                      | PP8600/<device name> CARD/<br><Card Index>                    | **bb PPES303 ffgg TBL                                   |
| C122 0003                                                                      | PP8600/<device name>                                          | *Cbb PPES303 ffgg TBL                                   |
| C122 0006                                                                      | PP8600/<device name> FAN/<Fan Index>                          | *Cbb PPES303 ffgg TBL                                   |
| C122 0007                                                                      | PP8600/<device name> PS/<ps index>                            | *Cbb PPES303 ffgg TBL                                   |
| C122 0008                                                                      | PP8600/<device name> RMON/<parameter>                         | * bb PPES301 ffgg TBL                                   |
| C122 0009                                                                      | PP8600/<device name>                                          | aabb PPES307 ffgg TBL<br>where: aa= "*" ", "***", "*"C" |
| C122 000A                                                                      | PP8600/<device name>                                          | **bb PPES303 ffgg TBL                                   |
| C122 000B                                                                      | PP8600/<device name>                                          | * bb PPES307 ffgg TBL                                   |
| C122 000C                                                                      | PP8600/<device name>                                          | * bb PPES307 ffgg TBL                                   |
| C122 000D                                                                      | PP8600/<device name>                                          | * bb PPES307 ffgg TBL                                   |
| C122 000E                                                                      | PP8600/<device name> OSPF \$<br>IfAddr <Ip-address>           | **bb PPES305 ffgg TBL                                   |
| C122 000F                                                                      | PP8600/<device name> OSPF \$<br>IfAddr <Ip-address>           | **bb PPES303 ffgg TBL                                   |

**Ethernet Routing Switch 8600 (previously Passport 8600) Log Mapping to SCC2 Headers**

| <b>Ethernet<br/>Routing Switch<br/>8600 (previously<br/>Passport 8600)<br/>Fault Code</b> | <b>Component Name</b>                                                | <b>SCC2 Header</b>                         |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------|
| C122 0010                                                                                 | PP8600/<device name> OSPF \$<br>IfAddr <Ip-address>                  | * bb PPES303 ffgg TBL                      |
| C122 0011                                                                                 | PP8600/<device name> OSPF \$<br>NBR <Ip-address>                     | **bb PPES303 ffgg TBL                      |
| C122 0012                                                                                 | PP8600/<device name> PVC/<IfIndex-Vpi-Vci>                           | aabb PPES304 ffgg TBL<br>where: aa="*", "" |
| C122 0013                                                                                 | PP8600/<device name> OSPF \$<br>VIRTIF <Ip-address1>- <Ip-address2>  | **bb PPES305 ffgg TBL                      |
| C122 0014                                                                                 | PP8600/<device name>                                                 | **bb PPES307 ffgg TBL                      |
| C122 0015                                                                                 | PP8600/<device name> OSPF \$<br>VIRTIF/<Ip Address1> - <Ip Address2> | * bb PPES304 ffgg TBL                      |
| C122 0016                                                                                 | PP8600/<device name> OSPF<br>VIRTNBR <Ip-address1> - <Ip-address2>   | * bb PPES304 ffgg TBL                      |
| C122 0017                                                                                 | PP8600/<device name> IF <If Index>                                   | * bb PPES307 ffgg TBL                      |
| C122 0020                                                                                 | PP8600/<device name>                                                 | **bb PPES307 ffgg TBL                      |
| C122 0021                                                                                 | PP8600/<device name> OSPF<br>VIRTIF <Ip-address1> - <Ip-address2>    | **bb PPES303 ffgg TBL                      |
| C122 0022                                                                                 | PP8600/<device name> SECURITY \$                                     | * bb PPES305 ffgg TBL                      |
| C122 0023                                                                                 | PP8600/<device name> card <Card Index>                               | * bb PPES303 ffgg TBL                      |
| C122 0024                                                                                 | PP8600/<device name> card <Card name>                                | **bb PPES303 ffgg TBL                      |
| C122 0025                                                                                 | PP8600/<device name> card <Card name>                                | * bb PPES303 ffgg TBL                      |
| C122 0026                                                                                 | PP8600/<device name>                                                 | **bb PPES302 ffgg TBL                      |
| C122 0027                                                                                 | PP8600/<device name>                                                 | **bb PPES303 ffgg TBL                      |
| C122 0028                                                                                 | PP8600/<device name> SECURITY                                        | **bb PPES300 ffgg TBL                      |
| C122 0029                                                                                 | PP8600/<device name> SECURITY \$                                     | **bb PPES300 ffgg TBL                      |
| C122 0030                                                                                 | PP8600/<device name> SECURITY \$                                     | **bb PPES305 ffgg TBL                      |



**Ethernet Routing Switch 8600 (previously Passport 8600) Log Mapping to SCC2 Headers**

| <b>Ethernet Routing Switch 8600 (previously Passport 8600) Fault Code</b> | <b>Component Name</b>                 | <b>SCC2 Header</b>    |
|---------------------------------------------------------------------------|---------------------------------------|-----------------------|
| C122 0031                                                                 | PP8600/<device name> card <Card name> | * bb PPES303 ffgg TBL |
| C122 0032                                                                 | PP8600/<device name> card <Card name> | * bb PPES304 ffgg TBL |
| C122 0033                                                                 | PP8600/<device name>                  | * bb PPES302 ffgg TBL |
| C122 0034                                                                 | PP8600/<device name> IF <If name>     | * bb PPES300 ffgg TBL |
| C122 0048                                                                 | PP8600/<device name>                  | * bb PPES300 ffgg TBL |
| C122 0049                                                                 | PP8600/<device name>                  | * bb PPES303 ffgg TBL |
| C122 0051                                                                 | PP8600/<device name>                  | * bb PPES307 ffgg TBL |
| C122 9998                                                                 | PP8600/<device name>                  | * bb PPES306 ffgg TBL |
| C122 9999                                                                 | PP8600/<device name>                  | * bb PPES307 ffgg TBL |

Where:

<device name> is the name of the PP8600 module, typically the CLI of the network element.

<If Index> is the numerical IFTABLE index of the interface (range: 1-65535).

<Card Index> is the slot number of the card in the shelf (range: 1-10)

<Fan Index> is the fan number (range: 1-2)

<ps Index> is the power supply number (range: 1-3)

<parameter> is an index number for the alarm

<Ip-address> is an IPv4 address

<IfIndex-Vpi-Vci> is a combination IFTABLE index with an ATM VPI/VCI.

## **MDM--available logs/faults**

### **See Appendix C.**

Appendix C in this *OSS Guide* references the MDM and MDM proxy set/clear alarm logs that are applicable for Carrier VoIP. Applicable MDM set/clear alarms logs include those due to MDM software failure, and alarms related to the monitoring of the platform on which MDM is operating. MDM proxy alarm logs are alarms that the MDM initiates on behalf of Passport (for a number of reasons) and injects into the Passport alarm log stream.

MDM supports API (ASCII Protocol Interface). For details on the logs, refer to NTPs 241-6001-011 and 241-6001-501.

## UAS--available logs/faults

The following table lists the UAS Faults/Alarms available through Carrier VoIP.

For detailed information on logs, refer to NN10275-909, *Fault Management Log Reference*.

UAS faults are available through SDM functionality or through the IEMS interface. UAS alarm information can also be viewed from the alarm browser that resides with the CS2000 Management Tools. For details on the logs, refer to the Fault Management section of UAS FCAPS documentation, NN10073-911.

Refer to the New and Changed section of this document to see if there are changes in UAS logs and faults.

### UAS Logs/Faults available

#### Network Element: UAS

UAS faults are sent from the UAS to the UAS EM and are then sent northbound via CORBA. UAS alarm information can also be viewed from the alarm browser that resides with the CS2000 Management Tools.

| Fault                        | Description                                                                                                                                                                                             |                                                                    | For details on these Logs/Faults, refer to the Fault section of documentation for UAS, NN10073-911. |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| ATM Alarms                   | AS001                                                                                                                                                                                                   | An ATM interface card is missing from the slot.                    |                                                                                                     |
|                              | AS002                                                                                                                                                                                                   | There is a different ATM card module inserted in the chassis slot. |                                                                                                     |
|                              | AS003                                                                                                                                                                                                   | The ATM card has detected an H.110 bus failure.                    |                                                                                                     |
|                              | AP001                                                                                                                                                                                                   | The ATM interface port has had a loss of connectivity.             |                                                                                                     |
| Ethernet Interface Alarms    |                                                                                                                                                                                                         |                                                                    |                                                                                                     |
|                              | EI_LINK_DOWN; Critical. "Callp was unable to initialize interface to hardware. Check configuration." Clear with a reboot.                                                                               |                                                                    |                                                                                                     |
| 88065 (366)                  | EI_LINK_DOWN; Critical. "Link on host network interface is down."                                                                                                                                       |                                                                    |                                                                                                     |
| Call Agent Connection Alarms |                                                                                                                                                                                                         |                                                                    |                                                                                                     |
| 8193 (301)                   | THREAD_DEATH_ALARM; Critical. Either the "ingoing" or "outgoing" messaging thread is unable to restart because of some undetermined problem. Clears at the next startup of call processing application. |                                                                    |                                                                                                     |

**UAS Logs/Faults available**

- 8194 (302) UDP\_INIT\_FAIL\_ALARM; Critical. This alarm can be raised for various reasons during initialization. The audio server is unable to communicate with the call server. The condition clears at the next startup of the call processing application. Possible reasons and corrective actions follow:
- MGC IP address is not datafilled because the uas.conf file either does not exist, is unreadable, or is missing an entry for "CallAgentIPAddress." Fix the configuration file.
- MGC IP address is not valid because the call agent IP address obtained from the config file is not valid. Fix the IP address in the config file.
- Bad return code from WSASStartup because an attempt was made to initialize the Windows socket library, but failed due to a version mismatch. Report the full text of the alarm to the support group.
- WinSock version is not 1.1 as expected because an attempt was made to initialize the Windows socket library, but failed due to a version mismatch. Report the full text of the alarm to the support group.
- Unable to create socket; an attempt was made to create a UDP communications socket, but failed. Report the full text of the alarm to the support group.
- Unable to bind client name to socket; an attempt was made to bind the communications socket to the port specified in the uas.conf configuration file. Another callp program may already be running. Make sure that another callp program is not running.
- Unable to connect to call agent socket; an attempt was made to associate the communications socket with the address of the call agent, but failed. Report the full text of the alarm to the support group.
- 8195 (800) SOCKET\_ERROR\_ALARM; Warning. UDP Socket errors are being detected.
- 8196 (801) RETRANS\_ALARM Warning, Retransmissions are being detected.
- 8197 (802) EXCEED\_MAX\_RETRANS\_ALARM; Warning, Call\_Agent\_Connection, The number of retransmissions has now exceeded the maximum number of retransmissions.
- System Alarms**
- 6154 (379) NODE\_NO\_CARDS\_INSTALLED; Critical. "There are no NMS cards installed."
- Call Engine Alarms** -- associated with call processing or maintenance state machines.
- 12290 (303) CALLP\_THREAD\_NOT\_RESTARTED; Major. The call processing software thread associated with <endpointId> died due to an unhandled software error, and was not restarted because it died too quickly after the previous start. Escalate this issue to Nortel support, providing any other logs that might have occurred. Clears at the next startup of the call processing application.
- 12291 (304) CALLP\_CFG\_INVALID; Critical. The resource configuration for endpointId in C:\uas\etc\rm.resources is not valid. Correct the configuration for endpointId in the rm.resources file, and restart the call processing application. Clears at the next startup of the call processing application.
- 12295 (305) AUDIO\_VFSDIR\_NOT\_SET; Critical. The environment variable VFSDIR is not set to the home directory of the VFS hierarchy. Verify that the VFS software is correctly installed. Clears at the next startup of the call processing application.

**UAS Logs/Faults available**

12296 (306) CALLP\_CONFIG\_PROB; Critical. A serious configuration problem has been detected. The Audio Server is unable to initialize. A configuration file is probably in error. Look for an error log to determine the exact cause of the problem. Clears at the next startup of the call processing application.

12297 (307) CALLP\_NO\_CARDS\_AVAILABLE Call\_Engine There are no NMS cards available for use.

12298 (308) CALLP\_AUDIO\_RESYNC\_FAILURE Call\_Engine Failed to communicate with aliasServer. Check audio installation and aliasServer.

**AG4000 Service-level Alarms** -- conditions that affect the service-level functionality of the AG4000 card in an ATM system.

14337 (315) AG\_GENERIC\_ALARM; Major. An attempt was made to load software onto the card and to start the card but failed. Stop the applications, reseal the card and then restart the applications. If the problem persists, contact the Nortel support group. Clears when the applications are restarted and the operation succeeds.

14338 (315) AG\_SURPRISE\_EXTRACTION Improper extraction of AG4000 card in slot <x> of the SAM 16 chassis.

14339 (316) AG\_CARD\_DISABLED AG4000 card in slot <x> disabled until next application restart of the UAS.

**NodeMtc Alarms** -- generated by the callp application if the NMS CT daemon and NMS Clock Fallback Manager services fail to stop or start successfully.

20481 (322) CTDAEMON\_SERVICE\_FAILURE; Critical. Either the NMS CT daemon service is not installed as a service, or it is in a service state where it cannot accept start and stop service requests. Make sure that the NMS CT daemon service is installed. Stop, uninstall and re-install the service if need be. Clears once the NMS CT daemon service has been successfully started or stopped.

20482 (323) CFBM\_SERVICE\_FAILURE; Critical. When the NMS CT daemon service is started, it should automatically start the NMS Clock Fallback Manager service (The NMS Clock Fallback Manager service is not automatically stopping the NMS CT daemon service.). If the NMS Clock Fallback Manager service is not automatically started for some reason, either the NMS Clock Fallback Manager service is not installed as a service for it to be started or stopped, or it is in a service state where it cannot accept start and stop service requests. Make sure that the NMS Clock Fallback Manager service is installed. Stop, uninstall and re-install the service if need be. Clears once the NMS Clock Fallback Manager service has been successfully started or stopped.

20483 (324) SERVICE\_FAILURE NodeMtc The <x> service could not be \_\_\_\_\_.

ConfigMgr Alarms

**UAS Logs/Faults available**

|                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26625                                                                                                                                                                                                                                                                                 | <p>CM_CONFIG_ERROR; Critical. This alarm can be raised for various reasons during initialization. A serious configuration problem has been detected. The Audio Server is unable to initialize. A configuration file is probably in error. Look for an error log to determine the exact cause of the problem. The condition clears after the configuration problem is fixed. Possible reasons and corrective actions follow:</p> <p>The specified configuration template files are missing from c:\uas\cfg\templates. Restore the missing files.</p> <p>The specified configuration file is missing. Restore the missing file.</p> <p>ConfigMgr was unable to update the uas_pending.conf file. The file may have had incorrect permissions, or the disk is full. Check file permissions. Check to see if the disk is full.</p> <p>ConfigMgr attempted to create a kernel object but encountered an error. Contact the support group.</p> <p>ConfigMgr was unable to copy a file. The file may have had incorrect permissions, or the disk is full. Look at logs to determine which file caused the problem. Check file permissions. Check to see if the disk is full.</p> <p>ConfigMgr could not automatically determine how many AG cards there are in the system. The number of AG cards could not be determined. Ensure that the NMS block utility is present and is working properly.</p> <p>ConfigMgr could not update the uas.conf file with the number of AG cards. Check file permissions. Check to see if the disk is full.</p> <p>A configuration parameter is missing or has an invalid value. Look at logs to determine which configuration parameters are missing.</p> <p>ConfigMgr attempted to operate on a kernel object but encountered an error. Contact the support group.</p> |
| <b>CG6000 Service-level Alarms</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 30721                                                                                                                                                                                                                                                                                 | CG_GENERIC_ALARM; Major. An attempt was made to load software onto the card and to start the card. The attempt failed. Stop the applications, reseal the card and then restart the applications. If the problem persists, contact the Nortel support group. Clears when the applications are restarted and the operation succeeds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 30722<br>(318)                                                                                                                                                                                                                                                                        | CG_ETHERNET_CONN_ALARM Critical, CG6000 %d failed ethernet connection(s) on CG6000 card in slot %d.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 30723<br>(319)                                                                                                                                                                                                                                                                        | CG_SURPRISE_EXTRACTION Major, CG6000 Improper extraction of CG6000 card in slot %d.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 30724<br>(320)                                                                                                                                                                                                                                                                        | CG_CARD_DISABLED Major, CG6000 card in slot %d disabled until next application restart.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 30725<br>(321)                                                                                                                                                                                                                                                                        | CG_CLOCKING_ALARM Major, CG6000 primary clock source is %s and secondary clock source is %s in slot %d.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>ATM Service Alarms</b>--The ATM_MISSING_CARD alarm and ATM_MISMATCH_CARD alarm are raised in situations where provisioned VCs exist for a given ATM Card in a given slot, and that card has either been removed, is inoperable, or has been replaced with another ATM card.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**UAS Logs/Faults available**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34817                   | ATM_MISSING_CARD; Critical. Either the ATM card has been pulled or it has experienced a catastrophic failure and is unable to register with the cPCI chassis. A working ATM card must be inserted into the slot. Alternatively, all the VCs may be deleted which are associated with the missing card. Clears at the next start of the call processing application.                                                                                          |
| 34818                   | ATM_MISMATCH_CARD; Critical. The ATM card has been replaced with a different model ATM card. Place the correct ATM card back in the slot which originally contained the S007 card. Alternatively, all the VCs may be deleted which are associated with the mismatched card. Clears at the next start of the call processing application.                                                                                                                     |
| ATM Port Alarms         |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 34913                   | ATM_PORT_LOC; Critical. The fiber connecting the ATM port to the network has either been unplugged or damaged. Plug the fiber back in, or replace it if it was damaged. Clears when the signal on the fiber is back to normal.                                                                                                                                                                                                                               |
| 34819<br>(328)          | ATM_H110_FAILURE Critical ATM_Service The ATM card detected an H.110 bus failure. This alarm may be caused by a bad AG driving the H.110 bus clock or more then one card is trying to drive the clock on the bus. Clears at the next start of the call processing application.                                                                                                                                                                               |
| 34820<br>(329)          | ATM_OUTDATED_FIRMWARE Major ATM_Service The ATM card in slot %d has outdated firmware ver.:%s recommended version:%s. Please run the ATMFirmware command to upgrade the firmware. This alarm is seen if the ATM card has outdated firmware. Clears at the next start of the call processing application, after the firmware has been upgraded.                                                                                                               |
| 34821<br>(330)          | ATM_FIRMWARE_NON_UPGRADABLE Major ATM_Service The ATM card in slot %d has outdated firmware ver.:%s. This firmware needs to be manually updated. Please load the card with a firmware version which is 2.1.0 or later. This alarm is seen when the firmware on the ATM card is outdated and can not be automatically upgraded. A newer firmware load needs to be transfer to the card manually. Clears at the next start of the call processing application. |
| 34822<br>(331)          | ATM_HW_API_TOO_MANY_FAILURES Critical ATM_Service The number of consecutive API calls failures to the ATM card in slot %d, has exceeded the threshold of %d. The card is being taken out of service. Clears at the next start of the call processing application.                                                                                                                                                                                            |
| Carrier Alarms          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 40961                   | CARRIER_CLR_ALARM. Indicates that a carrier alarm cleared.                                                                                                                                                                                                                                                                                                                                                                                                   |
| 40962                   | CARRIER_RAISE_ALARM; Critical. One of these carrier alarms is raised: RAI, AIS, LOF, LOS, E1 LOMFS, or E1 16 AIS. Based on the different alarm types, check T1/E1 carrier for the cause. Clears when the CARRIER_CLR_ALARM event is received.                                                                                                                                                                                                                |
| Activity Manager Alarms |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 53249 (336)             | AM_COLD_START_NOT_SENT_CEM Activity_Manager.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 53250 (337)             | AM_COLD_START_NOT_SENT_SWACT Activity_Manager.                                                                                                                                                                                                                                                                                                                                                                                                               |
| 53251 (338)             | AM_SWACT_FAILURE Critical Activity_Manager.                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 53252 (339)             | AM_ERM_FAILURE Critical Activity_Manager.                                                                                                                                                                                                                                                                                                                                                                                                                    |

**UAS Logs/Faults available**

53253 (340) AM\_ED\_SOCK\_FAILURE Major Activity\_Manager.

53254 (341) AM\_CONFIG\_ERROR\_NOFILE Minor Activity\_Manager.

53255 (342) AM\_DATAFILE\_ERROR\_NOFILE Critical Activity\_Manager.

**Power Supply, Disk, and Fan Maintenance Alarms**

61441 (345) COOLING\_SYSTEM\_RAISE\_ALARM; Major/Critical. In the case of a cooling fault, this is due to a high temperature at air intake to the chassis. In the case of a Cooling alarm, it is due to an extremely high temperature at air intake to the chassis. Check air flow and cooling equipment. Clears upon receipt of a Global Server Equipment fault tag with a 'cleared' alarm condition.

59393 (344) POWER\_SUPPLY\_RAISE\_ALARM; Major. HA Monitor received a Power Supply Fault Tag, and informed the PsFanMtc subsystem. This could be due to a faulty power supply system in the chassis that has gone down. Clears upon receipt of a Power Supply Fault tag with the "Power Good" bit set.

59393 POWER\_SUPPLY\_RAISE\_ALARM; Major. HA Monitor received a Fan Fault Tag, and informed the PsFanMtc subsystem. This could be due to a faulty fan in the chassis that has gone down. Clears upon receipt of a Fan Fault tag with the "Fan Fault" bit unset.

63489 (346) DISKDRIVE\_RAISE\_ALARM Critical Hard\_Disk ALARM: Problem detected on Domain %s %s disk drive, chassis peripheral %d, due to %s.

**I/O Card Base-level Alarms**

65537 (309) CD\_SURPRISE\_SLOT\_POWER\_OFF; Major. A surprise power off on a slot can be caused by a chassis hardware problem or by a software error. The problem may clear up after a reboot. Stop the applications and perform a reboot. If the problem does not clear up, then you may be able to work around the problem by moving the card to another slot. Refer to the appropriate card maintenance and configuration procedures. The alarm clears when power is restored to the slot.

65538 (310) CD\_SURPRISE\_CARD\_EXTRACTION; Major. A card was improperly extracted from the specified slot. The applications will need to be restarted. Perform these actions: 1) stop the applications 2) reinsert the card 3) restart the applications. The alarm clears when the card is reinserted and the applications are restarted.

65539 (311) CD\_LOAD\_SCRIPT\_FAILURE; Major. An attempt was made to load firmware onto the card in the specified slot. Stop the applications, reseal the card, and restart the applications. If the problem persists, then contact the Nortel support group. If resealing the card fixes the problem, then the alarm will clear when the applications are restarted.

65540 (312) CD\_SLOT\_VERIFY\_SCRIPT\_FAILURE; Major. An attempt was made to verify that the card contains the correct firmware version. Stop the applications, reseal the card, and restart the applications. If the problem persists, then contact the Nortel support group. If resealing the card fixes the problem, then the alarm will clear when the applications are restarted.

65541 (313) CD\_GENERIC\_CARD\_ALARM; Major. A problem occurred with the card in the specified slot. A brief description of the problem is supplied. No action required; no clear condition.

**Shelf Controller Alarms**



**UAS Logs/Faults available**

|                                   |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 67585 (309)                       | SC_SURPRISE_SLOT_POWER_OFF    | Major Shelf Controller Surprise power off on slot %d.                                                                                                                                                                                                                                                                                                                                                                                             |
| 67586 (310)                       | SC_SURPRISE_CARD_EXTRACTION   | Major Shelf Controller Surprise card extraction on.                                                                                                                                                                                                                                                                                                                                                                                               |
| 67587 (311)                       | SC_LOAD_SCRIPT_FAILURE        | Major Shelf Controller Firmware load script failure on card in slot %d.                                                                                                                                                                                                                                                                                                                                                                           |
| 67588 (312)                       | SC_SLOT_VERIFY_SCRIPT_FAILURE | Major Shelf Controller Verify script failure on card in slot %d.                                                                                                                                                                                                                                                                                                                                                                                  |
| 67589 (313)                       | SC_GENERIC_CARD_ALARM         | Major Shelf Controller Problem with card in slot %d:                                                                                                                                                                                                                                                                                                                                                                                              |
| Hot Swap Controller Alarms        |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 69633 (309)                       | HS_SURPRISE_SLOT_POWER_OFF    | Major Hot Swap Controller Surprise power off on slot %d.                                                                                                                                                                                                                                                                                                                                                                                          |
| 69634 (310)                       | HS_SURPRISE_CARD_EXTRACTION   | Major Hot Swap Controller Surprise card extraction on slot %d.                                                                                                                                                                                                                                                                                                                                                                                    |
| 69635 (311)                       | HS_LOAD_SCRIPT_FAILURE        | Major Hot Swap Controller Firmware load script failure on card in slot %d.                                                                                                                                                                                                                                                                                                                                                                        |
| 69636 (312)                       | HS_SLOT_VERIFY_SCRIPT_FAILURE | Major Hot Swap Controller Verify script failure on card in slot %d.                                                                                                                                                                                                                                                                                                                                                                               |
| 69637 (313)                       | HS_GENERIC_CARD_ALARM         | Major Hot Swap Controller Problem with card in slot %d:                                                                                                                                                                                                                                                                                                                                                                                           |
| SCSI Controller Base-level Alarms |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 71681 (309)                       | SS_SURPRISE_SLOT_POWER_OFF    | Major. A surprise power off on a slot can be caused by a chassis hardware problem or by a software error. The problem may clear up after a reboot. Stop the applications and perform a reboot. If the problem does not clear up, then you may be able to work around the problem by moving the card to another slot. Refer to the appropriate card maintenance and configuration procedures. The alarm clears when power is restored to the slot. |
| 71682 (310)                       | SS_SURPRISE_CARD_EXTRACTION   | Major. A card was improperly extracted from the specified slot. The applications will need to be restarted. Perform these actions: 1) stop the applications 2) reinsert the card 3) restart the applications. The alarm clears when the card is reinserted and the applications are restarted.                                                                                                                                                    |
| 71683 (311)                       | SS_LOAD_SCRIPT_FAILURE        | Major SCSI_Controller Firmware load script failure on card in slot %d.                                                                                                                                                                                                                                                                                                                                                                            |
| 71684 (312)                       | SS_SLOT_VERIFY_SCRIPT_FAILURE | Major SCSI_Controller Verify script failure on card in slot %d.                                                                                                                                                                                                                                                                                                                                                                                   |
| 71685 (313)                       | SS_GENERIC_CARD_ALARM         | Major SCSI_Controller Problem with card in slot %d:                                                                                                                                                                                                                                                                                                                                                                                               |
| Chassis Event Manager Alarms      |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 75783 (311)                       | SS_LOAD_SCRIPT_FAILURE        | Major SCSI_Controller Firmware load script failure on card in slot %d.                                                                                                                                                                                                                                                                                                                                                                            |
| 75784 (312)                       | SS_SLOT_VERIFY_SCRIPT_FAILURE | Major SCSI_Controller Verify script failure on card in slot %d.                                                                                                                                                                                                                                                                                                                                                                                   |



**UAS Logs/Faults available**

75785 (313) SS\_GENERIC\_CARD\_ALARM Major SCSI\_Controller Problem with card in slot %d:

Local Resource Manager Alarms

81921 (350) LRM\_CPU\_C Critical, LocalResourceManager cpu\_overload\_critical, The CPU is overloaded, critical alarm.

81922 (351) LRM\_CPU\_M Major, LocalResourceManager cpu\_overload\_major, The CPU is overloaded major alarm.

81923 (352) LRM\_MEM\_C Critical, LocalResourceManager, mem\_usage\_high\_critical, Memory usage is high.

81924 (353) LRM\_MEM\_M Major, LocalResourceManager mem\_usage\_high\_major, Memory usage is high

81925 (354) LRM\_DISK\_C Critical, LocalResourceManager disk\_usage\_critical, Disk usage is high.

81926 (355) LRM\_DISK\_M Major, LocalResourceManager disk\_usage\_major, Disk usage is high but less severe than critical where space is exhausted.

81927 (356) LRM\_CONFIG\_FILE\_ERR Minor, LocalResourceManager, lrm\_config\_fileerror

Program Manager Alarms

83971 (357) c\_FAILED\_MALLOC Critical ProgramManager.

83974 (358) c\_BAD\_PARSE Critical ProgramManager.

83987 (359) c\_BAD\_FORK Critical ProgramManager.

83989 (360) c\_BAD\_EXEC Critical ProgramManager.

83998 (361) c\_CRIT\_DEATH Critical ProgramManager.

83999 (362) c\_MAX\_RETRIES Critical ProgramManager

84000 (363) c\_MAX\_RETRIES\_NO\_RESTART Minor ProgramManager.

84009 (364) c\_FIFO\_ERROR Critical ProgramManager.

84039 (365) c\_RSM\_FAILED\_CONNECT Critical ProgramManager.

Clock Manager Alarms

90113 (367) PRIMARY\_CLOCK\_DOWN\_ALARM Minor ClockManager Primary Clock Driver trunk %d on board %d is down.

90114 (368) SECONDARY\_CLOCK\_DOWN\_ALARM Minor ClockManager Secondary Clock Driver trunk %d on board %d is down.

90115 (369) BOTH\_CLOCK\_DOWN\_ALARM Critical ClockManager System has lost all external clocking.

90116 (370) PRIMARY\_BOARD\_CLOCK\_DOWN\_ALARM Minor ClockManager Board %d has lost its primary clock source.

90117 (371) SECONDARY\_BOARD\_CLOCK\_DOWN\_ALARM Minor ClockManager Board %d has lost its secondary clock source.

**UAS Logs/Faults available**

90118 (372) BOTH\_BOARD\_CLOCK\_DOWN\_ALARM Critical ClockManager Board %d has lost all external clocking.

**Event Server Alarms**

96257 (373) LOCAL\_SRVSOCK\_CREATION\_FAILED Critical EventServer [es\_alm\_001] %s.

96258 (374) REMOTE\_SRVSOCK\_CREATION\_FAILED Major, EventServer [es\_alm\_002] %s.

96259 (375) SYSTEM\_RESOURCE\_ERR Critical, EventServer [es\_alm\_003].

96260 (376) CONFIG\_ERR EventServer [es\_alm\_004].

96261 (377) HAMODE\_CHECK\_FAILED Critical, EventServer [es\_alm\_005].

96262 (378) MATE\_EVTSVR\_CONN\_LOST Minor, EventServer [es\_alm\_006].

**UAS Logs**

|          |        |                                                                                              |
|----------|--------|----------------------------------------------------------------------------------------------|
| ATM logs | ASL001 | General ATM log indicating an ATM interface card problem.                                    |
|          | ASL002 | The ATM service has initialized successfully.                                                |
|          | ASL003 | An ATM delete gateway request has failed.                                                    |
|          | ASL004 | An ATM delete gateway request has failed.                                                    |
|          | ASL005 | An ATM interface card port has failed to lock. The port has returned to its previous state.  |
|          | ASL006 | An ATM interface card port has failed to lock. The port cannot return to its previous state. |
|          | ASL007 | An ATM Virtual Channel has experienced an AIS alarm.                                         |
|          | ASL008 | An ATM Virtual Channel has experienced an RDI alarm.                                         |
|          | ASL009 | An ATM Virtual Channel cleared the AIS alarm.                                                |
|          | ASL010 | An ATM Virtual Channel cleared the RDI alarm.                                                |
|          | ASL013 | The ATM port is configured with the wrong UNI version.                                       |
|          | ASL014 | ILMI failure on the ATM port.                                                                |
|          | ASL015 | UNI failure on the ATM port.                                                                 |
|          | ASL016 | ILMI is now ready on the ATM port.                                                           |
|          | ASL017 | UNI is now ready on the ATM port.                                                            |
|          | ASL018 | Invalid ATM SDP parameter received.                                                          |
|          | ASL019 | Invalid VCCI received in the incoming AAL2 SVC setup.                                        |
|          | ASL020 | A specific ATM software error occurred as described in the log.                              |
|          | ASL021 | Failed to acquire a channel for the endpoint described in the log.                           |
|          | ASL022 | An error was reported by the NMS PA200 API.                                                  |
|          | ASL023 | ATM audit has started.                                                                       |
|          | ASL024 | ATM audit has ended.                                                                         |

**UAS Logs/Faults available**

|        |        |                                                                                                                  |
|--------|--------|------------------------------------------------------------------------------------------------------------------|
|        | ASL025 | Audit has dropped a resource on the ATM board as described in the log.                                           |
|        | ASL026 | Audit has established a resource on the board p described in the log.                                            |
|        | ASL027 | Audit has found a missing resource on the board that can't be established. The resource is described in the log. |
|        | APL001 | The ATM interface port has initialized correctly.                                                                |
| UAS398 |        | Indicates a raised alarm in a UAS device                                                                         |
| UAS399 |        | Indicates a cleared alarm in a UAS device                                                                        |

**USP Logs/Faults**

For detailed information on logs, refer to NN10275-909, *Fault Management Log Reference*.

USP faults are available to the OSS through a third-party fault probe or fault collector. The fault probe/collector must reside somewhere on the OAM&P VLAN due to security rules for accessing the Carrier VoIP network elements. USP logs are also available through the IEMS interface and the USP PC Client GUI.

USP supports SSV format. For details on this format and the logs, refer to the Performance section of the FCAPS documentation on USP, NN10137-711.



# Operational measurements/performance measurements

Operating company personnel use operational measurements (OMs) and performance measurements (PMs) to obtain information on the performance and traffic load on a Succession Network. This data provides the information required for network planning and engineering.

## OMs/PMs collection and delivery

There are two major OM/PM interfaces used in SN08:

- For CS2K Core OMs, SDM functionality uses either OM Data Delivery (OMDD) or EADAS. The OMs are grouped into user-defined report elements, formatted into CSV (comma-separated value) format, and delivered to a customer OSS (operations support system). The OMDD application delivers OMs only for the MG 4000, IW-SPM, DPT-SPM, SPM, and XA-Core. For more complete details on the CS2K Core OMs, refer to NN10264-709, *Carrier Voice over IP Performance Management: Operational Measurements Reference*.
- The following CS2K Network Elements use the Integrated Element Management System (IEMS) single performance interface to OSS in Common Performance Record Format (CSV or XML): GWC, Storm, ERS8600 (formerly Passport 8600), MS, USP (raw format), MSS15000, MG9000, MCS, MAS, RTP Portal.

The Integrated EMS provides a centralized location for collecting, storing and forwarding performance data in a CS 2000 central office. Its performance collection sub-system provides some basic tools for viewing and graphing the collected performance attributes. In addition, it does provide interfaces to configure the generation of threshold alarms for the collected Operation Measurement data. For detailed information on the IEMS performance management features please refer to the Integrated EMS Performance Management document (NN10327-711). You may also refer to chapter one of this document, *IEMS Functionality*.

## Available OMs/ PMs

The OM/PM listings on the following pages are limited to the data accessible through OSS interfaces. These listings do not include those network elements

that employ their own graphical user interfaces for delivery/viewing of OM/PM data.

## CS 2000 Core OMs/PMs

The following table lists the operational measurements (OMs) and performance measurements (PMs) available from the Call Server 2000 Core network element.

CS 2000 Core supports CSV and EADAS formats through SDM functionality. For details on EADAS, refer to the Performance section of CS 2000 FCAPS documentation, NN10149-711.

### CS 2000 Core OMs/PMs

| OM Group<br>or PM name                                                                                                                                    | Registers                               | Description                                                                       | Applicability |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------------------|---------------|
| Network Element: CS 2000 Core                                                                                                                             |                                         |                                                                                   |               |
| AINTRAN                                                                                                                                                   | AIN Transports group--new in SN08       |                                                                                   | AIN           |
|                                                                                                                                                           | INSCMSGO                                | Pegs Outgoing IN messages using SCTP                                              |               |
|                                                                                                                                                           | INSCMSGI                                | Pegs Incoming IN messages using SCTP                                              |               |
|                                                                                                                                                           | INSSNDFA                                | Pegs IN messages using SCTP for which send failed                                 |               |
|                                                                                                                                                           | INSCDERR                                | Pegs IN messages which encountered errors at application data                     |               |
|                                                                                                                                                           | IN SCTBIG                               | Pegs IN Messages which failed due to message length                               |               |
|                                                                                                                                                           | IN SCTBMS                               | Pegs instances when buffer errors encountered while sending IN messages over SCTP |               |
| AL1SVCOM                                                                                                                                                  | AAL1 Service Failure group--new in SN07 |                                                                                   | CS2K Core     |
| Used to provide OM registers for ATM switched virtual circuits (SVC) external network connection bearer path call origination attempts and call failures. |                                         |                                                                                   |               |
|                                                                                                                                                           | NOSVCAT                                 | Number of SVC call attempts.                                                      |               |
|                                                                                                                                                           | NOSVCAT2                                | Extension register for nosvcatt.                                                  |               |
|                                                                                                                                                           | NOSVCFL                                 | Number of SVC call attempts.                                                      |               |
|                                                                                                                                                           | ISSVCAT                                 | Number of intraswitched (local) SVC call attempts.                                |               |
|                                                                                                                                                           | ISSVCAT2                                | Extension register for issvcatt.                                                  |               |
|                                                                                                                                                           | ISSVCFL                                 | Number of intraswitch (local) SVC call failures.                                  |               |
|                                                                                                                                                           | DPTSVCA                                 | Number of interswitch (DPT) SVC call attempts.                                    |               |
|                                                                                                                                                           | DPTSVCA2                                | Extension register for dptsvca.                                                   |               |
|                                                                                                                                                           | DPTSVCF                                 | Number of interswitch (DPT) SVC call failures.                                    |               |
|                                                                                                                                                           | NRTEDEST                                | ATM cause code 3 - no route to destination - SVC call failures.                   |               |
|                                                                                                                                                           | NOUSRRES                                | ATM cause code 18 - no user responding - SVC call failures.                       |               |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name                                                                                                                                                                                        | Registers | Description                                                                                                      | Applicability |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------|---------------|
|                                                                                                                                                                                                               | VPCINAVL  | ATM cause code 35 - requested VPI/VCI not available - SVC call failures.                                         |               |
|                                                                                                                                                                                                               | BWTHNAVL  | ATM cause code 37 - user cell rate not available - SVC call failures.                                            |               |
|                                                                                                                                                                                                               | TEMPFAIL  | ATM cause code 41 - temp failure - SVC call failure reference.                                                   |               |
|                                                                                                                                                                                                               | RESUNAVL  | ATM cause code 47 - Resource unavailable SVC call failure reference                                              |               |
|                                                                                                                                                                                                               | OTH_CC    | All other ATM cause codes SVC call failures.                                                                     |               |
| <b>ATTAMA2</b> CAIN Triggers group (Applies only to DMS)--new in SN08<br>Used for register overflows from the OM group ATTAMA, only when the BAS00023<br>SOC is ON, and only for registers AMANS and AMUNANS. |           |                                                                                                                  | CAIN          |
|                                                                                                                                                                                                               | QUERYSCU  | Counts call attempts that are unsuccessful because switching equipment in another office handles too many calls. |               |
|                                                                                                                                                                                                               | ISCONUCC  | Counts the number of times a CAIN call queries the SCU.                                                          |               |
| <b>AUDSRVS</b> --provides one tuple for each Audio Server (AUD) node. These OMs<br>appear in the Core only.                                                                                                   |           |                                                                                                                  | MG9K          |
|                                                                                                                                                                                                               | ANNCINSU  | Announcement port in-service usage                                                                               |               |
|                                                                                                                                                                                                               | ANNCOOSU  | Announcement port out-of-service usage                                                                           |               |
|                                                                                                                                                                                                               | ANNCTRU   | Announcement port traffic usage                                                                                  |               |
|                                                                                                                                                                                                               | ANNCFTRU  | Announcement port fast traffic usage                                                                             |               |
|                                                                                                                                                                                                               | CNF3INSU  | 3-port conference circuit in-service usage                                                                       |               |
|                                                                                                                                                                                                               | CNF3OOSU  | 3-port conference circuit out-of-service usage                                                                   |               |
|                                                                                                                                                                                                               | CNF3TRU   | 3-port conference circuit traffic usage                                                                          |               |
|                                                                                                                                                                                                               | CNF3FTRU  | 3-port conference circuit fast traffic usage                                                                     |               |
|                                                                                                                                                                                                               | CNF6INSU  | 6-port conference circuit in-service usage                                                                       |               |
|                                                                                                                                                                                                               | CNF6OOSU  | 6-port conference circuit out-of-service usage                                                                   |               |
|                                                                                                                                                                                                               | CNF6TRU   | 6-port conference circuit traffic usage                                                                          |               |
|                                                                                                                                                                                                               | CNF6FTRU  | 6-port conference circuit fast traffic usage                                                                     |               |
| <b>CAINTRIG</b> CAIN Triggers group                                                                                                                                                                           |           |                                                                                                                  | CAIN          |
|                                                                                                                                                                                                               | QUERYSCU  | Counts call attempts that are unsuccessful because switching equipment in another office handles too many calls. |               |
|                                                                                                                                                                                                               | ISCONUCC  | Counts the number of times a CAIN call queries the SCU.                                                          |               |
| <b>CMR FM</b> --The following OMs are maintained by the CMR FM application:                                                                                                                                   |           |                                                                                                                  | MG9K          |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name | Registers                                                                                                                                                                                                                                                                                                                                                         | Description                                                                                                                                                                                                                                                                                                                                                      | Applicability |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|                        | ADSI                                                                                                                                                                                                                                                                                                                                                              | No usage metering; no peg counts.                                                                                                                                                                                                                                                                                                                                |               |
|                        | BCLID                                                                                                                                                                                                                                                                                                                                                             | No usage metering; no peg counts.                                                                                                                                                                                                                                                                                                                                |               |
|                        | CID                                                                                                                                                                                                                                                                                                                                                               | Counts CID attempts and CID completions.                                                                                                                                                                                                                                                                                                                         |               |
|                        | CMWI                                                                                                                                                                                                                                                                                                                                                              | No usage metering; no peg counts.                                                                                                                                                                                                                                                                                                                                |               |
|                        | DSCWID                                                                                                                                                                                                                                                                                                                                                            | Counts DSCWID attempts.                                                                                                                                                                                                                                                                                                                                          |               |
|                        | SCWID                                                                                                                                                                                                                                                                                                                                                             | Counts SCWID attempts.                                                                                                                                                                                                                                                                                                                                           |               |
| <b>CP</b>              | Call Processing Software Resources group                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                  | CS2K Core     |
|                        | CPLOSZ                                                                                                                                                                                                                                                                                                                                                            | Counts origination messages correctly attached to a call condense block.                                                                                                                                                                                                                                                                                         |               |
|                        | CINITC                                                                                                                                                                                                                                                                                                                                                            | Counts call condense blocks that were in use at the time of a cold restart.                                                                                                                                                                                                                                                                                      |               |
|                        | WAKESZ                                                                                                                                                                                                                                                                                                                                                            | Counts CPWAKEUP block seizures.                                                                                                                                                                                                                                                                                                                                  |               |
| <b>DCAMCEIA</b>        | Dynamically Controlled Access Ineffective Attempts group                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                  | CS2K Core     |
|                        | FR_TRUNK                                                                                                                                                                                                                                                                                                                                                          | Counts the termination failures that the DCA considers ineffective attempts toward DNS for calls that come in from a trunk.                                                                                                                                                                                                                                      |               |
|                        | TO_TRUNK                                                                                                                                                                                                                                                                                                                                                          | Counts the termination failures that the DCA considers ineffective attempts toward DNS for calls that terminate to a trunk.                                                                                                                                                                                                                                      |               |
|                        | TOTAL                                                                                                                                                                                                                                                                                                                                                             | Counts the termination failures that the DCA considers ineffective attempts toward DNS.                                                                                                                                                                                                                                                                          |               |
|                        | TRMT                                                                                                                                                                                                                                                                                                                                                              | Counts the termination failures that the DCA considers ineffective attempts toward DNS.                                                                                                                                                                                                                                                                          |               |
|                        | ISUP                                                                                                                                                                                                                                                                                                                                                              | Counts the termination failures that the DCA considers ineffective attempts toward DNS.                                                                                                                                                                                                                                                                          |               |
| <b>DPTNODE</b>         | Dynamic packet trunk node type (SPM or DPT), PM #, and node #<br>SN07 adds the following: If the DPT Node is a GWC, then the associated DPT protocol (i.e., BICC or SIP-T) is added to the information. If the DPT Node is an SPM (i.e., either MG4K or DTP SPM), then the associated bearer network, DPT protocol and SPM node type is added to the information. |                                                                                                                                                                                                                                                                                                                                                                  | DPT-SPM       |
|                        | DPTGTAT                                                                                                                                                                                                                                                                                                                                                           | The number of attempts to get a DPT Terminal for a particular DPT node, pegged every time an attempt to get a DPT terminal is made within a given transfer period. For a typical SIPT call the number of pegs is in the range of 1 peg per DPT agent per call. For a typical BICC call the number of pegs is in the range of 1 to 3 pegs per DPT agent per call. |               |
|                        | DPTGTAT2                                                                                                                                                                                                                                                                                                                                                          | Extension of DPTGTAT                                                                                                                                                                                                                                                                                                                                             |               |

## CS 2000 Core OMs/PMs

| OM Group<br>or PM name | Registers                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Applicability |
|------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|                        | DPTGTFL                            | The number of attempts to get a DPT Terminal that failed (non-optimized) for a particular DPT node, pegged every time an attempt to get a <i>non-optimized</i> DPT terminal fails within a given transfer period.                                                                                                                                                                                                                                                                                       |               |
|                        | DPTUSAG                            | The number of DPT Terminals in use for a particular DPT node, pegged every one-hundred seconds within a given transfer period.                                                                                                                                                                                                                                                                                                                                                                          |               |
|                        | DPTUSAG2                           | Extension of DPTUSAG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |
|                        | DPTGTFL0                           | The number of attempts to get a DPT Terminal that failed (optimized) for a particular DPT node, pegged every time an attempt to get an <i>optimized</i> DPT terminal fails within a given transfer period. Optimized failure attempts on nodes "not DPT-enabled" are not pegged against this register.<br>Pegs to this register do not signify call failures. The optimized failure attempt to get an optimized terminal is immediately followed by an attempt to get a non-optimized terminal instead. |               |
|                        | DPTHWT                             | The high water mark for number of DPT Terminals in use for a particular DPT node, pegged every ten seconds within a given transfer period.                                                                                                                                                                                                                                                                                                                                                              |               |
| <b>DPTOFC</b>          | Dynamic packet trunk office events |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DPT-SPM       |
|                        | DPGTAT                             | The number of attempts to get a DPT Terminal, pegged every time an attempt to get a DPT terminal is made within a given transfer period. For a typical SIPT call the number of pegs is in the range of 1 peg per DPT agent per call. For a typical BICC call the number of pegs is in the range of 1 to 3 pegs per DPT agent per call.                                                                                                                                                                  |               |
|                        | DPGTAT2                            | Extension register of DPGTAT incremented when DPGTAT reaches 65,535                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |
|                        | DPGTFL                             | The number of attempts to get a DPT Terminal that failed (non-optimized), pegged every time an attempt to get a <i>non-optimized</i> DPT terminal fails within a given transfer period.                                                                                                                                                                                                                                                                                                                 |               |
|                        | DPGTFL2                            | Extension register of DPGTFL incremented when DPGTFL reaches 65,535                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |



## CS 2000 Core OMs/PMs

| OM Group<br>or PM name                                                                                                                                                                                                                                                                                                                                            | Registers | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Applicability |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|                                                                                                                                                                                                                                                                                                                                                                   | DPUSAG    | The number of DPT Terminals in use, pegged every one-hundred seconds within a given transfer period. Since this register is an accumulator and is added to itself the register can be misleading.<br><br>To interpret the usage register, divide the value by the number of slow samples to determine the average usage for a given transfer period.                                                                                                                              |               |
|                                                                                                                                                                                                                                                                                                                                                                   | DPUSAG2   | Extension register of DPUSAG incremented when DPUSAG reaches 65,535                                                                                                                                                                                                                                                                                                                                                                                                               |               |
|                                                                                                                                                                                                                                                                                                                                                                   | DPGTFLO   | The number of attempts to get a DPT Terminal that failed (optimized), pegged every time an attempt to get an <i>optimized</i> DPT terminal fails within a given transfer period. Optimized failure attempts on nodes "not DPT-enabled" are not pegged against this register.<br><br>Pegs to this register do not signify call failures. The optimized failure attempt to get an optimized terminal is immediately followed by an attempt to get a non-optimized terminal instead. |               |
|                                                                                                                                                                                                                                                                                                                                                                   | DPGTFLO2  | Extension register of DPGTFLO incremented when DPGTFLO reaches 65,535                                                                                                                                                                                                                                                                                                                                                                                                             |               |
|                                                                                                                                                                                                                                                                                                                                                                   | DPHWT     | The high water mark for number of DPT Terminals in use, pegged every ten seconds within a given transfer period.                                                                                                                                                                                                                                                                                                                                                                  |               |
|                                                                                                                                                                                                                                                                                                                                                                   | DPHWT2    | Extension register of DPHWT incremented when DPHWT reaches 65,535                                                                                                                                                                                                                                                                                                                                                                                                                 |               |
|                                                                                                                                                                                                                                                                                                                                                                   | DPDPL     | Number of attempts to get a DPT terminal that failed due to port depletion, pegged every time an attempt to get a DPT terminal fails due to port depletion within a given transfer period.                                                                                                                                                                                                                                                                                        |               |
|                                                                                                                                                                                                                                                                                                                                                                   | DPDPL2    | Extension register of DPDPL incremented when DPDPL reaches 65,535                                                                                                                                                                                                                                                                                                                                                                                                                 |               |
| <b>DPTOFCP</b> DPT Office Protocol group--new in SN07                                                                                                                                                                                                                                                                                                             |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | DPT-SPM       |
| This OM group measures the performance of the supported dynamic packet trunk protocols for the office. The two supported protocols are BICC and SIP-T. The addition of this new DPTOFCP OM group is controlled by the value of a new SN07 office parameter, MULTINET_DISPLAY_ACTIVE. If this parameter is set to 'Y', then the new DPTOFCP OM group is displayed. |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |
| <b>DTSRPM</b> Pegs originations and dialtone delays grouped by the type of line making the call (DP, DTMF, or Pphone).                                                                                                                                                                                                                                            |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | GWC           |
|                                                                                                                                                                                                                                                                                                                                                                   | DPLTOT    | Dial Pulse Lines Total Originations. This value is always 0 for CS2K lines since no differentiation is made between DP and DGT.                                                                                                                                                                                                                                                                                                                                                   |               |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name                                                                                                                         | Registers                   | Description                                                                                     | Applicability |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------|---------------|
|                                                                                                                                                | DPLDLY                      | Dial Pulse Line Delays. Counts DP lines which got dial tone after 3 seconds. Always 0 for CS2K. |               |
|                                                                                                                                                | DGTTOT                      | Counts Digit Tone Line Total Originations.                                                      |               |
|                                                                                                                                                | DGTDLY                      | Digit Tone Line Delays. Counts DGT lines which got dial tone after 3 seconds.                   |               |
|                                                                                                                                                | KSTOT                       | Keyset (Pphone) Lines Total Originations.                                                       |               |
|                                                                                                                                                | KSDLY                       | Keyset (Pphone) Lines which got dial tone after 3 seconds.                                      |               |
| <b>ENETPLNK</b> ENET Peripheral Side Links group. The registers listed here are the only DPT-SPM ones supported for SPM and MG4K applications. |                             |                                                                                                 |               |
|                                                                                                                                                | ENSPCHER                    | NOTE: This is an existing OM group. For details on the                                          |               |
|                                                                                                                                                | ENLKERR                     | registers, see NTP 297-2621-814, available on Helmsman                                          |               |
|                                                                                                                                                | ENLKFLT                     | Express.                                                                                        |               |
|                                                                                                                                                | ENSBLKU                     |                                                                                                 |               |
|                                                                                                                                                | ENMBLKU                     |                                                                                                 |               |
|                                                                                                                                                | ENLKPARU                    |                                                                                                 |               |
|                                                                                                                                                | ENSLKPAR                    |                                                                                                 |               |
|                                                                                                                                                | ENMLKPAR                    |                                                                                                 |               |
|                                                                                                                                                | ENLNKISOU                   |                                                                                                 |               |
|                                                                                                                                                | ENSLKISO                    |                                                                                                 |               |
|                                                                                                                                                | ENMLKISO                    |                                                                                                 |               |
| <b>ETHERNET</b>                                                                                                                                | OM group                    |                                                                                                 | CS2K Core     |
|                                                                                                                                                | Alignment Errors            | The counter associated with AlignErr Collection Interval.                                       |               |
|                                                                                                                                                | FCS Errors                  | The counter associated with FcsErr Collection Interval.                                         |               |
|                                                                                                                                                | Internal MAC Receive Errors | The counter associated with Internalmacrxerr.                                                   |               |
|                                                                                                                                                | Frame Too Long              | The counter associated with Frtoolongs.                                                         |               |
|                                                                                                                                                | Internal MAC TX Errors      | The counter associated with Internalmactxerr.                                                   |               |
|                                                                                                                                                | Symbol Errors               | The counter associated with Symbolerr.                                                          |               |
|                                                                                                                                                | Inpause Frames              | The counter associated with Inpausefr.                                                          |               |
|                                                                                                                                                | Outpause Frames             | The counter associated with Outpausefr.                                                         |               |

**CS 2000 Core OMs/PMs**

| OM Group                              | or PM name                                | Registers                                                                                                                             | Description                                                                                                                                                                                                                                                                                                                     | Applicability |
|---------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>FCDRTM1E</b> (Applies only to DMS) |                                           |                                                                                                                                       | Used for register overflows from the OM group FCDRTMP1, only when the UBFR0008 SOC is ON. This OM group provides 32 pre-defined tuples. Each register is associated with the CDR template being used for a CDR billing record. The CDR template index corresponds to the register number. This OM group supports indexes 0-31.  | CS2K Core     |
| <b>FCDRTM2E</b> (Applies only to DMS) |                                           |                                                                                                                                       | Used for register overflows from the OM group FCDRTMP2, only when the UBFR0008 SOC is ON. This OM group provides 32 pre-defined tuples. Each register is associated with the CDR template being used for a CDR billing record. The CDR template index corresponds to the register number. This OM group supports indexes 32-63. | CS2K Core     |
| <b>FCDRALG2</b> (Applies only to DMS) |                                           |                                                                                                                                       | Used for register overflows from the OM group FCDRALGR, only when the UBFR0008 SOC is ON. For these extension registers one count here is equal to 65535 counts of the same register in FCDRALGR.                                                                                                                               | CS2K Core     |
| <b>IOCAP</b>                          |                                           |                                                                                                                                       | IO Capacity for messaging over HIOP and HCMIC group                                                                                                                                                                                                                                                                             | CS2K Core     |
|                                       | IO_SERVICE_T<br>YPE                       | Indicates the service provided.                                                                                                       |                                                                                                                                                                                                                                                                                                                                 |               |
|                                       | IOUTIL                                    | Refers to percentage utilization of the services on the switch.                                                                       |                                                                                                                                                                                                                                                                                                                                 |               |
|                                       | IOHWM                                     | Refers to the highest level that the corresponding utilization has reached in the sample period.                                      |                                                                                                                                                                                                                                                                                                                                 |               |
|                                       | TxMSG/S,<br>TxSIZE,<br>RxMSG/S,<br>RxSIZE | Report the average transmit and receive message rates and sizes through the service.                                                  |                                                                                                                                                                                                                                                                                                                                 |               |
|                                       | IOTHRESH                                  | Pegged every time the service average utilization for one minute exceeds the value of OFCENG office parameter IO_WARNING_THRESHOLD.   |                                                                                                                                                                                                                                                                                                                                 |               |
| <b>ISUPCONN</b>                       |                                           |                                                                                                                                       | ISUP Connection group                                                                                                                                                                                                                                                                                                           | CS2K Core     |
|                                       | ISCONUCC                                  | Added to count call attempts that are unsuccessful because there are no available idle circuits in another office to handle the call. |                                                                                                                                                                                                                                                                                                                                 |               |
|                                       | ISCONUCE                                  | Added to count call attempts that are unsuccessful because switching equipment in another office handles too many calls.              |                                                                                                                                                                                                                                                                                                                                 |               |
|                                       | ISCONUCF                                  | Added to count call attempts that are unsuccessful because of a temporary fault in the far-end network.                               |                                                                                                                                                                                                                                                                                                                                 |               |
| <b>IWBM</b>                           |                                           |                                                                                                                                       | Interworking bridge manager events (associated with IW SPMs)                                                                                                                                                                                                                                                                    | IW-SPM        |
|                                       | IWGBATT                                   | Get bridge attempts                                                                                                                   |                                                                                                                                                                                                                                                                                                                                 |               |
|                                       | IWGBATT2                                  | Extension of IWGBATT                                                                                                                  |                                                                                                                                                                                                                                                                                                                                 |               |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name | Registers                                               | Description                                               | Applicability |
|------------------------|---------------------------------------------------------|-----------------------------------------------------------|---------------|
|                        | IWGBFAIL                                                | Get bridge attempt failures                               |               |
|                        | IWGGBABRT                                               | Get bridge attempts aborted                               |               |
|                        | IWFBATT                                                 | Free bridge attempts                                      |               |
|                        | IWFBATT2                                                | Extension of IWFBATT                                      |               |
|                        | IWGBFAIL                                                | Free bridge attempt failures                              |               |
|                        | IWGBABRT                                                | Free bridge attempts aborted                              |               |
|                        | IWONSET1                                                | Total IW SPMs in use reached 70%                          |               |
|                        | IWONSET2                                                | Total IW SPMs in use reached 90%                          |               |
|                        | IWABATE1                                                | Total IW SPMs in use less than 65%                        |               |
|                        | IWABATE2                                                | Total IW SPMs in use less than 85%                        |               |
| <b>MNATM</b>           | MG 4000 and IW SPM ATM interface performance statistics |                                                           | IW-SPM        |
|                        | ICTOTAL                                                 | Incoming ATM cells                                        |               |
|                        | ICTOTAL2                                                | Extension of ICTOTAL                                      |               |
|                        | ICLP0TO                                                 | Incoming ATM cells with CLP=0                             |               |
|                        | ICLP0TO2                                                | Extension of ICLP0TO                                      |               |
|                        | ICLP1TO                                                 | Incoming ATM cells with CLP=1                             |               |
|                        | ICLP1TO2                                                | Extension of ICLP1TO                                      |               |
|                        | ICNC                                                    | Incoming non-compliant ATM cells                          |               |
|                        | ICNC1                                                   | Extension of ICNC                                         |               |
|                        | ICCLP0NC                                                | Incoming non-compliant ATM cells with CLP=0               |               |
|                        | ICCLP0NC2                                               | Extension of ICCLP0NC                                     |               |
|                        | ICCLP1NC                                                | Incoming non-compliant ATM cells with CLP=1               |               |
|                        | ICCLP1NC2                                               | Extension of ICCLP1NC                                     |               |
|                        | ICDISC                                                  | Incoming ATM cells discarded; correlates with ATM800 log. |               |
|                        | ICDISC2                                                 | Extension of ICDISC                                       |               |
|                        | ICCLP0DC                                                | Incoming ATM cells with CLP=0 discarded                   |               |
|                        | ICCLP0DC2                                               | Extension of ICCLP0DC                                     |               |
|                        | ICCLP1DC                                                | Incoming ATM cells with CLP=0 discarded                   |               |
|                        | ICCLP1DC2                                               | Extension of ICCLP1DC                                     |               |
|                        | ITAGGED                                                 | Incoming tagged ATM cells                                 |               |
|                        | ITAGGED2                                                | Extension of ITAGGED                                      |               |
|                        | OGTOTAL                                                 | Outgoing ATM cells                                        |               |
|                        | OGTOTAL2                                                | Extension of OGTOTAL                                      |               |
|                        | OCLP0TO                                                 | Outgoing ATM cells with CLP=0                             |               |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name | Registers                                             | Description                                                      | Applicability |
|------------------------|-------------------------------------------------------|------------------------------------------------------------------|---------------|
| MNATMVC                | OCLP0TO2                                              | Extension of OCLP0TO                                             | MG4K          |
|                        | OCLP1TO                                               | Outgoing ATM cells with CLP=1                                    |               |
|                        | OCLP1TO2                                              | Extension of OCLP1TO                                             |               |
|                        | MG 4000 ATM PVC interface performance statistics      |                                                                  |               |
|                        | ICTOTAL                                               | Incoming ATM cells                                               |               |
|                        | ICTOTAL2                                              | Extension of ICTOTAL                                             |               |
|                        | ICLP0TO                                               | Incoming ATM cells with CLP=0                                    |               |
|                        | ICLP0TO2                                              | Extension of ICLP0TO                                             |               |
|                        | ICLP1TO                                               | Incoming ATM cells with CLP=1                                    |               |
|                        | ICLP1TO2                                              | Extension of ICLP1TO                                             |               |
|                        | ICNC                                                  | Incoming non-compliant ATM cells                                 |               |
|                        | ICNC1                                                 | Extension of ICNC                                                |               |
|                        | ICCLP0NC                                              | Incoming non-compliant ATM cells with CLP=0                      |               |
|                        | ICCLP0NC2                                             | Extension of ICCLP0NC                                            |               |
|                        | ICCLP1NC                                              | Incoming non-compliant ATM cells with CLP=1                      |               |
|                        | ICCLP1NC2                                             | Extension of ICCLP1NC                                            |               |
|                        | ICDISC                                                | Incoming ATM cells discarded                                     |               |
|                        | ICDISC2                                               | Extension of ICDISC                                              |               |
|                        | ICCLP0DC                                              | Incoming ATM cells with CLP=0 discarded                          |               |
|                        | ICCLP0DC2                                             | Extension of ICCLP0DC                                            |               |
|                        | ICCLP1DC                                              | Incoming ATM cells with CLP=0 discarded                          |               |
|                        | ICCLP1DC2                                             | Extension of ICCLP1DC                                            |               |
|                        | ITAGGED                                               | Incoming tagged ATM cells                                        |               |
|                        | ITAGGED2                                              | Extension of ITAGGED                                             |               |
|                        | ICERROR                                               | Incoming ATM cells with a protocol error                         |               |
|                        | ICERROR2                                              | Extension of ICERROR                                             |               |
|                        | OGTOTAL                                               | Outgoing ATM cells                                               |               |
|                        | OGTOTAL2                                              | Extension of OGTOTAL                                             |               |
|                        | OCLP0TO                                               | Outgoing ATM cells with CLP=0                                    |               |
|                        | OCLP0TO2                                              | Extension of OCLP0TO                                             |               |
|                        | OCLP1TO                                               | Outgoing ATM cells with CLP=1                                    |               |
|                        | OCLP1TO2                                              | Extension of OCLP1TO                                             |               |
| MNATMA5                | MG 4000 ATM PVC AAL5 interface performance statistics |                                                                  | MG4K          |
|                        | CRC32ERR                                              | PDUs that contain CRC-32 errors; correlates with the ATM800 log. |               |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name | Registers                                                                                                                      | Description                                                              | Applicability |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------|
|                        | OVERSDU                                                                                                                        | PDUs discarded due to oversized SDUs; correlates with the ATM800 log.    |               |
|                        | LENIOL                                                                                                                         | PDUs discarded due to length violations; correlates with the ATM800 log. |               |
| <b>MNATMA1</b>         | MG 4000 AAL1 ATM                                                                                                               | interface performance statistics*                                        | MG4K          |
|                        | ICTOTAL                                                                                                                        | Incoming ATM cells                                                       |               |
|                        | ICTOTAL2                                                                                                                       | Extension of ICTOTAL                                                     |               |
|                        | OGTOTAL                                                                                                                        | Outgoing total cells                                                     |               |
|                        | OGTOTAL2                                                                                                                       | Extension of OGTOTAL                                                     |               |
|                        | HERRCEL                                                                                                                        | Head Errored cells                                                       |               |
|                        | HERRCEL2                                                                                                                       | Extension of HERRCEL                                                     |               |
|                        | LATECEL                                                                                                                        | Late cells                                                               |               |
|                        | LATECEL2                                                                                                                       | Extension of LATECEL                                                     |               |
|                        | MSINCEL                                                                                                                        | Mis-inserted cells                                                       |               |
|                        | MSINCEL2                                                                                                                       | Extension of MSINCEL                                                     |               |
|                        | LOSTCEL                                                                                                                        | Lost cells                                                               |               |
|                        | LOSTCEL2                                                                                                                       | Extension of LOSTCEL                                                     |               |
|                        | SLIPS                                                                                                                          | Slip events                                                              |               |
|                        | SLIPS2                                                                                                                         | Extension of SLIPS                                                       |               |
|                        | OOSYNC                                                                                                                         | Out-of-sync events                                                       |               |
|                        | OOSYNC2                                                                                                                        | Extension of OOSYNC                                                      |               |
| <b>NMTCUNIT</b>        | Node Maintenance Unit Measurements group. The registers listed here are the only ones supported for SPM and MG4K applications. |                                                                          |               |
|                        | NDUERR                                                                                                                         | NOTE: This is an existing OM group. For details on the                   |               |
|                        | NDUFLT                                                                                                                         | registers, see NTP 297-2621-814, available on Helmsman                   |               |
|                        | NDUMBP                                                                                                                         | Express.                                                                 |               |
|                        | NDUMBU                                                                                                                         |                                                                          |               |
|                        | NDUMCRST                                                                                                                       |                                                                          |               |
|                        | NDUMRRST                                                                                                                       |                                                                          |               |
|                        | NDUNAP                                                                                                                         |                                                                          |               |
|                        | NDUSBP                                                                                                                         |                                                                          |               |
|                        | NDUSBU                                                                                                                         |                                                                          |               |
|                        | NDUNAU                                                                                                                         |                                                                          |               |
|                        | NDUSWERR                                                                                                                       |                                                                          |               |
|                        | NDUTRAP                                                                                                                        |                                                                          |               |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name                                                                                                                                                                                                                                                                                                                                                                                                      | Registers | Description                                                                                                                       | Applicability |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>NWMFRRCT</b>                                                                                                                                                                                                                                                                                                                                                                                                             |           | Network Management Flexible Reroute group                                                                                         | CS2K Core     |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | FRRATTCT  | Counts calls that are rerouted to a Virtual Interworking Agent (VIA) route list. Required for ACC (Automatic Congestion Control). |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | FRRFLCT   | Counts rerouted calls that fail to find an idle VIA route list. Required for ACC (automatic congestion control).                  |               |
| <b>OFZ2NET1</b>                                                                                                                                                                                                                                                                                                                                                                                                             |           | Office to Network group 1--new in SN07                                                                                            | CS2K Core     |
| This OM group records the structure of traffic that arrives at an office on a particular bearer network, the first routing, and the routing of outgoing traffic. The addition of this new OFZ2NET1 OM group is controlled by the value of a new SN07 office parameter, MULTINET_DISPLAY_ACTIVE. If this parameter is set to 'Y', then the new OFZ2NET1 OM group is displayed.                                               |           |                                                                                                                                   |               |
| <b>OFZ2NET2</b>                                                                                                                                                                                                                                                                                                                                                                                                             |           | Office to Network group 2--new in SN07                                                                                            | CS2K Core     |
| This OM group counts calls that the system routes to generalized no circuit treatment (GNCT). The system routes a call to GNCT when a trunk group is the last route in the route list and all trunks are busy. The addition of this new OFZ2NET2 OM group is controlled by the value of a new SN07 office parameter, MULTINET_DISPLAY_ACTIVE. If this parameter is set to 'Y', then the new OFZ2NET2 OM group is displayed. |           |                                                                                                                                   |               |
| <b>PM</b>                                                                                                                                                                                                                                                                                                                                                                                                                   |           | Peripheral Module group. The registers listed here are the only ones supported for SPM and MG4K applications.                     | DPT-SPM       |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMERR     | NOTE: This is an existing OM group. For details on the                                                                            |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMFLT     | registers, see NTP 297-2621-814, available on Helmsman                                                                            |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMMSBU    | Express.                                                                                                                          |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMUMBU    |                                                                                                                                   |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMSBP     |                                                                                                                                   |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMMBP     |                                                                                                                                   |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMMWXFR   |                                                                                                                                   |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMMCXFR   |                                                                                                                                   |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMINTEG   |                                                                                                                                   |               |
| <b>PMTYP</b>                                                                                                                                                                                                                                                                                                                                                                                                                |           | Peripheral Module Type group. The registers listed here are the only ones supported for SPM and MG4K applications.                | DPT-SPM       |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMTERR    | NOTE: This is an existing OM group. For details on the registers, see NTP 297-2621-814,                                           |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMTFLT    | available on Helmsman Express.                                                                                                    |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMTMSBU   |                                                                                                                                   |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMTUSBU   |                                                                                                                                   |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMTMMBU   |                                                                                                                                   |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                             | PMTSBP    |                                                                                                                                   |               |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name                                                                                                                                                                                                                                                                                                                                                                                                                            | Registers              | Description                                                                                                                                                                                                          | Applicability     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>SCMP</b>                                                                                                                                                                                                                                                                                                                                                                                                                                       | PMTMBP                 |                                                                                                                                                                                                                      |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PMTMWXFR               |                                                                                                                                                                                                                      |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PMTMCXFR               |                                                                                                                                                                                                                      |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PMTINTEG               |                                                                                                                                                                                                                      |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SCMPTRF                | If an SCMP line is found Callp busy, the SCMPTRF register will be pegged for that line.                                                                                                                              | Line Provisioning |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SCMPMNT                | If an SCMP line is found maintenance busy or unavailable, the SCMPTRF register will be pegged for that line.                                                                                                         |                   |
| <b>SMSTOPS.</b> This OM group records application-level events for the TOPS short message service.                                                                                                                                                                                                                                                                                                                                                |                        |                                                                                                                                                                                                                      | TOPS              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SMSSSENT,<br>SMSSSENT2 | SMS sent                                                                                                                                                                                                             |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SMSSUCC,<br>SMSSUCC2   | SMS success                                                                                                                                                                                                          |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SMSFAIL,<br>SMSFAIL2   | SMS failure                                                                                                                                                                                                          |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SMSTIME,<br>SMSTIME2   | SMS time-out                                                                                                                                                                                                         |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SMSNETWK               | SMS failure due to network problems                                                                                                                                                                                  |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SMSTERM                | SMS failure due to terminal (cell phone) problems                                                                                                                                                                    |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SMSRADIO               | SMS failure due to radio interface problems                                                                                                                                                                          |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SMSMISC                | Miscellaneous SMS failure                                                                                                                                                                                            |                   |
| <b>SPMACT</b> Spectrum Activity group                                                                                                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                                                                      | SPM               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                   | CAPLEVEL               | Added for Succession to indicate what the SPM's capacity index is. The capacity index is a numeric value, with possible values of 0, 1, or 2, corresponding to regular, enhanced and premium capacity, respectively. |                   |
| <b>SPMOVLD</b> Spectrum Overload Statistics group                                                                                                                                                                                                                                                                                                                                                                                                 |                        |                                                                                                                                                                                                                      | SPM               |
| The new SPMOVLVD group will have 18 OMs that give metrics on the SPM flow control system and the system overload control component. All OMs that apply to the system overload control component start with an 'S', all others apply to the flow control system. The actual peg counts and usage counts (accurate to one second) are accumulated on the peripheral and then uploaded to the OM group using the Spectrum OM Transfer System (SOTS). |                        |                                                                                                                                                                                                                      |                   |



**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Registers            | Description                                                    | Applicability |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------|---------------|
| <b>TC7WRLSS.</b> This OM group records transport-level events such as types of TCAP messages sent and received, SS7 errors, etc. on TOPS wireless calls (SMS and WIN, as well as IS-41 and GSM).                                                                                                                                                                                                                                                                                                |                      |                                                                |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | INVOKES,<br>INVOKES2 | TCAP INVOKE sent                                               | TOPS          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | INVOKER,<br>INVOKER2 | TCAP INVOKE receives                                           |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RETRESS,<br>RETRESS2 | TCAP RETURN RESULT sent                                        |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RETRESR,<br>RETRESR2 | TCAP RETURN RESULT received                                    |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RETERRS              | TCAP RETURN ERROR sent                                         |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RETERRR              | TCAP RETURN ERROR received                                     |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | REJECTS              | TCAP REJECT sent                                               |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | REJECTR              | TCAP REJECT received                                           |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ABORTS               | TCAP ABORT sent                                                |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ABORTR               | TCAP ABORT received                                            |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | NOTRIDS              | No transaction identifiers                                     |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | MBFULL               | Incoming message from MSC ignored due to heavy traffic         |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RTFNOXLA             | SCCP routing failure: No translation of such nature            |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RTFNOXLS             | SCCP routing failure: No translation for this specific address |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RTFSUBCG             | SCCP routing failure: Subsystem congestion                     |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RTFSUBFL             | SCCP routing failure: Subsystem failure                        |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RTFUNEQ              | SCCP routing failure: Unequipped user                          |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RTFNETFL             | SCCP routing failure: Network failure                          |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RTFNETCG             | SCCP routing failure: Network congestion                       |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RTFMISCE             | SCCP routing failure: Failure other than the above seven       |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | GTTFAIL              | Global Title Translation failure                               |               |
| <b>TDGTHRU.</b> TOPS Datagram Throughput.<br>This OM group counts the number of UDP messages sent and received in each of several "buckets" or message size ranges. Each register in this group counts the number of messages in a specific size range that were sent by or received by a particular TOPS application, using a particular Ethernet interface. The group consists of 14 registers and 14 extension registers, counting message sizes ranging from <= 48 bytes up to > 368 bytes. |                      |                                                                | TOPS          |
| <b>TONES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                      |                                                                | CS2K Core     |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Registers                                                                                                                           | Description                                                                                                                                                                                                     | Applicability |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TONEATT                                                                                                                             | Counts calls that the system routes to each tone generator.                                                                                                                                                     |               |
| <b>TRK2NET1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Trunk to Network group 1--new in SN07                                                                                               |                                                                                                                                                                                                                 | CS2K Core     |
| This OM group provides information on trunk traffic for each trunk group. The OM groups OFZ2NET1 and OFZ2NET2 provide office-wide per bearer network traffic summaries for trunks. The addition of this new TRK2NET1 OM group is controlled by the value of a new SN07 office parameter, MULTINET_DISPLAY_ACTIVE. If this parameter is set to 'Y', then the new TRK2NET1 OM group is displayed.                                                                                                                                      |                                                                                                                                     |                                                                                                                                                                                                                 |               |
| <b>TRK2NET2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Trunk to Network group 2--new in SN07                                                                                               |                                                                                                                                                                                                                 | CS2K Core     |
| This OM group counts calls that the system routes to generalized no circuit treatment (GNCT). The system routes a call to GNCT when a trunk group is the last route in the route list and all trunks are busy. The OM groups OFZ2NET1 and OFZ2NET2 provide office-wide per bearer network traffic summaries for trunks. The addition of this new TRK2NET2 OM group is controlled by the value of a new SN07 office parameter, MULTINET_DISPLAY_ACTIVE. If this parameter is set to 'Y', then the new TRK2NET2 OM group is displayed. |                                                                                                                                     |                                                                                                                                                                                                                 |               |
| <b>TRKQOS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | records instances in which QOS threshold values have been exceeded for GWC calls handled by a particular GWC-based TDM trunk group. |                                                                                                                                                                                                                 |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PKTLOSS                                                                                                                             | Packet Loss. Counts the number of times that the packet loss threshold has been exceeded.                                                                                                                       |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | JITTER                                                                                                                              | Jitter. Counts the number of times that the jitter threshold has been exceeded.                                                                                                                                 |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DELAY                                                                                                                               | Delay (latency). Counts the number of times that the delay threshold has been exceeded.                                                                                                                         |               |
| N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Existing                                                                                                                            | As noted in the design document for 89007781 (PT-IP), the following data is reported by all gateways: packets sent; packets received; packet loss; octets sent; octets received; inter-arrival latency; jitter. | GWC           |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name | Registers                                                                                                                                                                                                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Applicability |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| (Checking)             |                                                                                                                                                                                                                                | <p>The OMs that feature 89008294 (UA-IP) will use already exist for the ATM solution, now extended to IP solutions. It includes the following OM counters:</p> <ul style="list-style-type: none"> <li>• Intra total number of channel allocation requests</li> <li>• Intra total number of failed channel allocation requests</li> <li>• Intra total number of failed channel allocation requests</li> <li>• Inter maximum simultaneous number of channels in use</li> <li>• Inter total number of channel allocation requests</li> <li>• Inter total number of failed channel allocation requests</li> <li>• Intra total number of channel allocation requests</li> <li>• Intra total number of failed channel allocation requests</li> </ul> | GWC           |
| <b>TRNK2</b>           | OM group to hold extension registers from TRK OM group                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CS2K Core     |
|                        | TOTU2                                                                                                                                                                                                                          | Extension register of TOTU in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |
|                        | INCATOT2                                                                                                                                                                                                                       | Extension register of INCATOT in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
|                        | TOTU2                                                                                                                                                                                                                          | Extension register of TOTU in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |
|                        | INCATOT2                                                                                                                                                                                                                       | Extension register of INCATOT in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
|                        | NATTMPT2                                                                                                                                                                                                                       | Extension register of NATTMPT in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
|                        | DEFLDCA                                                                                                                                                                                                                        | Extension register of DEFLD in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |
|                        | TRU2                                                                                                                                                                                                                           | Extension register of TRU in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |               |
|                        | SBU2                                                                                                                                                                                                                           | Extension register of SBU in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |               |
|                        | CONNECT2                                                                                                                                                                                                                       | Extension register of CONNECT in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
|                        | TANDEM2                                                                                                                                                                                                                        | Extension register of TANDEM in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |
|                        | ANSWER2                                                                                                                                                                                                                        | Extension register of ANSWER in TRK OM group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |
| <b>UTR</b>             | Universal Tone Receiver group                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | UAS           |
|                        | UTRSZRS                                                                                                                                                                                                                        | Counts each time that the system supplies a UTR to a call in response to a request.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |
| <b>WINTOPS</b>         | This OM group records application-level events for wireless ADACC with release. This group uses WIN in the name since wireless intelligent network capabilities are used to provide ADACC with release for both IS-41 and GSM. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
|                        | WINBEGIN,<br>WINBEGI2                                                                                                                                                                                                          | IS-41 AnalyzedInformation or GSM InitialDP received.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | TOPS          |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name                     | Registers            | Description                                                                                                                                                                                                                                                                             | Applicability |
|--------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|                                            | REQCONN,<br>REQCONN2 | IS-41 ConnectResource or GSM EstablishTemporaryConnection sent                                                                                                                                                                                                                          |               |
|                                            | CONNECT,<br>CONNECT2 | IS-41 AnalyzedInformation or GSM Connect sent                                                                                                                                                                                                                                           |               |
|                                            | DISCONN,<br>DISCONN2 | IS-41 AnalyzedInformation with action code of "disconnect call" or GSM DisconnectTemporaryConnection sent. This event is not part of the normal IS-41 call flow, but it is part of the normal GSM call flow. If this is pegged for IS-41, it means ADACC with release was not provided. |               |
|                                            | WINEND,<br>WINEND2   | GSM Application End received; no equivalent IS-41 message.                                                                                                                                                                                                                              |               |
|                                            | ERRCONN              | MSC could not connect to TOPS using TLDN                                                                                                                                                                                                                                                |               |
|                                            | ERRDISC              | TOPS disconnected unexpectedly while providing operator assistance. IS-41 only; when this occurs in a GSM call, WINEND is pegged but not DISCONN or CONNECT.                                                                                                                            |               |
|                                            | ERRSSFT              | MSC's service switching function timer expired. Should not happen if TOPS Reset Timer is datafilled properly in Table ISUPTRK.                                                                                                                                                          |               |
|                                            | ABANDON              | Wireless caller disconnected prior to receiving ADACC with release.                                                                                                                                                                                                                     |               |
|                                            | RESTIMR,<br>RESTIMR2 | ResetTimer sent (IS-41 and GSM)                                                                                                                                                                                                                                                         |               |
|                                            | NOTLDNS              | No TLDNs available in Table TOPSTLDN.                                                                                                                                                                                                                                                   |               |
|                                            | NODATA               | TOPS could not find EXT block associated with incoming TLDN call from MSC.                                                                                                                                                                                                              |               |
|                                            | RXLAFail             | TOPS call could not obtain original called digits and defaulted to 411.                                                                                                                                                                                                                 |               |
|                                            | SANTIMR              | MSC did not release trunk to TOPS, or MSC did not send Application End.                                                                                                                                                                                                                 |               |
|                                            | TLDNTIME             | A TLDN was allocated for an MSC call which never arrived. The TLDN is allocated to a new call.                                                                                                                                                                                          |               |
| <b>XACORE</b> XA-Core hardware-related OMs |                      |                                                                                                                                                                                                                                                                                         | CS2K Core     |
|                                            | XAPE                 | PE (processor element) faults                                                                                                                                                                                                                                                           |               |
|                                            | XARXPE               | Routine exercise test (RXe) PE failures                                                                                                                                                                                                                                                 |               |
|                                            | XASM                 | Critical shared memory (SM) faults                                                                                                                                                                                                                                                      |               |
|                                            | XARXSM               | Routine exercise test (RXe) SM failures                                                                                                                                                                                                                                                 |               |
|                                            | XAIOP                | Critical IOP (input/output processor) faults                                                                                                                                                                                                                                            |               |
|                                            | XARXIO               | Routine exercise test (RXe) IOP failures                                                                                                                                                                                                                                                |               |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name | Registers                   | Description                                                                                                      | Applicability |
|------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------|---------------|
|                        | XADISK                      | Disk faults                                                                                                      |               |
|                        | XATAPE                      | Critical tape faults                                                                                             |               |
|                        | XARTIF                      | RTIF (reset terminal interface) packet faults                                                                    |               |
|                        | XALOCP                      | Critical faults on a RTIF local port                                                                             |               |
|                        | XAREMP                      | Critical faults on a RTIF remote port                                                                            |               |
|                        | XACMIC                      | CMIC packet faults                                                                                               |               |
|                        | XACXABRT                    | Routine exercise (REx) test aborts                                                                               |               |
|                        | XARXBASE                    | Routine exercise test on base hardware failures                                                                  |               |
|                        | XARXFULL                    | Routine exercise test on all hardware failures                                                                   |               |
|                        | XARXALL                     | Routine exercise test on all hardware failures                                                                   |               |
|                        | XAMDI                       | Number of critical AMDI packet faults detected                                                                   |               |
|                        | XAMDILNK                    | Number of critical AMDI link faults detected                                                                     |               |
|                        | XETHR                       | Hardware faults on Ethernet packet                                                                               |               |
|                        | XETHRPRT                    | Hardware faults on an Ethernet port                                                                              |               |
|                        | XETHRLNK                    | Hardware faults on an Ethernet link                                                                              |               |
| <b>XACSRVC</b>         | XA-Core service-related OMs |                                                                                                                  | CS2K Core     |
|                        | XAMDMAJU                    | Length of time (in 100 second increments) that an AMDI major alarm condition has existed                         |               |
|                        | XAMDCRIU                    | Length of time (in 100 second increments) that an AMDI critical alarm condition has existed                      |               |
|                        | XASSMPXU                    | Length of time (in 100 second increments) that a simplex SM condition has existed as a result of a system action |               |
|                        | XAMSMPXU                    | Length of time (in 100 second increments) that a simplex SM condition has existed as a result of a manual action |               |
|                        | XARXMPXU                    | Length of time (in 100 second increments) that a SM condition has existed as the result of a REx test            |               |
|                        | XASMCRIU                    | Length of time (in 100 second increments) that a low SM critical alarm has existed                               |               |
|                        | XALKMAJU                    | Length of time (in 100 second increments) that an MScomm (message switch communication) major alarm has existed  |               |
|                        | XETHRMJU                    | Major alarms on an Ethernet RM                                                                                   |               |
|                        | XETHRCRU                    | Minor alarms on an Ethernet RM                                                                                   |               |
|                        | XATRAP                      | Trap interrupts                                                                                                  |               |
|                        | XASWINI                     | Warm restarts as a result of a system action                                                                     |               |
|                        | XAMWINI                     | Warm restarts as a result of a manual action                                                                     |               |
|                        | XASCINI                     | Cold restarts as a result of a system action                                                                     |               |

**CS 2000 Core OMs/PMs**

| OM Group<br>or PM name                                                                                                                  | Registers | Description                                  | Applicability |
|-----------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------|---------------|
|                                                                                                                                         | XAMCINI   | Cold restarts as a result of a manual action |               |
|                                                                                                                                         | XAPEMAJU  | XACORE period of major alarm                 |               |
|                                                                                                                                         | XAPECRIU  | XACORE period of low processing power        |               |
| <b>XPMOVL</b> Collects statistics on XPM overload conditions. This is an existing OM group that functions the same as in TDM switches.  |           |                                              | GWC           |
| <b>XPMOCC</b> Collects statistics on CPU occupancy in the GWC. This is an existing OM group that functions the same as in TDM switches. |           |                                              | GWC           |

## Performance Management

The following section describes performance measurements collected and reported by the Integrated EMS for the various network elements. Pre-IEMS Performance interfaces for Network Elements, if integrated by the customer in SN07, are still supported in SN08, but are subject to the MD process that will be published for all FCAPS interfaces.

### Audio codes Media Servers (AMS) Performance Measurements

Performance Measurements for the AudioCodes media servers are available through the Integrated EMS, and also through an SNMP interface. The media server will provide performance measurements in the form of two types:

- **Gauges:** Gauges represent the current state of activities on the media server. Gauges unlike counters can decrease in value and like counters, can increase. The value of a gauge is the current value or a snapshot of the current activity on the media server at that moment.
- **Counters:** Counters always increase in value and are cumulative. Counters, unlike gauges, never decrease in value unless the server is reset and then the counters are zeroed.

The media server performance measurements will be provided by two AudioCodes MIBs (acPerfMediaGateway and acPerfMediaServices). The first mib is generic-type of PM mib. The second PM mib is media server specific.

The generic PM mib covers the control protocol, the RTP stream, and the system packets statistics. This AC PM enterprise mibs supports statistics which apply to the media server and other AC products like gateways.

### AudioCodes media servers PMs

The media server performance measurements will be provided by two AudioCodes MIBs (acPerfMediaGateway and acPerfMediaServices). The first mib is generic-type of PM mib. The second PM mib is media server specific. The first table shows performance measurements related to control protocol, RTP stream, and system packet statistics mibs.

### AMS Control Protocol, RTP, packet statistics PMs

| OM Group or PM Name              | Name                                      | Description                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Network Element: AMS</b>      |                                           |                                                                                                                                                                                                                                                                                                                                                                  |
| acPerfMediaGateway (new in SN08) | acPerfCpNumDupsForCompletedTransactions   | <b>Number of Duplicated Completed Transactions:</b><br>The number of times a duplicate transaction request was received after the initial transaction had already been completed. In this case, the gateway resends the response for this transaction.                                                                                                           |
|                                  | acPerfCpNumDupsForOutstandingTransactions | <b>Number of Duplicated Transactions Outstanding:</b><br>The number of times a duplicate transaction request was received while the initial transaction was outstanding, that is, still in progress. In this case, the gateway ignores the duplicate request.                                                                                                    |
|                                  | acPerfCpMessageSendSuccesses              | <b>Messages Send Successes:</b><br>Number of times there was a success in sending a call control (H.248) message. Call control messages are sent using the system's socket library. This counter tracks successes in using the local socket services. It does not track successes in end-to-end message transfer between the gateway and the call agent.         |
|                                  | acPerfCpMessageSendErrors                 | <b>Message Send Errors:</b><br>Number of times there was a failure in sending a call control (H.248) message. The message is sent via a datagram using the system's socket library. Normally a failure on a socket send operation would be attributed to an internal system problem.                                                                             |
|                                  | acPerfCpMessageReceiveSuccesses           | <b>Message Receive Successes:</b><br>Number of times there was a success in receiving a call control (H.248) message. Call control messages are received using the system's socket library. This counter tracks successes in using the local socket services. It does not track successes in end-to-end message transfer between the gateway and the call agent. |

**AMS Control Protocol, RTP, packet statistics PMs**

| OM Group or PM Name | Name                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | acPerfCpMessageReceiveErrors              | <b>Message Receive Errors:</b><br>Number of times there was a failure in receiving a call control(H.248) message. Call control messages are received using the system's socket library. A failure on the socket receive operation can be attributed to an internal system problem or with the call agent sending a message larger than what is supported by the gateway.                                                                                             |
|                     | acPerfCpProtocolSyntaxErrors              | <b>Protocol Syntax Errors:</b><br>Number of syntax errors detected in incoming call control (H.248) messages.                                                                                                                                                                                                                                                                                                                                                        |
|                     | acPerfCpMessageRetransmissions            | <b>Message Retransmissions:</b><br>Each time the call engine times out waiting for an acknowledgement it retransmits the control protocol message, unless the number of max retransmissions is exceeded. This counter is incremented each time a message is retransmitted due to a timeout.                                                                                                                                                                          |
|                     | acPerfCpMessageMaxRetransmissionsExceeded | <b>Message Max Re-transmissions Exceeded:</b><br>Number of times the call control message maximum retransmission count was exceeded. The gateway attempted several times to send a message to the call agent, but each time, an ack was not received. A failure of this type results in a failed call and is usually an indication that subsequent calls will fail. This problem is typically a result of the call agent being down or a result of a network problem |
|                     | acPerfCpMessagesFromUntrustedSources      | <b>Messages From Untrusted Sources:</b><br>Number of messages received from untrusted sources, that is from network nodes other than the node on which the call agent is running.                                                                                                                                                                                                                                                                                    |
|                     | acPerfRtpSenderPackets                    | <b>RTP Sender Packets (Card):</b><br>Total number of RTP packets sent by the system for this card.                                                                                                                                                                                                                                                                                                                                                                   |
|                     | acPerfRtpSenderOctets                     | <b>RTP Sending Octets (Card):</b><br>Total number of non-header RTP octets sent by this card.                                                                                                                                                                                                                                                                                                                                                                        |
|                     | acPerfRtpReceiverPackets                  | <b>RTP Receiver Packets (Card):</b><br>Total number of RTP packets received by the system for this card.                                                                                                                                                                                                                                                                                                                                                             |
|                     | acPerfRtpReceiverOctets                   | <b>RTP Receiver Octets (Card):</b><br>Total number of non-header RTP octets received by this card.                                                                                                                                                                                                                                                                                                                                                                   |
|                     | acPerfRtpRcvrLostPackets                  | <b>RTP Receiver Lost Packets (Card):</b><br>Total number of RTP packets lost as observed by this card.                                                                                                                                                                                                                                                                                                                                                               |
|                     | acPerfRtpFailedDueToLackOfResources       | <b>RTP Failed Due to Lack of Resources:</b><br>The number of times a rtp request was rejected due to lack of resources since the last application restart.                                                                                                                                                                                                                                                                                                           |



**AMS Control Protocol, RTP, packet statistics PMs**

| OM Group or PM Name | Name                               | Description                                                                                                                           |
|---------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
|                     | acPerfRtpSimplexInSessionsCurrent  | <b>RTP Simplex In Sessions:</b><br>Current number of simplex input RTP sessions.                                                      |
|                     | acPerfRtpSimplexOutSessionsTotal   | <b>RTP Simplex Out Session Total:</b><br>Total number of simplex output RTP sessions.                                                 |
|                     | acPerfRtpSimplexOutSessionsCurrent | <b>RTP Simplex Out Session Current:</b><br>Current number of simplex output RTP sessions                                              |
|                     | acPerfRtpDuplexSessionsTotal       | <b>RTP Duplex Sessions Total:</b><br>Total number of duplex RTP sessions.                                                             |
|                     | acPerfRtpDuplexSessionsCurrent     | <b>RTP Duplex Sessions Current:</b><br>Current number of duplex RTP sessions.                                                         |
|                     | acPerfSystemPacketEndpoints        | <b>System Packet Endpoints:</b><br>Number of endpoints reserved for all packet network-related functions (conferencing, plays, etc.). |

The second performance measurement mib is media server specific mib and contains statistics for these major categories:

- IVR – interactive voice response
- BCT – bearer channel tandeming
- CONF – Conferencing
- TT – Test Trunks

**AMS IVR, BCT, CONF, and IT PMs**

| OM Group or PM Name               | Name                                    | Description                                                                                                                                          |
|-----------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Network Element: AMS</b>       |                                         |                                                                                                                                                      |
| acPerfMediaServices (new in SN08) | acPerfIvrPlayRequests                   | <b>Play Requests:</b><br>The total number of announcement requests received from the call agent                                                      |
|                                   | acPerfIvrPlaySuccessful                 | <b>Play Successes:</b><br>Number of announcement requests processed successfully.                                                                    |
|                                   | acPerfIvrPlayFailedDueToLackOfResources | <b>Play Failures Due to Lack of Resources:</b><br>Number of announcement requests which failed to be played because some resource was not available. |
|                                   | acPerfIvrPlayFailedDueToLackOfResources | <b>Play In Progress:</b><br>The number of announcement operations that are currently in progress.                                                    |

**AMS IVR, BCT, CONF, and IT PMs**

| OM Group or PM Name | Name                                                | Description                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | acPerflvrPlayDuration                               | <b>Play Duration:</b><br>The duration, in seconds, of all successful announcement requests. The average duration of all requests (average hold time) can be computed by dividing acPerfPlayDuration by acPerfPlaySuccessful.                                                                                                                                                                                    |
|                     | acPerflvrPlayFailedDueToProvMismatch                | <b>Play Failed Due to Provisioning Mismatch:</b><br>Number of audio segments which failed to be played because of a provisioning mismatch.                                                                                                                                                                                                                                                                      |
|                     | acPerflvrPlayCollectRequests                        | <b>Play Collect Requests:</b><br>The number of play collect requests.                                                                                                                                                                                                                                                                                                                                           |
|                     | acPerflvrPlayCollectSuccessful                      | <b>Play Collect Successful:</b><br>Number of play collects completed successfully. A request is considered successful if the entire sequence, from initial prompt to success/failure prompt, is played out without a failure due to lack of resources, provisioning mismatch, or any other media server failure. The failure of the user to enter the proper digits is not a reason for failure of the request. |
|                     | acPerflvrPlayCollectFailedDueToLackOfResources      | <b>Play Collect Failure due to Lack of Resources:</b><br>The number of play collect requests that failed due to lack of resources.                                                                                                                                                                                                                                                                              |
|                     | acPerflvrPlayCollectFailedDueToProvMismatch         | <b>Play Collect Failed Due to Provisioning Mismatches:</b><br>The number of play collect requests that failed due a provisioning mismatch.                                                                                                                                                                                                                                                                      |
|                     | acPerflvrPlayCollectInProgress                      | <b>Play Collect In Progress:</b><br>The number of play collect operations that are currently in progress.                                                                                                                                                                                                                                                                                                       |
|                     | acPerflvrPlayCollectDuration                        | <b>Play Collect Duration in Seconds:</b><br>The duration, in seconds, of all successful play collect requests. The average duration of all requests can be computed by dividing acPlayCollectDuration by acPlayCollectSuccessful.                                                                                                                                                                               |
|                     | acPerflvrContDigitCollectRequests                   | <b>Number of Continuous Digit Collection Requests:</b><br>The number of continuous digit collect requests.                                                                                                                                                                                                                                                                                                      |
|                     | acPerflvrContDigitCollectSuccessful                 | <b>Number of Continuous Digit Collect Requests Successful:</b><br>Number of continuous digit collects completed successfully.                                                                                                                                                                                                                                                                                   |
|                     | acPerflvrContDigitCollectFailedDueToLackOfResources | <b>Number of Continuous Digit Collection request failed (no resources):</b><br>The number of continuous digit collect requests that failed due to lack of resources.                                                                                                                                                                                                                                            |
|                     | acPerflvrContDigitCollectInProgress                 | <b>In Progress Continuous Digit Collection requests:</b><br>The number of continuous digit collect operations that are currently in progress.                                                                                                                                                                                                                                                                   |

**AMS IVR, BCT, CONF, and IT PMs**

| OM Group or PM Name | Name                                 | Description                                                                                                                                                                                                                                           |
|---------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | acPerflvrContDigitCollectDuration    | <b>Successful Continuous Digit Collect Requests:</b><br>The duration, in seconds, of all successful continuous digit collect requests. The average duration of all requests can be computed by dividing acDCCollectDuration by acDCCollectSuccessful. |
|                     | acPerfBctRequests                    | <b>Total BCT Requests:</b><br>The total number of BCT contexts opened since the media server initialized.                                                                                                                                             |
|                     | acPerfBctSuccessful                  | <b>Successful BCT requests:</b><br>Number of BCT requests processed successfully.                                                                                                                                                                     |
|                     | acPerfBctFailedDueToLackOfResources  | <b>Failed BCT requests:</b><br>Number of BCT requests which failed to be played because a resource was not available.                                                                                                                                 |
|                     | acPerfBctInProgress                  | <b>In progress BCT requests:</b><br>The number of BCT calls that are currently in progress.                                                                                                                                                           |
|                     | acPerfBctDuration                    | <b>Duration of BCT contexts:</b><br>The duration, in seconds, of all successful BCT contexts. The average duration of all contexts can be computed by dividing acPerfBCTDuration by acPerfBCTSuccessful.                                              |
|                     | cPerfBctTotalParticipants            | <b>Total of BCT participants:</b><br>The total number of BCT participants since the media server initialized.                                                                                                                                         |
|                     | acPerfBctCurrentNumberOfParticipants | <b>In progress BCT participants:</b><br>The number of participants in all BCT calls that are currently in progress.                                                                                                                                   |
|                     | acPerfConfRequests                   | <b>Total number of conferences processed:</b><br>The total number of conferences processed since the last application restart. This is the number of conferences created and not the number of members.                                               |
|                     | acPerfConfSuccessful                 | <b>Successful Conferences:</b><br>Number of conference requests processed successfully.                                                                                                                                                               |
|                     | acPerfConfInProgress                 | <b>In-progress Conferences:</b><br>The number of conferences currently in progress.                                                                                                                                                                   |
|                     | acPerfConfDuration                   | <b>Conference Duration:</b><br>The duration, in seconds, of all successful conference requests. The average duration of all requests can be computed by dividing acPerfConfDuration by acPerfConfSuccessful.                                          |
|                     | acPerfConfFailedDueToLackOfResources | <b>Conference Failures due to lack of resources:</b><br>The number of times a conference request was rejected due to lack of resources since the last application restart.                                                                            |

**AMS IVR, BCT, CONF, and IT PMs**

| OM Group or PM Name | Name                                    | Description                                                                                                                                                                                                                                                                                    |
|---------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | acPerfConfAddRequests                   | <b>Requests to add a conferee:</b><br>The number of requests to add a conferee to an existing conference.                                                                                                                                                                                      |
|                     | acPerfConfAddSuccessful                 | <b>Conferee adds successful:</b><br>The number of times a conferee was added successful to an existing conference.                                                                                                                                                                             |
|                     | acPerfConfAddFailedDueToLackOfResources | <b>Conferee Add Failures due to lack of resources:</b><br>The number of times a conferee could not be added to an existing conference due to a lack of resources.                                                                                                                              |
|                     | acPerfConfPlays                         | <b>Plays into Conference:</b><br>The total number of plays made into conferences since the last application restart.                                                                                                                                                                           |
|                     | acPerfConfPlayCollects                  | <b>Play Collects in Conference:</b><br>The total number of play collects made into conferences since the last application restart.                                                                                                                                                             |
|                     | acPerfConfTones                         | <b>Play Tones into conference:</b><br>The total number of Tones played into conferences since the last application restart.                                                                                                                                                                    |
|                     | acPerfConfPortsUsed                     | <b>Conference Ports Reserved:</b><br>The total number of ports that were reserved for conferences since the last application restart.                                                                                                                                                          |
|                     | acPerfConfPortsReserved                 | <b>Conference Port Reserved for monitor:</b><br>A monitor port may be reserved by the call agent when setting up a conference. The monitor port can then be used by one or more listen-only conferees.                                                                                         |
|                     | acPerfTtRequests                        | <b>Test Trunk Test Requests:</b><br>The number of test trunk tests requested.                                                                                                                                                                                                                  |
|                     | acPerfTtSuccessful                      | <b>Test Trunk Test Request Successes:</b><br>The number of test trunk tests that were successfully setup and torn down. This PM is not a reflection on whether the test actually passed or failed.                                                                                             |
|                     | acPerfTtInProgress                      | <b>In-Progress Test Trunk Tests:</b><br>The number of test trunk tests that are currently in progress                                                                                                                                                                                          |
|                     | acPerfTtDuration                        | <b>Test Trunk Test Duration:</b><br>The duration, in seconds, of all successful test trunk requests. This number is the time between a test trunk test being initiated and completed. The average duration of all requests can be computed by dividing acPerfTtDuration by acPerfTtSuccessful. |
|                     | acPerfTtFailedDueToLackOfResources      | <b>Test Trunk failures due to lack of resources:</b><br>The number of times a test trunk request was rejected due to lack of resources since the last application restart.                                                                                                                     |

## **Ethernet Routing Switch 8600 (formerly Passport 8600) PMs**

ERS8600 Performance Measurement data files are stored in predetermined paths on the IEMS server. For SN08+, IEMS polls (via SNMP) the PM data and converts the data into XML or CSV format.

MIB input data files are found at: /opt/nortel/iems/current/mibs. The OM CSV output data files are in: /data/oms.

The /data/oms directory will contain 7 sub-directories (named 1-7). Each of these sub-directories contains a day's collection of CSV output files. The current day's output file are always written in subdirectory '1'. File rotation occurs just prior to midnight every 24 hour period. When rotation occurs, sub-directory '7' contents are removed and then sub-directories 1-6 are moved up a directory.

For information on performance measurements (PMs) available for the Media Gateway 15000 (previously PVG) network element, refer to Appendix G in this document, *Ethernet Routing Switch 8600 Trap List*.

## **GWC Performance Measurements**

GWC Performance Measurement data files are stored in predetermined paths on the IEMS server. For SN08+, IEMS polls (via SNMP) the PM data and converts the data into XML or CSV format. The GWC uses 4 MIBs: GWC-UNIT-STATUS-MIB, GWC-DPT-SERVICES-PM-MIB, RFC1213-MIB, and HOST-RESOURCES-MIB (RFC2790).

MIB input data files are found at: /opt/nortel/iems/current/mibs. The OM CSV output data files are in: /data/oms.

The /data/oms directory will contain 7 sub-directories (named 1-7). Each of these sub-directories contains a day's collection of CSV output files. The current day's output file are always written in subdirectory '1'. File rotation occurs just prior to midnight every 24 hour period. When rotation occurs, sub-directory '7' contents are removed and then sub-directories 1-6 are moved up a directory.

Performance Measurements for the Gateway Controller are available through the Integrated EMS. For more detailed information, refer to

NN10208-711, Gateway Controller Performance Management. The following table lists the GWC performance measurements.

### GWC Performance Measurements

| OIDs                                                                                                                                         | Description                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The GWC supports collection of a subset of several MIBs. The following table entries show the OIDs that are collected in various categories. |                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Host-Resources-MIB</b>                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                     |
| host(25).hrSystem(1)                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                     |
| 25.1.hrSystemUptime(1)                                                                                                                       | System Uptime (distinct from sysUpTime)                                                                                                                                                                                                                                                                                                                             |
| 25.1.hrSystemDate(2)                                                                                                                         | System local DateAndTime                                                                                                                                                                                                                                                                                                                                            |
| 25.1.hrSystemInitialLoadParameters(4)                                                                                                        | Load path/parameters used                                                                                                                                                                                                                                                                                                                                           |
| 25.1.hrSystemNumUsers(5)                                                                                                                     | Current number of "user sessions"                                                                                                                                                                                                                                                                                                                                   |
| 25.1.hrSystemProcesses(6)                                                                                                                    | Number of tasks                                                                                                                                                                                                                                                                                                                                                     |
| 25.1.hrSystemMaxProcesses(7)                                                                                                                 | Maximum number of tasks                                                                                                                                                                                                                                                                                                                                             |
| host(25).hrStorage(2)                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                     |
| 25.2.hrMemorySize(2)                                                                                                                         | Main memory DRAM size (KBytes)                                                                                                                                                                                                                                                                                                                                      |
| 25.2.hr.StorageTable(3)                                                                                                                      | Table describing storage and resource areas, including for each: Type, Description, AllocationUnits, Size, Used, and AllocationFailures.<br>An entry in this table is planned for each of the resources currently registered in the Base Resource Monitor:<br>- System Heap<br>- VRTX Workspace<br>- Segment Descriptors<br>- IPC Buffers<br>- Ethernet DCU Buffers |
| host(25).hrDevice(3)                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                     |
| 25.3.hrDeviceTable(2)                                                                                                                        | Table of hardware devices contained in host, including for each: Type, Description, "ID", Status, and Error counts.<br>An entry is planned in this table for each of the devices listed on the PCI bus, plus the CPU.                                                                                                                                               |
| 25.3.hrProcessorTable(3)                                                                                                                     | Table of info on processors for this host, including a FirmwareID and CPU-Load (1min).<br>There will be an entry for each processor in the hrDeviceTable (just 1 for now).                                                                                                                                                                                          |
| 25.hrSWRun(4)                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                     |

**GWC Performance Measurements**

| <b>OIDs</b>                | <b>Description</b>                                                                                                                                                       |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25.4.hrSWOSIndex(1)        | Index of the entry in the following table for the OS.                                                                                                                    |
| 25.4.hrSWRunTable(2)       | Table of software running on the host, and for each host, a Name, ProductID, Run Path and Parameters, Type, and Status. Status is implemented as READ-ONLY.              |
| 25.hrSWRunPerf(5)          |                                                                                                                                                                          |
| 25.5.hrSWRunPerfTable(1)   | Table of performance data for software in the hrSWRun table, which includes for each task the CPU and memory usage CPU and memory usage for each task that is available. |
| <b>RFC1213-MIB</b>         |                                                                                                                                                                          |
| sysDescr                   |                                                                                                                                                                          |
| snmpInPkts                 |                                                                                                                                                                          |
| snmpOutPkts                |                                                                                                                                                                          |
| snmpInBadVersions          |                                                                                                                                                                          |
| snmpInBadCommunityNames    |                                                                                                                                                                          |
| snmpInBadCommunityUses     |                                                                                                                                                                          |
| snmpInASNParseErrs         |                                                                                                                                                                          |
| snmpInTotalReqVars         |                                                                                                                                                                          |
| snmpInTotalSetVars         |                                                                                                                                                                          |
| snmpOutTraps               |                                                                                                                                                                          |
| snmpSilentDrops            |                                                                                                                                                                          |
| <b>Unit Status-MIB</b>     |                                                                                                                                                                          |
| norUnitAdminStatus         |                                                                                                                                                                          |
| norUnitOperStatus          |                                                                                                                                                                          |
| norUnitActivity            |                                                                                                                                                                          |
| <b>DPT Services PM-MIB</b> |                                                                                                                                                                          |
| dptCallAttempts            |                                                                                                                                                                          |
| dptCallFailResTimeout      |                                                                                                                                                                          |
| dptCallFailResError        |                                                                                                                                                                          |
| dptCallFailAccOOS          |                                                                                                                                                                          |
| accState                   |                                                                                                                                                                          |
| apgInsertions              |                                                                                                                                                                          |
| maxSimulApgCalls           |                                                                                                                                                                          |

**GWC Performance Measurements**

| <b>OIDs</b>            | <b>Description</b> |
|------------------------|--------------------|
| apgCallFailGWException |                    |
| apgCallFailGWLost      |                    |
| raState                |                    |
| totalResourceCapacity  |                    |
| resourceRequestError   |                    |



**GWC Performance Measurements**

| OIDs                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GWC Performance Statistics | <p>The following are reported through the GWC Performance MIB:</p> <ul style="list-style-type: none"><li>• Small GWs in Disabled State</li><li>• Large GWs in Disabled State</li><li>• Trunk GWs in Disabled State</li><li>• Audio GWs in Disabled State</li><li>• Total Gateways Provisioned</li><li>• DNS failed GW discovery</li><li>• DNS good GW discovery</li><li>• RSIP used in GW discovery</li><li>• Total DNS GWs to discover</li><li>• USP SS7 paths disabled</li><li>• USP SS7 path not Active</li><li>• Peer connections failed during interval</li><li>• Peer connections completed during interval</li><li>• Peer connections attempted during interval</li></ul> |

**GWC Performance Measurements**

| OIDs            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Media Proxy OMs | <p>The following are reported through the GWC Performance MIB:</p> <ul style="list-style-type: none"> <li>• Number of provisioned Media Proxies counts the number of currently provisioned media proxies on the GWC each 5-minute period.</li> <li>• Media Proxy 5 minute successful calls counts the number of calls that were successfully setup using this Media Proxy on this GWC in the last 5 minute OM period.</li> <li>• Media Proxy 30 minute successful calls counts the number of calls that were successfully setup using this Media Proxy on this GWC in the last 30 minute period.</li> <li>• Media Proxy 5 minute failed calls counts the number of failed attempts to setup a call using this Media Proxy on this GWC in the last 5 minute OM period.</li> <li>• Media Proxy 30 minute failed calls counts the number of failed attempts to setup a call using this Media Proxy on this GWC in the last 30 minute period.</li> <li>• GWC 5 minute successful calls counts the number of calls that were successfully setup using any available Media Proxy on this GWC in the last 5 minute OM period.</li> <li>• GWC 30 minute successful calls counts the number of calls that were successfully setup using any available Media Proxy on this GWC in the last 30 minute period.</li> <li>• GWC 5 minute failed calls counts the number of failed attempts to setup a call on any available Media Proxy on this GWC in the last 5 minute OM period.</li> <li>• GWC 30 minute failed calls counts the number of failed attempts to setup a call on any available Media Proxy on this GWC in the last 30 minute period.</li> </ul> |

**IEMS Performance Measurements**

The following table lists the performance measurements (PMs) collected by the Integrated Element Management System.

| Collection Attribute Name    | Description             |
|------------------------------|-------------------------|
| <b>Network Element: IEMS</b> |                         |
| database                     | usedTableSpaceInBytes   |
|                              | usedTableSpaceInPercent |

| Collection Attribute Name                      | Description                                                                                                           |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| fault/events                                   | numOfTableCleanUpPolicyExecutions                                                                                     |
|                                                | numOfEvents                                                                                                           |
|                                                | numOfEventsFromUnknownCustlogDevices                                                                                  |
|                                                | numOfEventsFromUnknownDevices                                                                                         |
|                                                | numOfDiscardedEvents                                                                                                  |
|                                                | numOfEventsAdded                                                                                                      |
|                                                | eventQueueSize                                                                                                        |
|                                                | avgEventThroughputRate                                                                                                |
|                                                | maxEventThroughputRate                                                                                                |
|                                                | DeviceEventRateTable<br>This table will have the following columns:<br>- ID<br>- DeviceName<br>- EventRate per Second |
| fault/alarms                                   | numOfActiveAlarms                                                                                                     |
|                                                | numOfCriticalAlarms                                                                                                   |
|                                                | numOfMajorAlarms                                                                                                      |
|                                                | numOfMinorAlarms                                                                                                      |
|                                                | numOfWarningAlarms                                                                                                    |
|                                                | numOfAlarmsCleared                                                                                                    |
|                                                | numOfAlarmsAdded                                                                                                      |
| performance                                    | numOfCollectionJobsProvisioned                                                                                        |
|                                                | numOfReportJobsProvisioned                                                                                            |
|                                                | numOfFailedReportJobs                                                                                                 |
|                                                | numOfTransferJobProvisioned                                                                                           |
|                                                | numOfAttributesCollected                                                                                              |
|                                                | numOfAttributesCollectedOverPreviousInterval                                                                          |
|                                                | numOf5MinSuccessfulJobs                                                                                               |
|                                                | numOf15MinSuccessfulJobs                                                                                              |
|                                                | numOf30MinSuccessfulJobs                                                                                              |
|                                                | numOf60MinSuccessfulJobs                                                                                              |
| performance/Successful Collection Jobs         | numOf12HrSuccessfulJobs                                                                                               |
|                                                | numOf24HrSuccessfulJobs                                                                                               |
|                                                | numOf5MinPartialSuccessfulJobs                                                                                        |
|                                                | numOf15MinPartialSuccessfulJobs                                                                                       |
|                                                | numOf30MinPartialSuccessfulJobs                                                                                       |
|                                                | numOf60MinPartialSuccessfulJobs                                                                                       |
|                                                | numOf12HrPartialSuccessfulJobs                                                                                        |
| performance/Partial Successful Collection Jobs | numOf24HrPartialSuccessfulJobs                                                                                        |

| Collection Attribute Name          | Description                                |
|------------------------------------|--------------------------------------------|
| performance/Failed Collection Jobs | numOf5MinFailedJobs                        |
|                                    | numOf15MinFailedJobs                       |
|                                    | numOf30MinFailedJobs                       |
|                                    | numOf60MinFailedJobs                       |
|                                    | numOf12HrFailedJobs                        |
|                                    | numOf24HrFailedJobs                        |
| performance/Collection Job Table   | 5MinCollectionJobTable                     |
|                                    | This table will have the following columns |
|                                    | - ID                                       |
|                                    | - JobName                                  |
|                                    | - Start Time                               |
|                                    | - Execution Time                           |
| performance/report Job Table       | 15MinCollectionJobTable                    |
|                                    | 30MinCollectionJobTable                    |
|                                    | 60MinCollectionJobTable                    |
|                                    | 5MinReportJobTable                         |
|                                    | 15MinReportJobTable                        |
|                                    | 30MinReportJobTable                        |
| performance/failedTransfer Jobs    | 60MinReportJobTable                        |
|                                    | numOf5MinFailedJobs                        |
|                                    | numOf15MinFailedJobs                       |
|                                    | numOf30MinFailedJobs                       |
|                                    | numOf60MinFailedJobs                       |
|                                    | numOf12HrFailedJobs                        |
| performance/transfer Job Table     | numOf24HrFailedJobs                        |
|                                    | 5MinTransferJobTable                       |
|                                    | 15MinTransferJobTable                      |
|                                    | 30MinTransferJobTable                      |
|                                    | 60MinTransferJobTable                      |
|                                    | 30MinReportJobTable                        |
| topology                           | 60MinReportJobTable                        |
|                                    | numOfManagedObjects                        |
|                                    | numOfAddedManagedObjects                   |
|                                    | numOfDeletedManagedObjects                 |
|                                    | numOfThrottledDevices                      |
|                                    | numOfUnManagedDevices                      |
| client                             | numOfUnknownDevices                        |
|                                    | numOfActiveClients                         |
|                                    | numOfSuccessfulLogins                      |

| Collection         | Attribute Name                         | Description |
|--------------------|----------------------------------------|-------------|
| application memory | numOfFailedLoginAttempts               |             |
|                    | applicationHeapSize                    |             |
|                    | maxApplicationHeapSizeInAGivenInterval |             |
| system             | systemRestartCount                     |             |

## MCS, RTP Media Portal, and MAS Performance Measurements

For information on performance measurements (PMs) available for these network elements, refer to the following documents:

- NN10384-700, *MCS 5200 Performance Management*
- NN10367-111, *CVoIP RTP Media Portal Basics*
- NN10303-111, *MAS Meetme Basics*

## MG 9000 Performance Measurements

MG9K Performance Measurement data files are stored in predetermined paths on the IEMS server. For SN08+, IEMS polls (via SNMP) the PM data and converts the data into XML or CSV format.

MIB input data files are found at: /opt/nortel/iems/current/mibs. The OM CSV output data files are in: /data/oms.

The /data/oms directory will contain 7 sub-directories (named 1-7). Each of these sub-directories contains a day's collection of CSV output files. The current day's output file are always written in subdirectory '1'. File rotation occurs just prior to midnight every 24 hour period. When rotation occurs, sub-directory '7' contents are removed and then sub-directories 1-6 are moved up a directory.

Performance Measurements for the MG 9000 are available through the Integrated EMS. For more information on MG9000 PMs, refer to NN10140-711, *MG 9000 Performance Management* and Appendix B of this document, *MG 9000 MIB OMs/PMs*. That appendix, together with the following table, list the MG 9000 performance measurements.

### MG 9000 Performance Measurements

| OM Group or PM Name             | Registers                             | Description |
|---------------------------------|---------------------------------------|-------------|
| <b>Network Element: MG 9000</b> |                                       |             |
| <b>Ethernet OMs</b>             |                                       |             |
|                                 | Number of Alignment Errors            |             |
|                                 | Number of FCS Errors                  |             |
|                                 | Number of Internal MAC Receive Errors |             |

**MG 9000 Performance Measurements**

| OM Group or PM Name            | Registers                                                                                        | Description                                                                                                           |
|--------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                                | Number of Frame Too Longs                                                                        |                                                                                                                       |
|                                | Number of Internal MAC TX Errors                                                                 |                                                                                                                       |
|                                | Number of Symbol Errors                                                                          |                                                                                                                       |
|                                | Number of Inpause Frames                                                                         |                                                                                                                       |
|                                | Number of Outpause Frames                                                                        |                                                                                                                       |
|                                | Number of Drop Events                                                                            |                                                                                                                       |
|                                | Number of Broadcast Packets                                                                      |                                                                                                                       |
|                                | Number of Multicast Packets                                                                      |                                                                                                                       |
|                                | Number of CRC Alignment Errors                                                                   |                                                                                                                       |
|                                | Number of Undersize Packets                                                                      |                                                                                                                       |
|                                | Number of Oversize Packets                                                                       |                                                                                                                       |
|                                | Number of Fragments                                                                              |                                                                                                                       |
|                                | Number of Jabbers                                                                                |                                                                                                                       |
|                                | Number of Collisions                                                                             |                                                                                                                       |
| <b>GWOVL</b>                   | This OM group will be incremented for every call connection request that is denied.              |                                                                                                                       |
|                                | OVERLOAD                                                                                         | This register is incremented when a Media Gateway 9000 reaches an overload threshold and call connections are denied. |
| <b>MG9K</b>                    | Performance Statistics                                                                           |                                                                                                                       |
|                                | Errored Seconds                                                                                  |                                                                                                                       |
|                                | Severely Errored Seconds                                                                         |                                                                                                                       |
|                                | Unavailable Seconds                                                                              |                                                                                                                       |
|                                | Optical Power Transmit                                                                           |                                                                                                                       |
|                                | Optical Power Receive                                                                            |                                                                                                                       |
|                                | Transmit Bias Current                                                                            |                                                                                                                       |
|                                | Temperature                                                                                      |                                                                                                                       |
|                                | Voltage                                                                                          |                                                                                                                       |
| <b>MG9K GIGE OM Statistics</b> | MG9K EM performance strategy where the data is collected in 15 or 5/30 minutes for 96 intervals. |                                                                                                                       |
|                                | Errored Seconds                                                                                  | Counter for Errored Seconds                                                                                           |
|                                | Severely Errored Seconds                                                                         | Counter for Severely Errored Seconds                                                                                  |
|                                | Unavailable Seconds                                                                              | Counter for Unavailable Seconds                                                                                       |
|                                | Optical Power Transmit                                                                           | Optical Power Transmit                                                                                                |
|                                | Optical Power Receive                                                                            | Counter for Optical Power Receive                                                                                     |
|                                | Transmit Bias Current                                                                            | Counter for Transmit Bias Current                                                                                     |

**MG 9000 Performance Measurements**

| OM Group or PM Name                     | Registers                          | Description                                                               |
|-----------------------------------------|------------------------------------|---------------------------------------------------------------------------|
|                                         | Temperature                        | Counter for Temperature                                                   |
| <b>RMON Performance Measurements</b>    |                                    |                                                                           |
|                                         | Drop Events                        | The current data associated with etherStatsDropEvents.                    |
|                                         | Broadcast Packets                  | The counter data associated with etherStatsBroadcastPkts.                 |
|                                         | Multicast Packets                  | The counter associated with etherStatsMulticastPkts.                      |
|                                         | CRC Alignment Errors               | The counter associated with etherStatsCRCAlignErrors.                     |
|                                         | Undersize Packets                  | The counter associated with etherStatsUndersizePkts.                      |
|                                         | Oversize Packets                   | The counter associated with etherStatsOversizePkts.                       |
|                                         | Fragments                          | The counter associated with etherStatsFragments.                          |
|                                         | Jabbers                            | The counter associated with etherStatsJabbers.                            |
|                                         | Collisions                         | The counter associated with etherStatsCollisions.                         |
| <b>RMON HC Performance Measurements</b> |                                    |                                                                           |
|                                         | HC overflow packets                | The counter associated with HC Overflow Packets.                          |
|                                         | Packets received                   | The counter associated with number of packets received.                   |
|                                         | Overflow octets                    | The counter associated with HC number of Overflow octets.                 |
|                                         | Octets of data received            | The counter associated with number of octets of data received.            |
|                                         | Total HC Octets                    | The counter associated with Total Number of HC Octets.                    |
|                                         | Total non unicast packets          | The counter associated with Total number of non unicast packets.          |
|                                         | Total non unicast HC octets        | The counter associated with Total number of non unicast HC octets.        |
|                                         | Total non unicast octets           | The counter associated with Total number of non unicast octets.           |
|                                         | Total non unicast over flow octets | The counter associated with Total number of non unicast over flow octets. |
|                                         | Total non unicast HC octets        | The counter associated with Total number of non unicast HC octets.        |
| <b>SMON MIB table</b>                   |                                    |                                                                           |
|                                         | smonVlanIdStatsTotal Pkts          | Total incoming packets.                                                   |
|                                         | smonVlanIdStatsTotal HCPkts        | Total outgoing packets.                                                   |
|                                         | smonVlanIdStatsTotal Octets        | Total incoming octets.                                                    |
|                                         | smonVlanIdStatsTotal HCOctets      | Total outgoing octets.                                                    |
| <b>SMON Performance Measurements</b>    |                                    |                                                                           |

**MG 9000 Performance Measurements**

| OM Group or PM Name     | Registers                          | Description                                                               |
|-------------------------|------------------------------------|---------------------------------------------------------------------------|
|                         | VLAN ID                            | The VLAN ID.                                                              |
|                         | Total Packets                      | The counter associated with Total number Packets.                         |
|                         | Total HC Packets                   | The counter associated with Total Number of HC Packets.                   |
|                         | Create time                        | The Create time.                                                          |
|                         | Total Octets                       | The counter associated with Total Number of Octets.                       |
|                         | Total HC octets                    | Displays the total number of HC octets.                                   |
|                         | Total overflow packets             | Displays the total number of overflow packets.                            |
|                         | Total overflow octets              | Displays the total number of overflow octets.                             |
|                         | Total non unicast packets          | The counter associated with Total number of non unicast packets.          |
|                         | Total non unicast HC octets        | The counter associated with Total number of non unicast HC octets.        |
|                         | Total non unicast octets           | The counter associated with Total number of non unicast octets.           |
|                         | Total non unicast over flow octets | The counter associated with Total number of non unicast over flow octets. |
|                         | Total non unicast HC octets        | The counter associated with Total number of non unicast HC octets.        |
| <b>SMON Performance</b> |                                    |                                                                           |
|                         | smonVlanIdStatsTotalPkts           | - total incoming packets                                                  |
|                         | smonVlanIdStatsTotalHCPkts         | - total outgoing packets                                                  |
|                         | smonVlanIdStatsTotalOctets         | - total incoming octets                                                   |
|                         | smonVlanIdStatsTotalHCOctets       | - total outgoing octets                                                   |

## Media Gateway 15000 OMs/PMs and Passport 15000/Multiservice Switch OMs/PMs

**Note:** For SN08, the terms Packet Voice Gateway (PVG) and Passport 15000 have been rebranded as part of Nortel Networks' brand simplified naming format. The PVG is now referred to as Nortel Networks Media Gateway 15000. The Passport 15000 is now referred to as the Nortel Networks Multiservice Switch 15000.

For details on Media Gateway 15000 and Multiservice Switch 15000 performance measurements, refer to NTP NN10158-711, *MSS 15000, MG 15000 & MDM Performance*.



In SN08, the 5- and 30-minute performance measurements (PMs) now provide Internet protocol (IP) statistics. The IP statistics are available at a physical interface level. You can use IP statistics for operational monitoring and for network planning and engineering. Also, you can obtain performance information from IP statistics, such as link bandwidth utilization, voice call volumes, and error conditions. These are key for monitoring the network using PMs. Within the Multiservice Switch, performance measurements (PMs) are referred to as network traffic management (NTM) statistics.

IP interface statistics apply to all physical interfaces on Nortel Networks Multiservice Switch 15000 nodes that process layer 3 IP. This includes ports on the Ethernet-based Gigabit Ethernet (GE) function processors (FPs), the control processor (CP) operations, administration, and maintenance (OAM) Ethernet port, and the asynchronous transfer mode (ATM)-based OC-3, OC-12 and DS3 ports. PMs for these nodes now include an expanded range of values.

### Statistics collection and data flow

The data collection system (DCS) on the node collects NTM statistics from the control and function processors, and ATM and IP interfaces, at 5-minute intervals. To collect the statistics, the DCS uses a real-time statistics stream (rtstats). Each node forwards these records to Nortel Networks Multiservice Data Manager (MDM) servers.

On Nortel Networks Multiservice Data Manager (MDM) servers, the Performance Measurements Stream Processor (PMSP) server application manages performance. NTM statistics originating from node processors flow to the PMSP server application. The PMSP server application converts the statistics into ASCII comma separated value (CSV) formatted 5-minute records. It also creates 30-minute data records by aggregating six 5-minute data records. These are referred to as 5-minute and 30-minute performance measurements (PMs).

The MDM servers transfer the NTM data directly to the OSS applications, or to the CS2000 Core Manager running on the SDM, depending on the network configuration.

### Accessing files through the SDM or MDM

**Note:** Access via SDM is not generally available for Media Gateway 15000 (previously PVG) performance measurements.

NTM statistics data can be configured to be obtained from the SuperNode Data Manager (SDM). The PM file follows the file naming conventions of the Operational Measurement Delivery (OMD) application. The format of the file name is:

```
<name>.<date>.<time>.PP.<type>.CSV
```

The collected NTM statistics files are stored in the /omdata/closedNotSent directory. They are now available to the OSS application. The OSS application retrieves the files and moves them to the /omdata/closedSent directory. Upon the transfer of the files, the OMD automatically sets the retention period for the files. The retention period for a file can be configured using the OMUI. It can range from one to fourteen days.

When NTM statistics data is configured to be obtained from Nortel Networks Multiservice Data Manager (MDM) servers, the name of the file is similar to that used by SDM. However, the Host Group Directory Server (HGDS) group name or shelf name indicating the source of the NTM statistics data replaces the “PP” string found after the time stamp in the SDM file name. The format for the file name appears below.

```
<name>.<date>.<time>.<HGDS group or shelf name>.<type>.CSV
```

### PMs for Media Gateway 15000

For information on performance measurements (PMs) available for the Media Gateway 15000 (previously PVG) network element, refer to NN10158-711, *MSS 15000, MG 15000 & MDM Performance*.

### PNM OMs/PMs

The following table lists the performance measurements (PMs) available for PNM.

| OM group or PM name         | Description                     |
|-----------------------------|---------------------------------|
| <b>Network Element: PNM</b> |                                 |
|                             | nnPmOvldRscDccInterval          |
|                             | nnPmOvldRscDccIntervPduRatePeak |
|                             | nnPmOvldRscDccIntervPduRateAvg  |
|                             | nnPmOvldRscDccIntervCbvMsgRPeak |
|                             | nnPmOvldRscDccIntervCbvMsgRAvg  |
|                             | nnPmOvldRscDccIntervConQDelPeak |
|                             | nnPmOvldRscDccIntervConQDelAvg  |
|                             | nnPmOvldRscDccIntervCpuUtilPeak |
|                             | nnPmOvldRscDccIntervCpuUtilAvg. |
|                             | nnPmOvldConnDenyInterval        |
|                             | nnPmOvldConnDenyIntervCount     |

### MS 2000 Series Node OMs/PMs

MS 2000 Series Node Performance Measurement data files are stored in predetermined paths on the IEMS server. For SN08+, IEMS polls (via SNMP) the PM data and converts the data into XML or CSV format.

MIB input data files are found at: /opt/nortel/iems/current/mibs. The OM CSV output data files are in: /data/oms.

The /data/oms directory will contain 7 sub-directories (named 1-7). Each of these sub-directories contains a day's collection of CSV output files. The current day's output file are always written in subdirectory '1'. File rotation occurs just prior to midnight every 24 hour period. When rotation occurs, sub-directory '7' contents are removed and then sub-directories 1-6 are moved up a directory.

Refer to NN10320-100, *ATM Solutions Basics*.

### **NGSS-Trunks OMs/PMs**

NGSS-Trunks Performance Measurement data files are stored in predetermined paths on the IEMS server. For SN08+, IEMS polls (via SNMP) the PM data and converts the data into XML or CSV format.

MIB input data files are found at: /opt/nortel/iems/current/mibs. The OM CSV output data files are in: /data/oms.

The /data/oms directory will contain 7 sub-directories (named 1-7). Each of these sub-directories contains a day's collection of CSV output files. The current day's output file are always written in subdirectory '1'. File rotation occurs just prior to midnight every 24 hour period. When rotation occurs, sub-directory '7' contents are removed and then sub-directories 1-6 are moved up a directory.

For details, refer to NN10342-711, *Session Server Performance Management*.

### **Session Server Manager OMs/PMs**

Refer to NN10342-711, *Session Server Manager Performance Management*.

### **SAM21 OMs/PMs**

SAM21 EM performance measurements support CSV format. The following is an example of Performance data for SAM21 Shelf Controller in CSV format:

```
PMFile=Begin
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2005-01-07T14:50:13EST
```

```
System=Begin
SystemId
NortelNetworks/IEMS

Entity=Begin
EntityId,Type
172.16.144.134,SAM21

SingleValues=Begin
MeasurementKind,IntervalDuration
Snapshot,5
MeasureId,CaptureTime,MeasureSuppId1,Value,Reliability
cellDropCount,2005-01-07T14:50:00EST,.iso.org.dod.internet.privat
e.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.ipo
aMIB,0,Valid
oversizedPDUCount,2005-01-07T14:50:00EST,.iso.org.dod.internet.pr
ivate.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging
.ipoaMIB,0,Valid
bytesRxdPerSec,2005-01-07T14:50:00EST,.iso.org.dod.internet.priv
ate.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.i
poaMIB,292,Valid
totalBytesSent,2005-01-07T14:50:00EST,.iso.org.dod.internet.priva
te.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.ip
oaMIB,570458,Valid
totalBytesRxd,2005-01-07T14:50:00EST,.iso.org.dod.internet.priva
te.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.ip
oaMIB,959297,Valid
rxedTimeoutCount,2005-01-07T14:50:00EST,.iso.org.dod.internet.pri
vate.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.
ipoaMIB,0,Valid
bytesSentPerSec,2005-01-07T14:50:00EST,.iso.org.dod.internet.priv
ate.enterprises.nortel.voip.ptn.serviceControl.scu.scuMessaging.i
poaMIB,190,Valid
SingleValues=End

Entity=End

System=End

PMFile=End
```

## SSPFS OMs/PMs

SPFS is the base OAM&P Server application. The following servers use SPFS on N240s: CBM, CMT, IEMS, MG9KEM. SSPFS Performance Measurement data files are stored in predetermined paths on the IEMS server. For SN08+, IEMS polls (via SNMP) the PM data and converts the data into XML or CSV format. The SSPFS Performance reference NTP is NN10150-711.

MIB input data files are found at: /opt/nortel/iems/current/mibs. The OM CSV output data files are in: /data/oms.

The /data/oms directory will contain 7 sub-directories (named 1-7). Each of these sub-directories contains a day's collection of CSV output files. The current day's output file are always written in subdirectory '1'. File rotation occurs just prior to midnight every 24 hour period. When rotation occurs,

sub-directory '7' contents are removed and then sub-directories 1-6 are moved up a directory.

The SPFSSC uses 2 MIBs (RFC1213 and SUN-SNMP). Each MIB will contain the following layout including the MIB name, MIB table, Entry Name, and PM-ID Name, Syntax, and description.

## STORM OMs/PMs

STORM Performance Measurement data files are stored in predetermined paths on the IEMS server. For SN08+, IEMS polls (via SNMP) the PM data and converts the data into XML or CSV format. Refer to NN10054-711, *STORM Performance Management* for more details

MIB input data files are found at: /opt/nortel/iems/current/mibs. The OM CSV output data files are in: /data/oms.

The /data/oms directory will contain 7 sub-directories (named 1-7). Each of these sub-directories contains a day's collection of CSV output files. The current day's output file are always written in subdirectory '1'. File rotation occurs just prior to midnight every 24 hour period. When rotation occurs, sub-directory '7' contents are removed and then sub-directories 1-6 are moved up a directory.

STORM uses two MIBs: RFC1213-MIB, and HOST-RESOURCES-MIB (RFC2790).

## UAS OMs/PMs

The following table lists the operational measurements (OMs) and performance measurements (PMs) available for the UAS network element. UAS supports CSV format.

| OM group or PM name                   | Description                                                                                            |
|---------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Network Element: UAS</b>           |                                                                                                        |
| CRC Count                             | A Minor alarm is raised when the CRC error count threshold is exceeded.                                |
| Plane Msg Count                       | A Minor alarm is raised when the plane message count threshold is exceeded.                            |
| norUasProtocolSyntaxErrors            | Number of syntax errors detected in incoming call control (MGCP, H.248) messages.                      |
| norUasProtocolMessageValidationErrors | Number of times an incoming call control (MGCP, H.248) message had valid syntax, but failed validation |

| OM group or PM name                     | Description                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| norUasUdpSendErrors                     | Number of times there was a failure in sending a call control (MGCP, H.248) message. The message is sent via a datagram using the system's socket library. Normally a failure on a socket send operation would be attributed to an internal system problem.                                                                                                   |
| norUasUdpReceiveErrors                  | Number of times there was a failure in receiving a call control (MGCP, H.248) message. Call control messages are received using the system's socket library. A failure on the socket receive operation can be attributed to an internal system problem or with the call agent sending a message larger than what is supported by the gateway.                 |
| norUasMgcpMessageRetransmissions        | Number of retransmissions of media gateway control protocol messages. Media gateway control protocol is used in here in a generic sense to include both MGCP and H.248                                                                                                                                                                                        |
| norUasMgcpMessageRetransmissionFailures | Number of times a retransmitted media gateway control protocol message was not acknowledged. Media gateway control protocol is used in here in a generic sense to include both MGCP and H.248.                                                                                                                                                                |
| norUasAudioSegmentPlayed                | Number of successful attempts to play audio. For the current number of play attempts, see norUasCurrentNumberOfPlays.                                                                                                                                                                                                                                         |
| norUasAudioSegmentFailed                | <p>Number of failed attempts to play audio. Failures can occur for the following reasons:</p> <ul style="list-style-type: none"> <li>- call agent sent a bad audio segment id</li> <li>- the audio segment is not provisioned</li> <li>- there was an internal program error</li> </ul> <p>Examine the logs to determine the exact nature of the failure.</p> |
| norUasAckfail                           | Number of negative acknowledgements (nacks) received. Nacks can be sent by the call agent in response to RSIP or NTFY messages.                                                                                                                                                                                                                               |
| norUasTimeout                           | Number of times the call engine timed out waiting for an acknowledgement.                                                                                                                                                                                                                                                                                     |
| norUasProterror                         | <p>Number of call control protocol errors detected. Typical reasons for these errors are:</p> <ul style="list-style-type: none"> <li>- duplicate parameter</li> <li>- invalid range of parameter</li> <li>- mandatory parameter missing</li> </ul> <p>Examine the logs to determine the exact nature of the failure.</p>                                      |

| OM group or PM name                     | Description                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| norUasRestart                           | Number of abnormal restarts of one of two critical threads in the call processing process. The two threads are the event state machine thread and the maintenance state machine thread. Examine the logs to determine which thread failed.                                                                                                                                                                       |
| norUasComperror                         | The number of times the call engine failed to build a response to a call agent message. Examine the logs to determine the exact nature of the failure.                                                                                                                                                                                                                                                           |
| norUasConndeleted                       | Number of times that the call engine receives a bad connection id from the call agent. This is normally a result of the call agent sending a message for a connection that has already been deleted.                                                                                                                                                                                                             |
| norUasCallControlMessageSendFailures    | Number of times the call control message maximum retransmission count was exceeded. The UAS attempted several times to send a message to the call agent, but each time, an ack was not received. A failure of this type results in a failed call and is usually an indication that subsequent calls will fail. This problem is typically a result of the call agent being down or a result of a network problem. |
| norUasEndpointsInUse                    | Number of endpoints that the call engine is currently using for all packet network-related functions (conferencing, plays, etc.).                                                                                                                                                                                                                                                                                |
| norUasNumDupsForCompletedTransactions   | The number of times a duplicate transaction request was received after the initial transaction had already been completed. In this case, the gateway resends the response for this transaction.                                                                                                                                                                                                                  |
| norUasNumDupsForOutstandingTransactions | The number of times a duplicate transaction request was received while the initial transaction was outstanding, that is, still in progress. In this case, the gateway ignores the duplicate request.                                                                                                                                                                                                             |
| norUasConfTotal                         | The total number of conferences processed since the last application restart.                                                                                                                                                                                                                                                                                                                                    |
| norUasConfLackOfResourceRejections      | The number of times a conference request was rejected due to lack of resources since the last application restart.                                                                                                                                                                                                                                                                                               |
| norUasConfPlays                         | The total number of plays made into conferences since the last application restart.                                                                                                                                                                                                                                                                                                                              |
| norUasRequestsFailed                    | The number of resource requests for endpoints on this pool that failed.                                                                                                                                                                                                                                                                                                                                          |
| norUasNumberOfPlayRecords               | The total number of play record operations.                                                                                                                                                                                                                                                                                                                                                                      |
| norUasNumberOfPlayRecordErrors          | The total number of failed play record operations.                                                                                                                                                                                                                                                                                                                                                               |

## USP OMs/PMs

### See Appendix D

Refer to Appendix D for a complete list of the operational measurements

(OMs) and performance measurements (PMs) available for the USP network element. You may also refer to NN10137-711, *USP Performance Management* and NN1038-711, *USP-Compact Performance Management*.

USP supports SSV format. For details on this format, refer to the Performance section of the FCAPS documentation on USP, NN10137-711.



## Appendix A: Passport 8600 Performance Metrics

| <u>Performance Metric Identifier</u> | <u>MIB Name</u> | <u>Description</u>                                                                                                                                                                                                                                                                                                                                                                                                                              | <u>Default Succession<br/>IEMS Collection<br/>Interval</u> |
|--------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| <b>RFC1213-MIB</b>                   |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |
| sysDescr                             | RFC1213-MIB     | A textual description of the entity. This value should include the full name and version identification of the system's hardware type, software operating-system, and networking software. It is mandatory that this only contain printable ASCII characters.                                                                                                                                                                                   | Every 30 mins                                              |
| sysObjectID                          | RFC1213-MIB     | The vendor's authoritative identification of the network management subsystem contained in the entity. This value is allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides an easy and unambiguous means for determining 'what kind of box' is being managed. For example, if vendor 'Flintstones, Inc.' was assigned the subtree 1.3.6.1.4.1.4242, it could assign the identifier 1.3.6.1.4.1.4242.1.1 to its 'Fred Router'. | Every 30 mins                                              |
| sysUpTime                            | RFC1213-MIB     | The time (in hundredths of a second) since the network management portion of the system was last re-initialized.                                                                                                                                                                                                                                                                                                                                | Every 30 mins                                              |
| sysName                              | RFC1213-MIB     | An administratively-assigned name for this managed node. By convention, this is the node's fully-qualified domain name.                                                                                                                                                                                                                                                                                                                         | Every 30 mins                                              |
| sysLocation                          | RFC1213-MIB     | The physical location of this node (e.g., 'telephone closet, 3rd floor').                                                                                                                                                                                                                                                                                                                                                                       | Every 30 mins                                              |
| ifInOctets                           | RFC1213-MIB     | The total number of octets received on the interface, including framing characters.                                                                                                                                                                                                                                                                                                                                                             | Every 5 and 30 mins                                        |
| ifInDiscards                         | RFC1213-MIB     | The number of inbound packets which were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol. One possible reason for discarding such a packet could be to free up buffer space.                                                                                                                                                                                       | Every 30 mins                                              |
| ifInErrors                           | RFC1213-MIB     | The number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.                                                                                                                                                                                                                                                                                                                          | Every 30 mins                                              |
| ifOutOctets                          | RFC1213-MIB     | The total number of octets transmitted out of the interface, including framing characters.                                                                                                                                                                                                                                                                                                                                                      | Every 5 and 30 mins                                        |
| ifOutDiscards                        | RFC1213-MIB     | The number of outbound packets which were chosen to be discarded even though no errors had been detected to prevent their being transmitted. One possible reason for discarding such a packet could be to free up buffer space.                                                                                                                                                                                                                 | Every 30 mins                                              |
| ifOutErrors                          | RFC1213-MIB     | The number of outbound packets that could not be transmitted because of errors.                                                                                                                                                                                                                                                                                                                                                                 | Every 30 mins                                              |
| ipInReceives                         | RFC1213-MIB     | The total number of input datagrams received from interfaces, including those received in error.                                                                                                                                                                                                                                                                                                                                                | Every 5 and 30 mins                                        |
| ipInDiscards                         | RFC1213-MIB     | The number of input IP datagrams for which no problems were encountered to prevent their continued processing, but which were discarded (e.g., for lack of buffer space). Note that this counter does not include any datagrams discarded while awaiting re-assembly.                                                                                                                                                                           | Every 30 mins                                              |
| ipOutRequests                        | RFC1213-MIB     | The total number of IP datagrams which local IP user-protocols (including ICMP) supplied to IP in requests for transmission. Note that this counter does not include any datagrams counted in ipForwDatagrams.                                                                                                                                                                                                                                  | Every 5 and 30 mins                                        |
| ipOutDiscards                        | RFC1213-MIB     | The number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded (e.g., for lack of buffer space). Note that this counter would include datagrams counted in ipForwDatagrams if any such packets met this (discretionary) discard criterion.                                                                                                                 | Every 30 mins                                              |
| <b>RFC1271-MIB</b>                   |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |
| etherStatsCRCAlignErrors             | RFC1271-MIB     | The total number of packets received that had a length (excluding framing bits, but including FCS octets) of between 64 and 1518 octets, inclusive, but were not an integral number of octets in length or had a bad Frame Check Sequence (FCS).                                                                                                                                                                                                | Every 30 mins                                              |

| <u>Performance Metric Identifier</u> | <u>MIB Name</u>    | <u>Description</u>                                                                                                                                                                                                                                                   | <u>Default Succession</u>                 |
|--------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
|                                      |                    |                                                                                                                                                                                                                                                                      | <u>IEMS Collection</u><br><u>Interval</u> |
| etherStatsUndersizePkts              | RFC1271-MIB        | The total number of packets received that were less than 64 octets long (excluding framing bits, but including FCS octets) and were otherwise well formed.                                                                                                           | Every 30 mins                             |
| etherStatsOversizePkts               | RFC1271-MIB        | The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.                                                                                                            | Every 30 mins                             |
| etherStatsFragments                  | RFC1271-MIB        | The total number of packets received that were not an integral number of octets in length or that had a bad Frame Check Sequence (FCS), and were less than 64 octets in length (excluding framing bits but including FCS octets).                                    | Every 30 mins                             |
| etherStatsJabbers                    | RFC1271-MIB        | The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets), and were not an integral number of octets in length or had a bad Frame Check Sequence (FCS).                                              | Every 30 mins                             |
| etherStatsCollisions                 | RFC1271-MIB        | The best estimate of the total number of collisions on this Ethernet segment.                                                                                                                                                                                        | Every 30 mins                             |
| etherHistoryCRCAAlignErrors          | RFC1271-MIB        | The number of packets received during this sampling interval that had a length (excluding framing bits but including FCS octets) between 64 and 1518 octets, inclusive, but were not an integral number of octets in length or had a bad Frame Check Sequence (FCS). | Every 30 mins                             |
| etherHistoryUndersizePkts            | RFC1271-MIB        | The number of packets received during this interval that were less than 64 octets long (excluding framing bits but including FCS octets) and were otherwise well formed.                                                                                             | Every 30 mins                             |
| etherHistoryOversizePkts             | RFC1271-MIB        | The number of packets received during this interval that were longer than 1518 octets (excluding framing bits but including FCS octets) but were otherwise well formed.                                                                                              | Every 30 mins                             |
| etherHistoryFragments                | RFC1271-MIB        | The total number of packets received during this sampling interval that were not an integral number of octets in length or that had a bad Frame Check Sequence (FCS), and were less than 64 octets in length (excluding framing bits but including FCS octets).      | Every 30 mins                             |
| etherHistoryJabbers                  | RFC1271-MIB        | The number of packets received during this interval that were longer than 1518 octets (excluding framing bits but including FCS octets), and were not an integral number of octets in length or had a bad Frame Check Sequence (FCS).                                | Every 30 mins                             |
| etherHistoryCollisions               | RFC1271-MIB        | The best estimate of the total number of collisions on this Ethernet segment during this interval.                                                                                                                                                                   | Every 30 mins                             |
| <b>OSPF-MIB</b>                      |                    |                                                                                                                                                                                                                                                                      |                                           |
| ospfIfEvents                         | OSPF-MIB           | The number of times this OSPF interface has changed its state, or an error has occurred.                                                                                                                                                                             | Every 30 mins                             |
| <b>OSPF-MIB</b>                      |                    |                                                                                                                                                                                                                                                                      |                                           |
| ospfNbrIpAddr                        | OSPF-MIB           | The IP address this neighbor is using in its IP Source Address. Note that, on addressless links, this will not be 0.0.0.0, but the address of another of the neighbor's interfaces.                                                                                  | Every 30 mins                             |
| ospfNbrEvents                        | OSPF-MIB           | The number of times this neighbor relationship has changed state, or an error has occurred.                                                                                                                                                                          | Every 30 mins                             |
| <b>SNMP-FRAMEWORK-MIB</b>            |                    |                                                                                                                                                                                                                                                                      |                                           |
| snmplnInvalidMsgs                    | SNMP-FRAMEWORK-MIB | The total number of packets received by the SNMP engine which were dropped because there were invalid or inconsistent components in the SNMP message.                                                                                                                | Every 30 mins                             |
| <b>SNMP-FRAMEWORK-MIB</b>            |                    |                                                                                                                                                                                                                                                                      |                                           |
| snmplnPkts                           | SNMP-FRAMEWORK-MIB | The total number of Messages delivered to the SNMP entity from the transport service.                                                                                                                                                                                | Every 30 mins                             |
| snmpOutPkts                          | SNMP-FRAMEWORK-MIB | The total number of SNMP Messages which were passed from the SNMP protocol entity to the transport service.                                                                                                                                                          | Every 30 mins                             |
| snmplnBadVersions                    | SNMP-FRAMEWORK-MIB | The total number of SNMP Messages which were delivered to the SNMP protocol entity and were for an unsupported SNMP version.                                                                                                                                         | Every 30 mins                             |
| snmplnBadCommunityUses               | SNMP-FRAMEWORK-MIB | The total number of SNMP Messages delivered to the SNMP protocol entity which represented an SNMP operation which was not allowed by the SNMP community named in the Message.                                                                                        | Every 30 mins                             |
| snmplnASNParseErrs                   | SNMP-FRAMEWORK-MIB | The total number of ASN.1 or BER errors encountered by the SNMP protocol entity when decoding received SNMP Messages.                                                                                                                                                | Every 30 mins                             |

| <u>Performance Metric Identifier</u> | <u>MIB Name</u>        | <u>Description</u>                                                                                                                                                      | <u>Default Succession</u><br><u>Interval</u> |
|--------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| snmplnTotalReqVars                   | SNMP-<br>FRAMEWORK-MIB | The total number of MIB objects which have been retrieved successfully by the SNMP protocol entity as the result of receiving valid SNMP Get-Request and Get-Next PDUs. | Every 30 mins                                |
| snmplnTotalSetVars                   | SNMP-<br>FRAMEWORK-MIB | The total number of MIB objects which have been altered successfully by the SNMP protocol entity as the result of receiving valid SNMP Set-Request PDUs.                | Every 30 mins                                |
| snmpOutTraps                         | SNMP-<br>FRAMEWORK-MIB | The total number of SNMP Trap PDUs which have been generated by the SNMP protocol entity.                                                                               | Every 30 mins                                |
| <b>VRRP-MIB</b>                      |                        |                                                                                                                                                                         |                                              |
| vrrpStatsBecomeMaster                | VRRP-MIB               | The total number of times that this virtual router's state has transitioned from BACKUP to MASTER.                                                                      | Every 30 mins                                |
| <b>RAPID-CITY</b>                    |                        |                                                                                                                                                                         |                                              |
| rcSysBufferUtil                      | RAPID-CITY             | Buffer utilization as a percentage of the total amount of buffer space in the system. A high value indicates congestion.                                                | Every 30 mins                                |
| rcSysBufferUtilPeak                  | RAPID-CITY             | The largest buffer utilization since sysUpTime.                                                                                                                         | Every 30 mins                                |
| rcSysBufferUtilPeakTime              | RAPID-CITY             | Timestamp for rcSysPeakBandwidth.                                                                                                                                       | Every 30 mins                                |
| rcSysNVRamUsed                       | RAPID-CITY             | Non-volatile RAM in use in Kbytes.                                                                                                                                      | Every 30 mins                                |
| rcSysCpuUtil                         | RAPID-CITY             | Percentage of CPU utilization.                                                                                                                                          | Every 30 mins                                |
| rcSysSwitchFabricUtil                | RAPID-CITY             | Percentage of Switching Fabric utilization.                                                                                                                             | Every 30 mins                                |
| rcStatFrameTooShorts                 | RAPID-CITY             | The total number of frames that are too short that were encountered on this interface.                                                                                  | Every 30 mins                                |
| rcStatBridgeInDiscards               | RAPID-CITY             | The total number of frames that were discarded by the bridging entity.                                                                                                  | Every 30 mins                                |
| rcStatRouteInDiscards                | RAPID-CITY             | The total number of frames that were discarded by the routing entity.                                                                                                   | Every 30 mins                                |
| rcStatStgForwardTransitions          | RAPID-CITY             | The number of times this port has transitioned from the Learning state to the Forwarding state.                                                                         | Every 30 mins                                |
| rcStatGigLinkFailures                | RAPID-CITY             | The total number of link failures encountered on this interface.                                                                                                        | Every 30 mins                                |
| rcStatGigPacketErrors                | RAPID-CITY             | The total number of packet errors encountered on this interface.                                                                                                        | Every 30 mins                                |
| rcStatGigCarrierErrors               | RAPID-CITY             | The total number of carrier errors encountered on this interface.                                                                                                       | Every 30 mins                                |
| rcStatGigLinkInactiveErrors          | RAPID-CITY             | The total number of link inactive errors encountered on this interface.                                                                                                 | Every 30 mins                                |
| rcStatSmltStDownCnt                  | RAPID-CITY             | Counters that counts how the session between the two peering switches has done down since last boot.                                                                    | Every 30 mins                                |
| rcStatSmltSmltDownTxMsgCnt           | RAPID-CITY             | Counters that counts the tx Smlt Down msg.                                                                                                                              | Every 30 mins                                |
| rcStatSmltSmltDownRxMsgCnt           | RAPID-CITY             | Counters that counts the rx Smlt Down msg.                                                                                                                              | Every 30 mins                                |
| rcStatSmltSmltUpTxMsgCnt             | RAPID-CITY             | Counters that counts the tx Smlt Up msg.                                                                                                                                | Every 30 mins                                |
| rcStatSmltSmltUpRxMsgCnt             | RAPID-CITY             | Counters that counts the rx Smlt Up msg.                                                                                                                                | Every 30 mins                                |
| rc2kAtmPortStatsInDroppedPkts        | RAPID-CITY             | Number of AAL5 CPCS PDUs dropped due to resource exhaustion.                                                                                                            | Every 30 mins                                |
| rc2kAtmPortStatsOutDroppedPkts       | RAPID-CITY             | Number of AAL5 CPCS PDUs dropped because the transmitter closed the channel.                                                                                            | Every 30 mins                                |
| rc2kAtmVPortStatsInOctets            | RAPID-CITY             | AAL5 CPCS PDU octets received from ATM interface                                                                                                                        | Every 5 and 30 mins                          |
| rc2kAtmVPortStatsOutOctets           | RAPID-CITY             | AAL5 CPCS PDU octets transmitted out of ATM interface                                                                                                                   | Every 5 and 30 mins                          |
| rc2kAtmVPortStatsInErrors            | RAPID-CITY             | AAL5 CPCS PDUs received with errors from ATM interface. These errors include CRC-32 errors,SAR time-out errors and oversized SDU errors.                                | Every 30 mins                                |
| rc2kAtmVPortStatsOutErrors           | RAPID-CITY             | Number of AAL5 CPCS PDUs that couldn't be transmitted due to errors.                                                                                                    | Every 30 mins                                |
| rc2kAtmVPortStatsInDiscards          | RAPID-CITY             | Number of received AAL5 CPCS PDUs discarded.                                                                                                                            | Every 30 mins                                |
| rc2kAtmVPortStatsOutDiscards         | RAPID-CITY             | Number of AAL5 CPCS PDUs which are to be transmitted but discarded.                                                                                                     | Every 30 mins                                |
| rcStgPortForwardTransitions          | RAPID-CITY             | The number of times this port has transitioned from the Learning state to the Forwarding state.                                                                         | Every 30 mins                                |

## Appendix B: MG 9000 MIB OMs/PMs

| OM Name                                     | Description                                                                               | MIB Table Name                       | MIB Name                | For OSS |
|---------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------|-------------------------|---------|
| <b>NORTEL-UEMG-NODE-MIB</b>                 |                                                                                           |                                      |                         |         |
| <b>norNodeAlarmsTable</b>                   |                                                                                           |                                      |                         |         |
| norNodeAlarmsCritical                       | Number of Critical Alarms currently on this Node                                          | norNodeAlarmsTable                   | NORTEL-UEMG-NODE-MIB    | No      |
| norNodeAlarmsMajor                          | Number of Major Alarms currently on this Node                                             | norNodeAlarmsTable                   | NORTEL-UEMG-NODE-MIB    | No      |
| norNodeAlarmsMinor                          | Number of Minor Alarms currently on this Node                                             | norNodeAlarmsTable                   | NORTEL-UEMG-NODE-MIB    | No      |
| <b>NORTEL-UEMG-CARRIER-MIB</b>              |                                                                                           |                                      |                         |         |
| <b>norCarrSonetMediumCurrentTable</b>       |                                                                                           |                                      |                         |         |
| norCarrSonetMedCurrentOpt                   | Optical Power Transmitted. This is interpreted as a Percentage                            | norCarrSonetMediumCurrentTable       | NORTEL-UEMG-CARRIER-MIB | No      |
| norCarrSonetMedCurrentLBC                   | Laser Bias Current.                                                                       | norCarrSonetMediumCurrentTable       | NORTEL-UEMG-CARRIER-MIB | No      |
| <b>norCarrSonetMediumIntervalTable</b>      |                                                                                           |                                      |                         |         |
| norCarrSonetMedCurrentOpt                   | Optical Power Transmitted. This is interpreted as a Percentage                            | norCarrSonetMediumIntervalTable      | NORTEL-UEMG-CARRIER-MIB | Yes     |
| norCarrSonetMedIntervalLBC                  | Laser Bias Current.                                                                       | norCarrSonetMediumIntervalTable      | NORTEL-UEMG-CARRIER-MIB | Yes     |
| <b>NORTEL-UEMG-MEGACO-MIB</b>               |                                                                                           |                                      |                         |         |
| <b>nnMegacoOMMedGwyIntervalTable</b>        |                                                                                           |                                      |                         |         |
| nnMegacoOMMedGwyNumInMessages               | Total number of messages received from the Gateway Controller (GWC) during this interval. | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyNumInOctets                 | Total number of octets received from the Gateway Controller (GWC) during this interval.   | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyAvrgInMsgRate               | Average message send rate (per minute) for messages sent to the GWC during this interval. | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyMaxInMsgRate                | Maximum message send rate (per minute) for messages sent to the GWC during this interval. | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyNumOutMessages              | Total number of messages sent to the Gateway Controller (GWC) during this interval.       | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyNumOutOctets                | Total number of octets sent to the Gateway Controller (GWC) during this interval.         | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyAvrgOutMsgRate              | Average message send rate (per minute) for messages sent to the GWC during this interval. | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyMaxOutMsgRate               | Maximum message send rate (per minute) for messages sent to the GWC during this interval. | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      |
| <b>nnMegacoOMMedGwyCurrentDayTotalTable</b> |                                                                                           |                                      |                         |         |
| nnMegacoOMMedGwyNumInMessagesTotCurDay      | Total number of messages received from the Gateway Controller (GWC) during this interval. | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyNumInOctetsTotCurDay        | Total number of octets received from the Gateway Controller (GWC) during this interval.   | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyAvrgInMsgRateTotCurDay      | Average message send rate (per minute) for messages sent to the GWC during this interval. | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyMaxInMsgRateTotCurDay       | Maximum message send rate (per minute) for messages sent to the GWC during this interval. | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      |
| nnMegacoOMMedGwyNumOutMessagesTotCurDay     | Total number of messages sent to the Gateway Controller (GWC) during this interval.       | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      |

|                                          |                                                                                           |                                      |                        |     |
|------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------|------------------------|-----|
| nnMegacoOMMedGwyNumOutOctetsTotCurDay    | Total number of octets sent to the Gateway Controller (GWC) during this interval.         | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMMedGwyAvrgOutMsgRateTotCurDay  | Average message send rate (per minute) for messages sent to the GWC during this interval. | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMMedGwyMaxOutMsgRateTotCurDay   | Maximum message send rate (per minute) for messages sent to the GWC during this interval. | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| <b>nnMegacoOMCMRIntervalTable</b>        |                                                                                           |                                      |                        |     |
| nnMegacoOMCMRmaxSimultCNDreq             | The maximum simultaneous number of CND requests during this interval.                     | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRtotNumberCNDreq             | The total number of CND requests during this interval.                                    | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRnumCNDcompleted             | The number of CND requests during this interval that completed.                           | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRmaxSimultADSIreq            | The maximum simultaneous number of ADSI requests during this interval.                    | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRtotNumberADSIreq            | The total number of ADSI requests during this interval.                                   | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRnumADSIcompleted            | The number of ADSI requests during this interval that completed.                          | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRmaxSimultBCLIDreq           | The maximum simultaneous number of BCLID requests during this interval.                   | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRtotNumberBCLIDreq           | The total number of BCLID requests during this interval.                                  | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRnumBCLIDcompleted           | The number of BCLID requests during this interval that completed.                         | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRmaxSimultSCWIDreq           | The maximum simultaneous number of SCWID requests during this interval.                   | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRtotNumberSCWIDreq           | The total number of SCWID requests during this interval.                                  | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRnumSCWIDcompleted           | The number of SCWID requests during this interval that completed.                         | nnMegacoOMCMRIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| <b>nnMegacoOMCMRCurrentDayTotalTable</b> |                                                                                           |                                      |                        |     |
| nnMegacoOMCMRmaxSimultCNDreqTotCurDay    | The current day's highest maximum simultaneous number of CND requests.                    | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRtotNumberCNDreqTotCurDay    | The current day's total number of CND requests.                                           | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRnumCNDcompletedTotCurDay    | The current day's total number of CND requests that completed.                            | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRmaxSimultADSIreqTotCurDay   | The current day's highest maximum simultaneous number of ADSI requests.                   | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRtotNumberADSIreqTotCurDay   | The current day's total number of ADSI requests.                                          | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRnumADSIcompletedTotCurDay   | The current day's total number of ADSI requests that completed.                           | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRmaxSimultBCLIDreqTotCurDay  | The current day's highest maximum simultaneous number of BCLID requests.                  | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRtotNumberBCLIDreqTotCurDay  | The current day's total number of BCLID requests.                                         | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRnumBCLIDcompletedTotCurDay  | The current day's total number of BCLID requests that completed.                          | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRmaxSimultSCWIDreqTotCurDay  | The current day's highest maximum simultaneous number of SCWID requests.                  | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRtotNumberSCWIDreqTotCurDay  | The current day's total number of SCWID requests.                                         | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCMRnumSCWIDcompletedTotCurDay  | The current day's total number of SCWID requests that completed.                          | nnMegacoOMCMRCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| <b>nnMegacoOMDSPIntervalTable</b>        |                                                                                           |                                      |                        |     |
| nnMegacoOMDSPmaxSimultToneRcvrInUse      | The maximum simultaneous number of tone receivers in use during this interval.            | nnMegacoOMDSPIntervalTable           | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPnumToneRcvrReq              | The number of tone receiver requests during this interval.                                | nnMegacoOMDSPIntervalTable           | NORTEL-UEMG-MEGACO-MIB | Yes |

|                                              |                                                                                                            |                                   |                        |     |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------|-----|
| nnMegacoOMDSPnumToneRcvrReqFail              | The number of tone receiver requests that failed during this interval.                                     | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMDSPmaxSimultToneGenInUse           | The maximum simultaneous number of tone generators in use during this interval.                            | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPnumToneGenReq                   | The number of tone generator requests during this interval.                                                | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMDSPnumToneGenReqFail               | The number of tone generator requests that failed during this interval.                                    | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMDSPmaxSimultCMRmodemInUse          | The maximum simultaneous number of CMR modems in use during this interval.                                 | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPnumCMRmodemReq                  | The number of CMR modem requests during this interval.                                                     | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMDSPnumCMRmodemReqFail              | The number of CMR modem requests that failed during this interval.                                         | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| <b>nnMegacoOMDSPCurrentDayTotalTable</b>     |                                                                                                            |                                   |                        |     |
| nnMegacoOMDSPmaxSimultToneRcvrInUseTotCurDay | The current day's highest maximum simultaneous number of tone receivers in use.                            | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPnumToneRcvrReqTotCurDay         | The current day's total of the number of tone receiver requests.                                           | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPnumToneRcvrReqFailTotCurDay     | The current day's total of the number of tone receiver requests that failed.                               | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPmaxSimultToneGenInUseTotCurDay  | The current day's highest maximum simultaneous number of tone generators in use.                           | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPnumToneGenReqTotCurDay          | The current day's total of the number of tone generator requests.                                          | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPnumToneGenReqFailTotCurDay      | The current day's total of the number of tone generator requests that failed.                              | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPmaxSimultCMRmodemInUseTotCurDay | The current day's highest maximum simultaneous number of CMR modems in use.                                | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPnumCMRmodemReqTotCurDay         | The current day's total of the number of CMR modem requests.                                               | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMDSPnumCMRmodemReqFailTotCurDay     | The current day's total of the number of CMR modem requests that failed.                                   | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| <b>nnMegacoOMCESIntervalTable</b>            |                                                                                                            |                                   |                        |     |
| nnMegacoOMCESmaxSimultIntraSwitch            | The maximum simultaneous number of channels in use for intra-switched calls during this interval.          | nnMegacoOMCESIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCESnumChnlAllocIntra               | The total number of channel allocation requests for intra-switched calls during this interval.             | nnMegacoOMCESIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMCESnumChnlAllocIntraFail           | The total number of channel allocation requests for intra-switched calls that failed during this interval. | nnMegacoOMCESIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMCESmaxSimultInterSwitch            | The maximum simultaneous number of channels in use for inter-switched calls during this interval.          | nnMegacoOMCESIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCESnumChnlAllocInter               | The total number of channel allocation requests for inter-switched calls during this interval.             | nnMegacoOMCESIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMCESnumChnlAllocInterFail           | The total number of channel allocation requests for inter-switched calls that failed during this interval. | nnMegacoOMCESIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| <b>nnMegacoOMCESCurrentDayTotalTable</b>     |                                                                                                            |                                   |                        |     |
| nnMegacoOMCESmaxSimultIntraSwitchTotCurDay   | The current day's highest maximum simultaneous number of channels in use for intra-switched calls.         | nnMegacoOMCESCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCESnumChnlAllocIntraTotCurDay      | The current day's total number of channel allocation requests for intra-switched calls.                    | nnMegacoOMCESCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCESnumChnlAllocIntraFailTotCurDay  | The current day's total number of channel allocation requests for intra-switched calls that failed.        | nnMegacoOMCESCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |

|                                             |                                                                                                     |                                      |                        |     |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------|------------------------|-----|
| nnMegacoOMCESmaxSimultInterSwitchTotCurDay  | The current day's highest maximum simultaneous number of channels in use for inter-switched calls.  | nnMegacoOMCESCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCESnumChnlAllocInterTotCurDay     | The current day's total number of channel allocation requests for inter-switched calls.             | nnMegacoOMCESCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMCESnumChnlAllocInterFailTotCurDay | The current day's total number of channel allocation requests for inter-switched calls that failed. | nnMegacoOMCESCurrentDayTotalTable    | NORTEL-UEMG-MEGACO-MIB | No  |
| <b>nnMegacoOMEKANIntervalTable</b>          |                                                                                                     |                                      |                        |     |
| nnMegacoOMEKANmaxSimultResrcInUse           | The maximum simultaneous number of ECAN resources in use during this interval.                      | nnMegacoOMEKANIntervalTable          | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMEKANnumResrcReq                   | The total number of ECAN resource request attempts during this interval.                            | nnMegacoOMEKANIntervalTable          | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMEKANnumResrcReqFail               | The total number of ECAN resource request attempts that failed during this interval.                | nnMegacoOMEKANIntervalTable          | NORTEL-UEMG-MEGACO-MIB | Yes |
| <b>nnMegacoOMEKANCurrentDayTotalTable</b>   |                                                                                                     |                                      |                        |     |
| nnMegacoOMEKANmaxSimultResrcInUseTotCurDay  | The current day's maximum simultaneous number of ECAN resources in use.                             | nnMegacoOMEKANCurrentDayTotalTable   | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMEKANnumResrcReqTotCurDay          | The current day's total number of ECAN resource requests.                                           | nnMegacoOMEKANCurrentDayTotalTable   | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMEKANnumResrcReqFailTotCurDay      | The current day's total number of ECAN resource requests that failed.                               | nnMegacoOMEKANCurrentDayTotalTable   | NORTEL-UEMG-MEGACO-MIB | No  |
| <b>nnMegacoOMMedGwyIntervalTable</b>        |                                                                                                     |                                      |                        |     |
| nnMegacoOMMedGwyNumInMessages               | Number of messages received from the Gateway Controller (GWC) during this interval.                 | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMMedGwyNumInOctets                 | Number of octets received from the Gateway Controller (GWC) during this interval.                   | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMMedGwyAvrgInMsgRate               | Average message rate (per minute) for messages received from the GWC during this interval.          | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMMedGwyMaxInMsgRate                | Maximum message rate (per minute) for messages received from the GWC during this interval.          | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMMedGwyNumOutMessages              | Number of messages sent to the Gateway Controller (GWC) during this interval.                       | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMMedGwyNumOutOctets                | Number of octets sent to the Gateway Controller (GWC) during this interval.                         | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMMedGwyAvrgOutMsgRate              | Average message rate (per minute) for messages sent to the GWC during this interval.                | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| nnMegacoOMMedGwyMaxOutMsgRate               | Maximum message rate (per minute) for messages sent to the GWC during this interval.                | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes |
| <b>nnMegacoOMMedGwyCurrentDayTotalTable</b> |                                                                                                     |                                      |                        |     |
| nnMegacoOMMedGwyNumInMessagesTotCurDay      | The current day's total Number of messages received from the Gateway Controller (GWC).              | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMMedGwyNumInOctetsTotCurDay        | The current day's total Number of octets received from the Gateway Controller (GWC).                | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMMedGwyAvrgInMsgRateTotCurDay      | The current day's total Average message rate (per minute) for messages received from the GWC.       | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMMedGwyMaxInMsgRateTotCurDay       | The current day's total Maximum message rate (per minute) for messages received from the GWC.       | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMMedGwyNumOutMessagesTotCurDay     | The current day's total Number of messages sent to the Gateway Controller (GWC).                    | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |
| nnMegacoOMMedGwyNumOutOctetsTotCurDay       | The current day's total Number of octets sent to the Gateway Controller (GWC).                      | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  |



|                                              |                                                                                                                                                              |                                       |                           |     |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------|-----|
| nnMegacoOMMedGwyAvrgOutMsgRateTotCurDay      | The current day's total Average message rate (per minute) for messages sent to the GWC.                                                                      | nnMegacoOMMedGwyCurrentDayTotalTable  | NORTEL-UEMG-MEGACO-MIB    | No  |
| nnMegacoOMMedGwyMaxOutMsgRateTotCurDay       | The current day's total Maximum message rate (per minute) for messages sent to the GWC.                                                                      | nnMegacoOMMedGwyCurrentDayTotalTable  | NORTEL-UEMG-MEGACO-MIB    | No  |
| <b>NORTEL-UEMG-BANDWIDTH-MIB</b>             |                                                                                                                                                              |                                       |                           |     |
| <b>nnBwShelfCurrentSloaBandwResrvdTable</b>  |                                                                                                                                                              |                                       |                           |     |
| nnBwShelfCurrentSloaBandwReserved            | Current amount of reserved bandwidth currently allocated for the aggregate of all Switched Lines over ATM VCs on This UEMG shelf.                            | nnBwShelfCurrentSloaBandwResrvdTable  | NORTEL-UEMG-BANDWIDTH-MIB | No  |
| nnBwShelfCapacitySloaBandwReserved           | Current amount of reserved bandwidth Capacity for the aggregate of all Switched Lines over ATM VCs on This UEMG shelf.                                       | nnBwShelfCurrentSloaBandwResrvdTable  | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| <b>nnBwNetIfBwResIntervalTable</b>           |                                                                                                                                                              |                                       |                           |     |
| nnBwNetIfBwResIntervalTotal                  | The ith 15min measure of the amount of reserved bandwidth currently allocated to VCs on the network interface.                                               | nnBwNetIfBwResIntervalTable           | NORTEL-UEMG-BANDWIDTH-MIB | No  |
| nnBwNetIfBwResIntervalSloa                   | The ith 15min measure of the amount of reserved bandwidth currently allocated for the aggregate of all Switched Lines over ATM VCs on the network interface. | nnBwNetIfBwResIntervalTable           | NORTEL-UEMG-BANDWIDTH-MIB | No  |
| <b>nnBwShelfIntervalSloaBandwResrvdTable</b> |                                                                                                                                                              |                                       |                           |     |
| nnBwShelfIntervalSloaBandwReserved           | ith 15-minute measure amount of reserved band width allocated for the aggregate of all Switched Lines over ATM VCs on This UEMG shelf."                      | nnBwShelfIntervalSloaBandwResrvdTable | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| <b>nnBwIntervalBandwUtilTable</b>            |                                                                                                                                                              |                                       |                           |     |
| nnBwBandwUtilIntervalInCellRate              | The ith 15min measure of the inbound bandwidth utilization.                                                                                                  | nnBwIntervalBandwUtilTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| nnBwBandwUtilIntervalOutCellRate             | The ith 15min measure of the outbound bandwidth utilization.                                                                                                 | nnBwIntervalBandwUtilTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| nnBwBandwUtilIntervalInDslCellRate           | The ith 15min measure of the inbound dsl band width utilization.                                                                                             | nnBwIntervalBandwUtilTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| nnBwBandwUtilIntervalOutDslCellRate          | The ith 15min measure of the outbound dsl band width utilization.                                                                                            | nnBwIntervalBandwUtilTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| <b>nnBwIntervalQueueFillTable</b>            |                                                                                                                                                              |                                       |                           |     |
| nnBwQueueFillIntervalTotal                   | ith 15-minute value % fill of the entire input cell queue associated with the central switching fabric.                                                      | nnBwIntervalQueueFillTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| nnBwQueueFillIntervalCbr                     | ith 15-minute value % fill of the entire input queue associated with the aggregate of all CBR VCs.                                                           | nnBwIntervalQueueFillTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| nnBwQueueFillIntervalRtVbr                   | ith 15-minute value % fill of the entire input queue associated with the aggregate of all rt-VBR VCs.                                                        | nnBwIntervalQueueFillTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| nnBwQueueFillIntervalNrtVbr                  | ith 15-minute value % fill of the entire input queue associated with the aggregate of all nrt-VBR VCs.                                                       | nnBwIntervalQueueFillTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| nnBwQueueFillIntervalUbr                     | ith 15-minute value % fill of the entire input queue associated with the aggregate of all UBR VCs.                                                           | nnBwIntervalQueueFillTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| nnBwQueueFillIntervalUbrPlus                 | ith 15-minute value % fill of the entire input queue associated with the aggregate of all UBR+ VCs.                                                          | nnBwIntervalQueueFillTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| nnBwQueueFillIntervalControl                 | ith 15-minute value % fill of the entire input queue associated with the aggregate of all Control VCs.                                                       | nnBwIntervalQueueFillTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| <b>nnBwAbiCurrentBandwResrvdTable</b>        |                                                                                                                                                              |                                       |                           |     |
| nnBwAbiCurrentBandwReserved                  | Current amount of reserved bandwidth currently allocated for the aggregate of all VCs on this UEMG ABI interface.                                            | nnBwAbiCurrentBandwResrvdTable        | NORTEL-UEMG-BANDWIDTH-MIB | No  |
| nnBwAbiCapacityBandwReserved                 | Current amount of reserved bandwidth Capacity for the aggregate of all VCs on this UEMG ABI interface.                                                       | nnBwAbiCurrentBandwResrvdTable        | NORTEL-UEMG-BANDWIDTH-MIB | Yes |



|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                  |                           |     |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------|-----|
| <b>nnBwAbilIntervalBandwResrvdEntry</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                  |                           |     |
| nnBwAbilIntervalBandwReserved           | ith 15-minute measure amount of reserved bandwidth allocated for the aggregate of all VCs on this ABI interface."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | nnBwAbilIntervalBandwResrvdTable | NORTEL-UEMG-BANDWIDTH-MIB | Yes |
| <b>SNMP-MPD-MIB</b>                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                  |                           |     |
| <b>SNMP Table</b>                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                  |                           |     |
| snmplInvalidMsgs                        | The total number of packets received by the SNMP engine which were dropped because there were invalid or inconsistent components in the SNMP message.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SNMP Table                       | SNMP-MPD-MIB              | Yes |
| <b>SNMPv2-MIB</b>                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                  |                           |     |
| snmplnBadCommunityNames                 | The total number of community-based SNMP messages (for example, SNMPv1) delivered to the SNMP entity which used an SNMP community name not known to said entity. Also, implementations which authenticate community-based SNMP messages using check(s) in addition to matching the community name (for example, by also checking whether the message originated from a transport address allowed to use a specified community name) MAY include in this value the number of messages which failed the additional check(s). It is to authenticate community-based SNMP messages specify the precise conditions that contribute to this value. |                                  | SNMPv2-MIB                | Yes |
| snmplnPkts                              | The total number of messages delivered to the SNMP entity from the transport service.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                  | SNMPv2-MIB                | Yes |
| <b>NORTEL-UEMG-CLKSYNC-MIB</b>          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                  |                           |     |
| <b>NnClkSyncRefTable</b>                | This table provides status information for each of the sync reference inputs associated with the ITP card. There are six references per ITP card, two ITP cards on each shelf.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                  |                           |     |
| nnClkSyncRefId                          | Reference Identification... Identifies the six possible clock synchronization references on the ITP card. This field along with entPhysicalIndex defines a unique row in the nnClkSyncRefTable.<br>itx0 (1), -- reference coming from the left ITX (ITX 0)<br>itx1 (2), -- reference coming from the right ITX (ITX 1)<br>dcc0 (3), -- reference coming from the left DCC (DCC-0)<br>dcc1 (4), -- reference coming from the right DCC (DCC-1)<br>host0 (5), -- reference cabled into the ITP ATM25 phy0<br>host1 (6) -- reference cabled into the ITP ATM25 phy1 "                                                                           | NnClkSyncRefTable                | NORTEL-UEMG-CLKSYNC-MIB   | Yes |
| nnClkSyncRefLossOfSignalCount           | Contains the count of the number of onsets of timing reference signal loss. Range is from 0 - 255                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NnClkSyncRefTable                | NORTEL-UEMG-CLKSYNC-MIB   | Yes |
| nnClkSyncRefLossOfFrameCount            | Contains the count of the number of loss of frames. Range is from 0 - 255.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | NnClkSyncRefTable                | NORTEL-UEMG-CLKSYNC-MIB   | Yes |
| <b>NnClkSyncSignalTable</b>             | This table provides status information on each of the six timing signals coming into the UE9KMG host shelf. There is one entry for each network timing signal (total of two), and one entry for each BITS signal                                                                                                                                                                                                                                                                                                                                                                                                                             |                                  |                           |     |

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      |                         |     |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------|-----|
| nnClkSyncSignalId                | Signal Identification... Identifies the six possible timing source signals which eventually are seen as references into the ITP card. This field defines a unique row in the nnClkSyncSignalTable.<br>bitsA-0 (1), -- BITS A signal coming into the left ITX of<br>-- the BITS ITX connected pair.<br>bitsB-0 (2), -- BITS B signal coming into the left ITX of<br>-- the BITS ITX connected pair.<br>bitsA-1 (3), -- BITS A signal coming into the right ITX of<br>-- the BITS ITX connected pair.<br>bitsB-1 (4), -- BITS B signal coming into the right ITX of<br>-- the BITS ITX connected pair.<br>dcc-0 (5), -- Network Traffic signal coming into DCC-0<br>dcc-1 (6) -- Network Traffic signal coming into DCC-1" | NnClkSyncSignalTable | NORTEL-UEMG-CLKSYNC-MIB | Yes |
| nnClkSyncSignalLossOfFrameCount  | Contains the count of the number of loss of frames.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NnClkSyncSignalTable | NORTEL-UEMG-CLKSYNC-MIB | Yes |
| nnClkSyncSignalLossOfSignalCount | Contains the count of the number of onsets of timing source signal loss.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | NnClkSyncSignalTable | NORTEL-UEMG-CLKSYNC-MIB | Yes |
| <b>DS1-MIB</b>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      |                         |     |
| <b>dsx1CurrentTable</b>          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      |                         |     |
| dsx1CurrentESSs                  | The number of Errored Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | dsx1CurrentTable     | DS1-MIB                 | No  |
| dsx1CurrentSESSs                 | The number of Severely Errored Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | dsx1CurrentTable     | DS1-MIB                 | No  |
| dsx1CurrentSEFSs                 | The number of Severely Errored Framing Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | dsx1CurrentTable     | DS1-MIB                 | No  |
| dsx1CurrentUASs                  | The number of Unavailable Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | dsx1CurrentTable     | DS1-MIB                 | No  |
| dsx1CurrentCSSs                  | The number of Controlled Slip Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | dsx1CurrentTable     | DS1-MIB                 | No  |
| dsx1CurrentPCVs                  | The number of Path Coding Violations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | dsx1CurrentTable     | DS1-MIB                 | No  |
| dsx1CurrentLESSs                 | The number of Line Errored Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | dsx1CurrentTable     | DS1-MIB                 | No  |
| dsx1CurrentBESSs                 | The number of Bursty Errored Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | dsx1CurrentTable     | DS1-MIB                 | No  |
| dsx1CurrentDMs                   | The number of Degraded Minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | dsx1CurrentTable     | DS1-MIB                 | No  |
| dsx1CurrentLCVs                  | The number of Line Code Violations (LCVs).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | dsx1CurrentTable     | DS1-MIB                 | No  |
| <b>dsx1IntervalTable</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      |                         |     |
| dsx1IntervalESSs                 | The number of Errored Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | dsx1IntervalTable    | DS1-MIB                 | No  |
| dsx1IntervalSESSs                | The number of Severely Errored Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | dsx1IntervalTable    | DS1-MIB                 | No  |
| dsx1IntervalSEFSs                | The number of Severely Errored Framing Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | dsx1IntervalTable    | DS1-MIB                 | No  |
| dsx1IntervalUASs                 | The number of Unavailable Seconds. This object may decrease if the occurrence of unavailable seconds occurs across an interval boundary.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | dsx1IntervalTable    | DS1-MIB                 | No  |
| dsx1IntervalCSSs                 | The number of Controlled Slip Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | dsx1IntervalTable    | DS1-MIB                 | No  |
| dsx1IntervalPCVs                 | The number of Path Coding Violations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | dsx1IntervalTable    | DS1-MIB                 | No  |
| dsx1IntervalLESSs                | The number of Line Errored Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | dsx1IntervalTable    | DS1-MIB                 | No  |
| dsx1IntervalBESSs                | The number of Bursty Errored Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | dsx1IntervalTable    | DS1-MIB                 | No  |
| dsx1IntervalDMs                  | The number of Degraded Minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | dsx1IntervalTable    | DS1-MIB                 | No  |
| dsx1IntervalLCVs                 | The number of Line Code Violations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | dsx1IntervalTable    | DS1-MIB                 | No  |
| <b>dsx1TotalTable</b>            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      |                         |     |
| dsx1CurrentESSs                  | The sum of Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minutes intervals are ignored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | dsx1TotalTable       | DS1-MIB                 | No  |

|                                |                                                                                                                                                         |                         |         |    |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------|----|
| dsx1CurrentSESSs               | The number of Severely Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.         | dsx1TotalTable          | DS1-MIB | No |
| dsx1CurrentSEFSs               | The number of Severely Errored Framing Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0. | dsx1TotalTable          | DS1-MIB | No |
| dsx1CurrentUASs                | The number of Unavailable Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.              | dsx1TotalTable          | DS1-MIB | No |
| dsx1CurrentCSSs                | The number of Controlled Slip Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.          | dsx1TotalTable          | DS1-MIB | No |
| dsx1CurrentPCVs                | The number of Path Coding Violations encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.           | dsx1TotalTable          | DS1-MIB | No |
| dsx1CurrentLESs                | The number of Line Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.             | dsx1TotalTable          | DS1-MIB | No |
| dsx1CurrentBESSs               | The number of Bursty Errored Seconds                                                                                                                    | dsx1TotalTable          | DS1-MIB | No |
| dsx1CurrentDMs                 | The number of Degraded Minutes                                                                                                                          | dsx1TotalTable          | DS1-MIB | No |
| dsx1CurrentLCVs                | The number of Line Code Violations (LCVs) encountered by a DS1 interface in the current 15 minute interval. Invalid 15 minute intervals count as 0.     | dsx1TotalTable          | DS1-MIB | No |
| <b>dsx1FarEndCurrentTable</b>  |                                                                                                                                                         |                         |         |    |
| dsx1CurrentESSs                | The number of Far End Errored Seconds.                                                                                                                  | dsx1FarEndCurrentTable  | DS1-MIB | No |
| dsx1CurrentSESSs               | The number of Far End Severely Errored Seconds.                                                                                                         | dsx1FarEndCurrentTable  | DS1-MIB | No |
| dsx1CurrentSEFSs               | The number of Far End Severely Errored Framing Seconds.                                                                                                 | dsx1FarEndCurrentTable  | DS1-MIB | No |
| dsx1CurrentUASs                | The number of Unavailable Seconds.                                                                                                                      | dsx1FarEndCurrentTable  | DS1-MIB | No |
| dsx1CurrentCSSs                | The number of Far End Controlled Slip Seconds.                                                                                                          | dsx1FarEndCurrentTable  | DS1-MIB | No |
| dsx1CurrentLESs                | The number of Far End Line Errored Seconds.                                                                                                             | dsx1FarEndCurrentTable  | DS1-MIB | No |
| dsx1CurrentPCVs                | The number of Far End Path Coding Violations.                                                                                                           | dsx1FarEndCurrentTable  | DS1-MIB | No |
| dsx1CurrentBESSs               | The number of Bursty Errored Seconds                                                                                                                    | dsx1FarEndCurrentTable  | DS1-MIB | No |
| dsx1CurrentDMs                 | The number of Degraded Minutes                                                                                                                          | dsx1FarEndCurrentTable  | DS1-MIB | No |
| <b>dsx1FarEndIntervalTable</b> |                                                                                                                                                         |                         |         |    |
| dsx1CurrentESSs                | The number of Far End Errored Seconds.                                                                                                                  | dsx1FarEndIntervalTable | DS1-MIB | No |
| dsx1CurrentSESSs               | The number of Far End Severely Errored Seconds.                                                                                                         | dsx1FarEndIntervalTable | DS1-MIB | No |
| dsx1CurrentSEFSs               | The number of Far End Severely Errored Framing Seconds.                                                                                                 | dsx1FarEndIntervalTable | DS1-MIB | No |
| dsx1CurrentUASs                | The number of Unavailable Seconds.                                                                                                                      | dsx1FarEndIntervalTable | DS1-MIB | No |
| dsx1CurrentCSSs                | The number of Far End Controlled Slip Seconds.                                                                                                          | dsx1FarEndIntervalTable | DS1-MIB | No |
| dsx1CurrentLESs                | The number of Far End Line Errored Seconds.                                                                                                             | dsx1FarEndIntervalTable | DS1-MIB | No |
| dsx1CurrentPCVs                | The number of Far End Path Coding Violations.                                                                                                           | dsx1FarEndIntervalTable | DS1-MIB | No |
| dsx1CurrentBESSs               | The number of Bursty Errored Seconds                                                                                                                    | dsx1FarEndIntervalTable | DS1-MIB | No |
| dsx1CurrentDMs                 | The number of Degraded Minutes                                                                                                                          | dsx1FarEndIntervalTable | DS1-MIB | No |
| <b>dsx1FarEndTotalTable</b>    |                                                                                                                                                         |                         |         |    |

|                                  |                                                                                                                                                                                                  |                           |           |     |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|-----|
| dsx1CurrentESs                   | The number of Far End Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                                   | dsx1FarEndTotalTable      | DS1-MIB   | No  |
| dsx1CurrentSEsSs                 | The number of Far End Severely Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                          | dsx1FarEndTotalTable      | DS1-MIB   | No  |
| dsx1CurrentSEFSs                 | The number of Far End Severely Errored Framing Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                  | dsx1FarEndTotalTable      | DS1-MIB   | No  |
| dsx1CurrentUASs                  | The number of Unavailable Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                                       | dsx1FarEndTotalTable      | DS1-MIB   | No  |
| dsx1CurrentCSSs                  | The number of Far End Controlled Slip Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                           | dsx1FarEndTotalTable      | DS1-MIB   | No  |
| dsx1CurrentLESs                  | The number of Far End Line Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                              | dsx1FarEndTotalTable      | DS1-MIB   | No  |
| dsx1CurrentPCVs                  | The number of Far End Path Coding Violations reported via the far end block error count encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0. | dsx1FarEndTotalTable      | DS1-MIB   | No  |
| dsx1CurrentBESs                  | The number of Bursty Errored Seconds                                                                                                                                                             | dsx1FarEndTotalTable      | DS1-MIB   | No  |
| dsx1CurrentDMs                   | The number of Degraded Minutes                                                                                                                                                                   | dsx1FarEndTotalTable      | DS1-MIB   | No  |
| <b>SONET-MIB</b>                 |                                                                                                                                                                                                  |                           |           |     |
| <b>sonetSectionCurrentTable</b>  |                                                                                                                                                                                                  |                           |           |     |
| sonetSectionCurrentESs           | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Section in the current 15 minute interval.                                                                  | sonetSectionCurrentTable  | SONET-MIB | No  |
| sonetSectionCurrentSEsSs         | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Section in the current 15 minute interval.                                                         | sonetSectionCurrentTable  | SONET-MIB | No  |
| sonetSectionCurrentSEFSs         | The counter associated with the number of Severely Errored Framing Seconds encountered by a SONET/SDH Section in the current 15 minute interval.                                                 | sonetSectionCurrentTable  | SONET-MIB | No  |
| sonetSectionCurrentCVs           | The counter associated with the number of Coding Violations encountered by a SONET/SDH Section in the current 15 minute interval.                                                                | sonetSectionCurrentTable  | SONET-MIB | No  |
| <b>sonetSectionIntervalTable</b> |                                                                                                                                                                                                  |                           |           |     |
| sonetSectionIntervalESs          | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Section in a particular 15-minute interval in the past 24 hours.                                            | sonetSectionIntervalTable | SONET-MIB | Yes |
| sonetSectionIntervalSEsSs        | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Section in a particular 15-minute interval in the past 24 hours.                                   | sonetSectionIntervalTable | SONET-MIB | Yes |

|                                    |                                                                                                                                                                                                            |                             |           |     |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------|-----|
| sonetSectionIntervalSEFSs          | The counter associated with the number of Severely Errored Framing Seconds encountered by a SONET/SDH Section in a particular 15- minute interval in the past 24 hours.                                    | sonetSectionIntervalTable   | SONET-MIB | Yes |
| sonetSectionIntervalCVs            | The counter associated with the number of Coding Violations encountered by a SONET/SDH Section in a particular 15-minute interval in the past 24 hours.                                                    | sonetSectionIntervalTable   | SONET-MIB | Yes |
| <b>sonetLineCurrentTable</b>       |                                                                                                                                                                                                            |                             |           |     |
| sonetLineCurrentESs                | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Line in the current 15 minute interval.                                                                               | sonetLineCurrentTable       | SONET-MIB | No  |
| sonetLineCurrentSESSs              | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Line in the current 15 minute inter val.                                                                     | sonetLineCurrentTable       | SONET-MIB | No  |
| sonetLineCurrentCVs                | The counter associated with the number of Coding Violations encountered by a SONET/SDH Line in the current 15 minute inter val.                                                                            | sonetLineCurrentTable       | SONET-MIB | No  |
| sonetLineCurrentUASs               | The counter associated with the number of Unavailable Seconds encountered by a SONET/SDH Line in the current 15 minute inter val.                                                                          | sonetLineCurrentTable       | SONET-MIB | No  |
| <b>sonetLineIntervalTable</b>      |                                                                                                                                                                                                            |                             |           |     |
| sonetLineIntervalESs               | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Line in a particular 15-minute interval in the past 24 hours.                                                         | sonetLineIntervalTable      | SONET-MIB | Yes |
| sonetLineIntervalSESSs             | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Line in a particular 15-minute interval in the past 24 hours.                                                | sonetLineIntervalTable      | SONET-MIB | Yes |
| sonetLineIntervalCVs               | The counter associated with the number of Coding Violations encountered by a SONET/SDH Line in a particular 15-minute interval in the past 24 hours.                                                       | sonetLineIntervalTable      | SONET-MIB | Yes |
| sonetLineIntervalUASs              | The counter associated with the number of Unavailable Seconds encountered by a SONET/SDH Line in a particular 15-minute interval in the past 24 hours.                                                     | sonetLineIntervalTable      | SONET-MIB | Yes |
| <b>sonetFarEndLineCurrentTable</b> |                                                                                                                                                                                                            |                             |           |     |
| sonetFarEndLineCurrentESs          | The counter associated with the number of Far End Errored Seconds encountered by a SONET/SDH interface in the current 15 minute interval.                                                                  | sonetFarEndLineCurrentTable | SONET-MIB | No  |
| sonetFarEndLineCurrentSESSs        | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET/SDH Medium/Section/Line inter face in the current 15 minute interval.                                    | sonetFarEndLineCurrentTable | SONET-MIB | No  |
| sonetFarEndLineCurrentCVs          | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET/SDH Medium/Section/Line interface in the current 15 minute interval. | sonetFarEndLineCurrentTable | SONET-MIB | No  |

|                                     |                                                                                                                                                                                                                    |                              |           |     |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|-----|
| sonetFarEndLineCurrentUASs          | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET/SDH Medium/Section/Line interface in the current 15 minute interval.                                                  | sonetFarEndLineCurrentTable  | SONET-MIB | No  |
| <b>sonetFarEndLineIntervalTable</b> |                                                                                                                                                                                                                    |                              |           |     |
| sonetFarEndLineIntervalESs          | The counter associated with the number of Far End Errored Seconds encountered by a SONET/SDH Line interface in a particular 15- minute interval in the past 24 hours.                                              | sonetFarEndLineIntervalTable | SONET-MIB | No  |
| sonetFarEndLineIntervalSESSs        | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET/SDH Line interface in a particular 15-minute interval in the past 24 hours.                                      | sonetFarEndLineIntervalTable | SONET-MIB | No  |
| sonetFarEndLineIntervalCVs          | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET/SDH Line interface in a particular 15- minute interval in the past 24 hours. | sonetFarEndLineIntervalTable | SONET-MIB | No  |
| sonetFarEndLineIntervalUASs         | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET/SDH Line interface in a particular 15-minute interval in the past 24 hours.                                           | sonetFarEndLineIntervalTable | SONET-MIB | No  |
| <b>sonetPathCurrentTable</b>        |                                                                                                                                                                                                                    |                              |           |     |
| sonetPathCurrentESs                 | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Path in the current 15 minute interval.                                                                                       | sonetPathCurrentTable        | SONET-MIB | No  |
| sonetPathCurrentSESSs               | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Path in the current 15 minute interval.                                                                              | sonetPathCurrentTable        | SONET-MIB | No  |
| sonetPathCurrentCVs                 | The counter associated with the number of Coding Violations encountered by a SONET/SDH Path in the current 15 minute interval.                                                                                     | sonetPathCurrentTable        | SONET-MIB | No  |
| sonetPathCurrentUASs                | The counter associated with the number of Unavailable Seconds encountered by a Path in the current 15 minute interval.                                                                                             | sonetPathCurrentTable        | SONET-MIB | No  |
| <b>sonetPathIntervalTable</b>       |                                                                                                                                                                                                                    |                              |           |     |
| sonetPathIntervalESs                | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Path in a particular 15-minute interval in the past 24 hours.                                                                 | sonetPathIntervalTable       | SONET-MIB | Yes |
| sonetPathIntervalSESSs              | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Path in a particular 15-minute interval in the past 24 hours.                                                        | sonetPathIntervalTable       | SONET-MIB | Yes |
| sonetPathIntervalCVs                | The counter associated with the number of Coding Violations encountered by a SONET/SDH Path in a particular 15-minute interval in the past 24 hours.                                                               | sonetPathIntervalTable       | SONET-MIB | Yes |
| sonetPathIntervalUASs               | The counter associated with the number of Unavailable Seconds encountered by a Path in a particular 15-minute interval in the past 24 hours.                                                                       | sonetPathIntervalTable       | SONET-MIB | Yes |
| <b>sonetFarEndPathCurrentTable</b>  |                                                                                                                                                                                                                    |                              |           |     |

|                                     |                                                                                                                                                                                                                                                                                                                                        |                              |           |     |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|-----|
| sonetFarEndPathCurrentESs           | The counter associated with the number of FarEnd Errored Seconds encountered by a SONET/SDH interface in the current 15 minute interval.                                                                                                                                                                                               | sonetFarEndPathCurrentTable  | SONET-MIB | No  |
| sonetFarEndPathCurrentSESSs         | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET/SDH Path interface in the current 15 minute interval.                                                                                                                                                                                | sonetFarEndPathCurrentTable  | SONET-MIB | No  |
| sonetFarEndPathCurrentCVs           | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET/SDH Path interface in the current 15 minute interval.                                                                                                                                            | sonetFarEndPathCurrentTable  | SONET-MIB | No  |
| sonetFarEndPathCurrentUASs          | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET/SDH Path interface in the current 15 minute interval.                                                                                                                                                                                     | sonetFarEndPathCurrentTable  | SONET-MIB | No  |
| <b>sonetFarEndPathIntervalTable</b> |                                                                                                                                                                                                                                                                                                                                        |                              |           |     |
| sonetFarEndPathIntervalESs          | The counter associated with the number of Far End Errored Seconds encountered by a SONET/SDH Path interface in a particular 15- minute interval in the past 24 hours.                                                                                                                                                                  | sonetFarEndPathIntervalTable | SONET-MIB | No  |
| sonetFarEndPathIntervalSESSs        | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET/SDH Path interface in a particular 15-minute interval in the past 24 hours.                                                                                                                                                          | sonetFarEndPathIntervalTable | SONET-MIB | No  |
| sonetFarEndPathIntervalCVs          | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET/SDH Path interface in a particular 15- minute interval in the past 24 hours.                                                                                                                     | sonetFarEndPathIntervalTable | SONET-MIB | No  |
| sonetFarEndPathIntervalUASs         | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET/SDH Path interface in a particular 15-minute interval in the past 24 hours.                                                                                                                                                               | sonetFarEndPathIntervalTable | SONET-MIB | No  |
| <b>APS-MIB</b>                      |                                                                                                                                                                                                                                                                                                                                        |                              |           |     |
| <b>apsStatusTable</b>               |                                                                                                                                                                                                                                                                                                                                        |                              |           |     |
| apsStatusModeMismatches             | A count of Mode Mismatch conditions. Modes other than 1+1 unidirectional monitor protection line K2 bit 5, which indicates the architecture and K2 bits 6-8, which indicate if the mode is unidirectional or bidirectional. A conflict between the current local mode and the received K2 mode information constitutes a mode mismatch | apsStatusTable               | APS-MIB   | No  |
| <b>apsChanStatusTable</b>           |                                                                                                                                                                                                                                                                                                                                        |                              |           |     |
| apsChanSignalDegrades               | A count of Signal Degrade conditions. This condition occurs when the line Bit Error Rate exceeds the currently configured threshold.                                                                                                                                                                                                   | apsChanStatusTable           | APS-MIB   | Yes |
| apsChanSignalFailures               | A count of Signal Failure conditions that have been detected on the incoming signal. This condition occurs when a loss of signal, loss of frame, AIS-L or a Line bit error rate exceeding $10^{-3}$ is detected on an incoming line.                                                                                                   | apsChanStatusTable           | APS-MIB   | Yes |

|                            |                                                                                                                                                                                                                                              |                     |          |     |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|-----|
| apsChanSwitchovers         | The number of times this channel has switched to the protection line. When queried with index value apsChanNumber set to 0, which is the protection line, this object will return 0.                                                         | apsChanStatusTable  | APS-MIB  | Yes |
| <b>ATM-MIB</b>             |                                                                                                                                                                                                                                              |                     |          |     |
| <b>atmInterfaceTCTable</b> |                                                                                                                                                                                                                                              |                     |          |     |
| atmInterfaceOCDEvents      | The number of times the Out of Cell Delineation (OCD) events occur. If seven consecutive ATM cells have Header Error Control (HEC) violations, an OCD event occurs. A high number of OCD events may indicate a problem with the TC Sublayer. | atmInterfaceTCTable | ATM-MIB  | No  |
| <b>ATM2-MIB</b>            |                                                                                                                                                                                                                                              |                     |          |     |
| <b>atmSigStatTable</b>     |                                                                                                                                                                                                                                              |                     |          |     |
| atmSigSSCOPConEvents       | SSCOP Connection Events Counter.                                                                                                                                                                                                             | atmSigStatTable     | ATM2-MIB | No  |
| atmSigSSCOPErrdPdus        | SSCOP Errored PDUs Counter.                                                                                                                                                                                                                  | atmSigStatTable     | ATM2-MIB | No  |
| atmSigDetectSetupAttempts  | Call Setup Attempts Counter. This counter counts the number of call setup attempts (both successful and unsuccessful) detected on this interface.                                                                                            | atmSigStatTable     | ATM2-MIB | No  |
| atmSigEmitSetupAttempts    | Call Setup Attempts Counter. This counter counts the number of call setup attempts (both successful and unsuccessful) transmitted on this interface.                                                                                         | atmSigStatTable     | ATM2-MIB | No  |
| atmSigDetectUnavailRoutes  | Number of Route Unavailability detected on this interface.                                                                                                                                                                                   | atmSigStatTable     | ATM2-MIB | No  |
| atmSigEmitUnavailRoutes    | Number of Route Unavailability transmitted from this interface.                                                                                                                                                                              | atmSigStatTable     | ATM2-MIB | No  |
| atmSigDetectUnavailResrcs  | Number of Resource Unavailability detected on this interface.                                                                                                                                                                                | atmSigStatTable     | ATM2-MIB | No  |
| atmSigEmitUnavailResrcs    | Number of Resource Unavailability transmitted from this interface.                                                                                                                                                                           | atmSigStatTable     | ATM2-MIB | No  |
| atmSigDetectCldPtyEvents   | Number of Called Party Responsible For Unsuccessful Call detected on this interface.                                                                                                                                                         | atmSigStatTable     | ATM2-MIB | No  |
| atmSigEmitCldPtyEvents     | Number of Called Party Responsible For Unsuccessful Call transmitted from this interface.                                                                                                                                                    | atmSigStatTable     | ATM2-MIB | No  |
| atmSigDetectMsgErrors      | Number of Incorrect Messages detected on this interface.                                                                                                                                                                                     | atmSigStatTable     | ATM2-MIB | No  |
| atmSigEmitMsgErrors        | Number of Incorrect Messages transmitted on this interface.                                                                                                                                                                                  | atmSigStatTable     | ATM2-MIB | No  |
| atmSigDetectClgPtyEvents   | Number of Calling Party Events detected on this interface.                                                                                                                                                                                   | atmSigStatTable     | ATM2-MIB | No  |
| atmSigEmitClgPtyEvents     | Number of Calling Party Events transmitted from this interface.                                                                                                                                                                              | atmSigStatTable     | ATM2-MIB | No  |
| atmSigDetectTimerExpires   | Number of Timer Expiries detected on this interface.                                                                                                                                                                                         | atmSigStatTable     | ATM2-MIB | No  |
| atmSigEmitTimerExpires     | Number of Timer Expiries transmitted from this interface.                                                                                                                                                                                    | atmSigStatTable     | ATM2-MIB | No  |
| atmSigDetectRestarts       | Number of Restart Activity errors detected on this interface.                                                                                                                                                                                | atmSigStatTable     | ATM2-MIB | No  |
| atmSigEmitRestarts         | Number of Restart Activity errors transmitted from this interface.                                                                                                                                                                           | atmSigStatTable     | ATM2-MIB | No  |
| atmSigInEstabls            | Number of SVC VCCs established at this signaling entity for incoming connections.                                                                                                                                                            | atmSigStatTable     | ATM2-MIB | No  |
| atmSigOutEstabls           | Number of SVC VCCs established at this signaling entity for outgoing connections.                                                                                                                                                            | atmSigStatTable     | ATM2-MIB | No  |
| <b>ATMF-CES-MIB</b>        |                                                                                                                                                                                                                                              |                     |          |     |
| <b>atmfCESStatsTable</b>   |                                                                                                                                                                                                                                              |                     |          |     |



|                              |                                                                                                                                                                                                                                                                                                                                                                                                                        |                       |                     |    |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------|----|
| atmfCESHdrErrors             | The count of the number of AAL1 header errors detected, including those corrected. Header errors include correctable and uncorrectable CRC, plus bad parity.                                                                                                                                                                                                                                                           | atmfCESStatsTable     | ATMF-CES-MIB        | No |
| atmfCESPointerReframes       | This records the count of the number of events in which the AAL1 reassembler found that an SDT pointer is not where it is expected, and the pointer must be reacquired. This count is only meaningful for structured CES modes, as unstructured CES modes do not use pointers. For unstructured CES modes, this count, if present, should indicate zero.                                                               | atmfCESStatsTable     | ATMF-CES-MIB        | No |
| atmfCESPointerParityErrors   | This records the count of the number of events in which the AAL1 reassembler detects a parity check failure at the point where a structured data pointer is expected. This count is only meaningful for structured CES modes, as unstructured CES modes do not use pointers. For unstructured CES modes, this count, if present, should indicate zero.                                                                 | atmfCESStatsTable     | ATMF-CES-MIB        | No |
| atmfCESLostCells             | Number of lost cells, as detected by the AAL1 sequence number processing, for example. This records the count of the number of cells detected as lost in the network prior to the destination CES IWF AAL1 layer processing.                                                                                                                                                                                           | atmfCESStatsTable     | ATMF-CES-MIB        | No |
| atmfCESMisinsertedCells      | Number of AAL1 sequence violations which the AAL Convergence sublayer interprets as a misinserted cell, as defined by ITU-T I.363.1.                                                                                                                                                                                                                                                                                   | atmfCESStatsTable     | ATMF-CES-MIB        | No |
| atmfCESBufUnderflows         | Number of buffer underflows. This records the count of the number of times the CES reassembly buffer underflows. In the case of a continuous underflow caused by a loss of ATM cell flow, a single buffer underflow should be counted. If the CES IWF is implemented with multiple buffers (such as a cell level buffer and a bit level buffer), then either buffer underflow will cause this count to be incremented. | atmfCESStatsTable     | ATMF-CES-MIB        | No |
| atmfCESBufOverflows          | Number of buffer overflows. This records the count of the number of times the CES reassembly buffer overflows. If the CES IWF is implemented with multiple buffers (such as a cell level buffer and a bit level buffer), then either buffer overflow will cause this count to be incremented.                                                                                                                          | atmfCESStatsTable     | ATMF-CES-MIB        | No |
| <b>NORTEL-UEMG-ATM-MIB</b>   |                                                                                                                                                                                                                                                                                                                                                                                                                        |                       |                     |    |
| <b>nnAtmStatsIfDataTable</b> |                                                                                                                                                                                                                                                                                                                                                                                                                        |                       |                     |    |
| nnAtmStatsIfInOctets         | Total octets received on this interface                                                                                                                                                                                                                                                                                                                                                                                | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsIfInErrors         | Total inbound errors                                                                                                                                                                                                                                                                                                                                                                                                   | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsIfInProtoError     | Total incoming unknown/unsupported Protocol discards                                                                                                                                                                                                                                                                                                                                                                   | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsIfInOam            | Total incoming OAM cells.                                                                                                                                                                                                                                                                                                                                                                                              | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsIfOutOctets        | Total octets sent on this interface                                                                                                                                                                                                                                                                                                                                                                                    | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsIfOutDiscards      | Total outbound errors                                                                                                                                                                                                                                                                                                                                                                                                  | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsIfOutOam           | Total outgoing OAM cells.                                                                                                                                                                                                                                                                                                                                                                                              | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No |
| <b>nnAtmStatsVcDataTable</b> |                                                                                                                                                                                                                                                                                                                                                                                                                        |                       |                     |    |
| nnAtmStatsVcInTotal          | Total incoming cells (CLP = 0 1).                                                                                                                                                                                                                                                                                                                                                                                      | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsVcInTotalClp0      | Total incoming cells (CLP = 0)                                                                                                                                                                                                                                                                                                                                                                                         | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No |

|                              |                                                                                                                                                                                                     |                       |                     |    |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------|----|
| nnAtmStatsVcInDiscarded      | Total incoming cells discarded (CLP = 01).                                                                                                                                                          | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsVcInDiscardedClp0  | Total incoming cells discarded (CLP = 0)                                                                                                                                                            | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsVcOutTotal         | Total outgoing cells (CLP = 01).                                                                                                                                                                    | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsVcOutTotalClp0     | Total outgoing cells (CLP = 0)                                                                                                                                                                      | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No |
| nnAtmStatsVcOutTagged        | Total outgoing cells tagged (CLP = 0 > CLP = 1).                                                                                                                                                    | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No |
| <b>nnAtmPmVcDataTable</b>    |                                                                                                                                                                                                     |                       |                     |    |
| nnAtmPmVcFwImpBlk            | forward impaired block.                                                                                                                                                                             | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcFwSeCblkImp         | forward lost/misinserted impaired block.                                                                                                                                                            | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcFwSeCblkLst         | forward severely errored cell block (lost).                                                                                                                                                         | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcFwSeCblkMist        | forward severely errored cell block (misinserted).                                                                                                                                                  | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcFwSeCblkBvlt        | forward severely errored cell block - (BIP-16 violations).                                                                                                                                          | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcFwSeCblkComb        | forward severely errored cell block combined.                                                                                                                                                       | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcLfstClp01Cnt        | forward lost CLP0+1 cell count.                                                                                                                                                                     | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcFwLstClp0Cnt        | forward lost CLP0 cell count.                                                                                                                                                                       | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcFwMistClp01Cnt      | forward misinserted CLP0+1 cell count.                                                                                                                                                              | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcFwErrCnt            | forward errored cell count.                                                                                                                                                                         | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcFwTotalLstClp01Cnt  | forward total lost CLP0+1 cell count.                                                                                                                                                               | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcFwTotalLstClp0Cnt   | forward total lost CLP0 cell count.                                                                                                                                                                 | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwImpBlk            | backward impaired block.                                                                                                                                                                            | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwSeCblkImp         | backward lost/misinserted impaired block.                                                                                                                                                           | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwSeCblkLst         | backward severely errored cell block (lost).                                                                                                                                                        | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwSeCblkMist        | backward severely errored cell block (misinserted).                                                                                                                                                 | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwSeCblkBvlt        | backward severely errored cell block - (BIP-16 violations).                                                                                                                                         | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwSeCblkCombNsat    | backward severely errored cell block combined(non-saturating).                                                                                                                                      | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwLstClp01Cnt       | backward lost CLP0+1 cell count.                                                                                                                                                                    | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwLstClp0Cnt        | backward lost CLP0 cell count.                                                                                                                                                                      | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwMistClp01Cnt      | backward misinserted CLP0+1 cell count.                                                                                                                                                             | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwErrCnt            | backward errored cell count.                                                                                                                                                                        | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwTotalLstClp01Cnt  | backward total lost CLP01 cell count.                                                                                                                                                               | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcBwTotalLstClp0Cnt   | backward total lost CLP0 cell count.                                                                                                                                                                | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcTotalTransClp01Cnt  | total transmitted CLP0+1 cell count.                                                                                                                                                                | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| nnAtmPmVcTotalTransClp0Cnt   | total transmitted CLP0 cell count.                                                                                                                                                                  | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No |
| <b>ADSL-LINE-MIB</b>         |                                                                                                                                                                                                     |                       |                     |    |
| <b>adslAtucPerfDataTable</b> |                                                                                                                                                                                                     |                       |                     |    |
| adslAtucPerfCurr15MinLofs    | Count of seconds in the current 15 minute interval when there was Loss of Framing.                                                                                                                  | adslAtucPerfDataTable | ADSL-LINE-MIB       | No |
| adslAtucPerfCurr15MinLoss    | Count of seconds in the current 15 minute interval when there was Loss of Signal.                                                                                                                   | adslAtucPerfDataTable | ADSL-LINE-MIB       | No |
| adslAtucPerfCurr15MinLols    | Count of seconds in the current 15 minute interval when there was Loss of Link.                                                                                                                     | adslAtucPerfDataTable | ADSL-LINE-MIB       | No |
| adslAtucPerfCurr15MinLprs    | Count of seconds in the current 15 minute interval when there was Loss of Power.                                                                                                                    | adslAtucPerfDataTable | ADSL-LINE-MIB       | No |
| adslAtucPerfCurr15MinESs     | Count of Errored Seconds in the current 15 minute interval. The errored second parameter is a count of one-second intervals containing one or more CRC anomalies or one or more los or sef defects. | adslAtucPerfDataTable | ADSL-LINE-MIB       | No |
| adslAtucPerfCurr15MinInits   | Count of the line initialization attempts in the current 15 minute interval. Includes both successful and failed attempts.                                                                          | adslAtucPerfDataTable | ADSL-LINE-MIB       | No |
| <b>adslAtucPerfDataTable</b> |                                                                                                                                                                                                     |                       |                     |    |

|                                          |                                                                                                                                                                                                      |                           |               |    |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------|----|
| adslAturPerfCurr15MinLofs                | Count of seconds in the current 15 minute interval when there was Loss of Framing.                                                                                                                   | adslAturPerfDataTable     | ADSL-LINE-MIB | No |
| adslAturPerfCurr15MinLoss                | Count of seconds in the current 15 minute interval when there was Loss of Signal.                                                                                                                    | adslAturPerfDataTable     | ADSL-LINE-MIB | No |
| adslAturPerfCurr15MinLprs                | Count of seconds in the current 15 minute interval when there was Loss of Power.                                                                                                                     | adslAturPerfDataTable     | ADSL-LINE-MIB | No |
| adslAturPerfCurr15MinESs                 | Count of Errored Seconds in the current 15 minute interval. The errored second parameter is a count of one-second intervals containing one or more CRC anomalies, or one or more los or sef defects. | adslAturPerfDataTable     | ADSL-LINE-MIB | No |
| <b>adslAtucIntervalTable</b>             |                                                                                                                                                                                                      |                           |               |    |
| adslAtucIntervalLofs                     | Count of seconds in the interval when there was Loss of Framing.                                                                                                                                     | adslAtucIntervalTable     | ADSL-LINE-MIB | No |
| adslAtucIntervalLoss                     | Count of seconds in the interval when there was Loss of Signal.                                                                                                                                      | adslAtucIntervalTable     | ADSL-LINE-MIB | No |
| adslAtucIntervalLols                     | Count of seconds in the interval when there was Loss of Link.                                                                                                                                        | adslAtucIntervalTable     | ADSL-LINE-MIB | No |
| adslAtucIntervalLprs                     | Count of seconds in the interval when there was Loss of Power.                                                                                                                                       | adslAtucIntervalTable     | ADSL-LINE-MIB | No |
| adslAtucIntervalESs                      | Count of Errored Seconds in the interval. The errored second parameter is a count of one-second intervals containing one or more CRC anomalies or one or more los or sef defects.                    | adslAtucIntervalTable     | ADSL-LINE-MIB | No |
| adslAtucIntervalInits                    | Count of the line initialization attempts during the interval. Includes both successful and failed attempts                                                                                          | adslAtucIntervalTable     | ADSL-LINE-MIB | No |
| <b>adslAturIntervalTable</b>             |                                                                                                                                                                                                      |                           |               |    |
| adslAturIntervalLofs                     | Count of seconds in the interval when there was Loss of Framing.                                                                                                                                     | adslAtucIntervalTable     | ADSL-LINE-MIB | No |
| adslAturIntervalLoss                     | Count of seconds in the interval when there was Loss of Signal.                                                                                                                                      | adslAtucIntervalTable     | ADSL-LINE-MIB | No |
| adslAturIntervalLprs                     | Count of seconds in the interval when there was Loss of Power.                                                                                                                                       | adslAtucIntervalTable     | ADSL-LINE-MIB | No |
| adslAturIntervalESs                      | Count of Errored Seconds in the interval. The errored second parameter is a count of one-second intervals containing one or more CRC anomalies, or one or more los or sef defects.                   | adslAtucIntervalTable     | ADSL-LINE-MIB | No |
| <b>adslAtucChanPerfDataTable</b>         |                                                                                                                                                                                                      |                           |               |    |
| adslAtucChanPerfCurr15MinReceivedBlks    | Count of all encoded blocks received on this channel within the current 15 minute interval.                                                                                                          | adslAtucChanPerfDataTable | ADSL-LINE-MIB | No |
| adslAtucChanPerfCurr15MinTransmittedBlks | Count of all encoded blocks transmitted on this channel within the current 15 minute interval.                                                                                                       | adslAtucChanPerfDataTable | ADSL-LINE-MIB | No |
| adslAtucChanPerfCurr15MinCorrectedBlks   | Count of all blocks received with errors that were corrected on this channel within the current 15 minute interval.                                                                                  | adslAtucChanPerfDataTable | ADSL-LINE-MIB | No |
| adslAtucChanPerfCurr15MinUncorrectBlks   | Count of all blocks received with uncorrectable errors on this channel within the current 15 minute interval.                                                                                        | adslAtucChanPerfDataTable | ADSL-LINE-MIB | No |
| <b>adslAturChanPerfDataTable</b>         |                                                                                                                                                                                                      |                           |               |    |
| adslAturChanPerfCurr15MinReceivedBlks    | Count of all encoded blocks received on this channel within the current 15 minute interval.                                                                                                          | adslAturChanPerfDataTable | ADSL-LINE-MIB | No |
| adslAturChanPerfCurr15MinTransmittedBlks | Count of all encoded blocks transmitted on this channel within the current 15 minute interval.                                                                                                       | adslAturChanPerfDataTable | ADSL-LINE-MIB | No |
| adslAturChanPerfCurr15MinCorrectedBlks   | Count of all blocks received with errors that were corrected on this channel within the current 15 minute interval.                                                                                  | adslAturChanPerfDataTable | ADSL-LINE-MIB | No |

|                                        |                                                                                                               |                           |                      |    |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------|----------------------|----|
| adslAturChanPerfCurr15MinUncorrectBlks | Count of all blocks received with uncorrectable errors on this channel within the current 15 minute interval. | adslAturChanPerfDataTable | ADSL-LINE-MIB        | No |
| <b>adslAtucChanIntervalTable</b>       |                                                                                                               |                           |                      |    |
| adslAtucChanIntervalReceivedBlks       | Count of all encoded blocks received on this channel during this interval.                                    | adslAtucChanIntervalTable | ADSL-LINE-MIB        | No |
| adslAtucChanIntervalTransmittedBlks    | Count of all encoded blocks transmitted on this channel during this interval.                                 | adslAtucChanIntervalTable | ADSL-LINE-MIB        | No |
| adslAtucChanIntervalCorrectedBlks      | Count of all blocks received with errors that were corrected on this channel during this interval.            | adslAtucChanIntervalTable | ADSL-LINE-MIB        | No |
| adslAtucChanIntervalUncorrectBlks      | Count of all blocks received with uncorrectable errors on this channel during this interval.                  | adslAtucChanIntervalTable | ADSL-LINE-MIB        | No |
| <b>adslAturChanIntervalTable</b>       |                                                                                                               |                           |                      |    |
| adslAturChanIntervalReceivedBlks       | Count of all encoded blocks received on this channel during this interval.                                    | adslAturChanIntervalTable | ADSL-LINE-MIB        | No |
| adslAturChanIntervalTransmittedBlks    | Count of all encoded blocks transmitted on this channel during this interval.                                 | adslAturChanIntervalTable | ADSL-LINE-MIB        | No |
| adslAturChanIntervalCorrectedBlks      | Count of all blocks received with errors that were corrected on this channel during this interval.            | adslAturChanIntervalTable | ADSL-LINE-MIB        | No |
| adslAturChanIntervalUncorrectBlks      | Count of all blocks received with uncorrectable errors on this channel during this interval.                  | adslAturChanIntervalTable | ADSL-LINE-MIB        | No |
| <b>NORTEL-UEMG-ADSL-MIB</b>            |                                                                                                               |                           |                      |    |
| <b>nnUemgDslAtucPerfTable</b>          |                                                                                                               |                           |                      |    |
| nnUemgDslAtucPerfCurr15MinFec          | Number of Forward Error Correction anomalies on the Atuc Channel in the current 15min interval.               | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| nnUemgDslAtucPerfCurr15MinCrc          | Number of Cyclical Redundancy Check anomalies on the Atuc Channel in the current 15min interval.              | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| nnUemgDslAtucPerfCurr15MinNcd          | Number of No Cell Delineation anomalies on the Atuc Channel in the current 15min interval.                    | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| nnUemgDslAtucPerfCurr15MinOcd          | Number of Out of Cell Delineation anomalies on the Atuc Channel in the current 15min interval.                | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| nnUemgDslAtucPerfCurr15MinHec          | Number of Header Error Check anomalies which on the Atuc Channel in the current 15min interval.               | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| nnUemgDslAtucPerfCurr15MinLcd          | Number of Loss of Cell Delineation anomalies on the Atuc Channel in the current 15min interval.               | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| <b>nnUemgDslAturPerfTable</b>          |                                                                                                               |                           |                      |    |
| nnUemgDslAturPerfCurr15MinFec          | Number of Forward Error Correction anomalies on the ATUR Channel in the current 15min interval.               | nnUemgDslAturPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| nnUemgDslAturPerfCurr15MinBlockError   | Number of Block Error anomalies which occurred on the ATUR Channel in the current 15min interval.             | nnUemgDslAturPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| nnUemgDslAturPerfCurr15MinNcd          | Number of No Cell Delineation anomalies on the ATUR Channel in the current 15min interval.                    | nnUemgDslAturPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| nnUemgDslAturPerfCurr15MinOcd          | Number of Out of Cell Delineation anomalies on the ATUR Channel in the current 15min interval.                | nnUemgDslAturPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| nnUemgDslAturPerfCurr15MinHec          | Number of Header Error Check anomalies which on the ATUR Channel in the current 15min interval.               | nnUemgDslAturPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| nnUemgDslAturPerfCurr15MinLcd          | Number of Loss of Cell Delineation anomalies on the ATUR Channel in the current 15min interval.               | nnUemgDslAturPerfTable    | NORTEL-UEMG-ADSL-MIB | No |
| <b>nnUemgDslAtucIntervalTable</b>      |                                                                                                               |                           |                      |    |
| nnUemgDslAtucPerfFec                   | Number of Forward Error Correction anomalies on the ATUC channel during this interval.                        | nnUemgDslAturPerfTable    | NORTEL-UEMG-ADSL-MIB | No |

|                                   |                                                                                                                                                                                                                |                        |                      |     |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------|-----|
| nnUemgDslAtucPerfCrc              | Number of Cyclical Redundancy Check anomalies on the ATUC channel during this interval.                                                                                                                        | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| nnUemgDslAtucPerfNcd              | Number of No Cell Delineation anomalies which on the ATUC channel during this interval.                                                                                                                        | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| nnUemgDslAtucPerfOcd              | Number of Out of Cell Delineation anomalies which on the ATUC channel during this interval.                                                                                                                    | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| nnUemgDslAtucPerfHec              | Number of Header Error Check anomalies which on the ATUC channel during this interval.                                                                                                                         | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| nnUemgDslAtucPerfLcd              | Number of Loss of Cell Delineation anomalies on the ATUC channel during this interval.                                                                                                                         | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| <b>nnUemgDslAturIntervalTable</b> |                                                                                                                                                                                                                |                        |                      |     |
| nnUemgDslAtucPerfFec              | Number of Forward Error Correction anomalies on the ATUC channel during this interval.                                                                                                                         | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| nnUemgDslAturPerfBlockError       | Number of Block Error anomalies which occurred on the ATUR channel during this interval.                                                                                                                       | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| nnUemgDslAtucPerfNcd              | Number of No Cell Delineation anomalies which on the ATUC channel during this interval.                                                                                                                        | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| nnUemgDslAtucPerfOcd              | Number of Out of Cell Delineation anomalies which on the ATUC channel during this interval.                                                                                                                    | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| nnUemgDslAtucPerfHec              | Number of Header Error Check anomalies which on the ATUC channel during this interval.                                                                                                                         | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| nnUemgDslAtucPerfLcd              | Number of Loss of Cell Delineation anomalies on the ATUC channel during this interval.                                                                                                                         | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  |
| <b>IMA-MIB (new in SN05)</b>      |                                                                                                                                                                                                                |                        |                      |     |
| <b>imaGroupCurrentTable</b>       |                                                                                                                                                                                                                |                        |                      |     |
| imaGroupCurrentUnavailSecs        | Count of one second intervals where the IMA Group Traffic State Machine is Down in current 15 minute interval                                                                                                  | imaGroupCurrentTable   | IMA-MIB              | No  |
| imaGroupCurrentNeNumFailures      | The number of times a near-end group failure (Config-Aborted, Insufficient-Links) has been reported in current 15 minute interval                                                                              | imaGroupCurrentTable   | IMA-MIB              | No  |
| imaGroupCurrentFeNumFailures      | The number of times a far-end group failure (Config-Aborted-FE, Insufficient-Links-FE, Blocked-FE) has been reported in current 15 minute interval. This is an optional attribute.                             | imaGroupCurrentTable   | IMA-MIB              | No  |
| <b>imaGroupIntervalTable</b>      |                                                                                                                                                                                                                |                        |                      |     |
| imaGroupIntervalUnavailSecs       | Count of one second intervals where the IMA Group Traffic State Machine is Down in one of the previous 96, individual 15 minute, intervals                                                                     | imaGroupIntervalTable  | IMA-MIB              | Yes |
| imaGroupIntervalNeNumFailures     | The number of times a near-end group failure (Config-Aborted, Insufficient-Links) has been reported in one of the previous 96, individual 15 minute, intervals                                                 | imaGroupIntervalTable  | IMA-MIB              | Yes |
| imaGroupIntervalFeNumFailures     | The number of times a far-end group failure (Config-Aborted-FE, Insufficient-Links-FE, Blocked-FE) has been reported in one of the previous 96, individual 15 minute, intervals. This is an optional attribute | imaGroupIntervalTable  | IMA-MIB              | No  |
| <b>imaGroupTotalTable</b>         |                                                                                                                                                                                                                |                        |                      |     |
| imaGroupTotalUnavailSecs          | Count of one second intervals where the IMA Group Traffic State Machine is Down in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                                      | imaGroupTotalTable     | IMA-MIB              | No  |

|                                |                                                                                                                                                                                                                                                        |                     |         |    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------|----|
| imaGroupTotalNeNumFailures     | The number of times a near-end group failure (Config-Aborted, Insufficient-Links) has been reported in the previous 24 hour. interval. Invalid 15 minute intervals count as 0.                                                                         | imaGroupTotalTable  | IMA-MIB | No |
| imaGroupTotalFeNumFailures     | The number of times a far-end group failure (Config-Aborted-FE, Insufficient-Links-FE, Blocked-FE) has been reported in the previous 24 hour interval. Invalid 15 minute intervals count as 0. This is an optional attribute.                          | imaGroupTotalTable  | IMA-MIB | No |
| <b>imaLinkCurrentTable</b>     |                                                                                                                                                                                                                                                        |                     |         |    |
| imaLinkCurrentImaViolations    | ICP violations: count of errored, invalid or missing ICP cells, except during SES-IMA or UAS-IMA conditions, in the current 15 minute interval                                                                                                         | imaLinkCurrentTable | IMA-MIB | No |
| imaLinkCurrentOifAnomalies     | The number of OIF anomalies, except during SES-IMA or UAS-IMA conditions, at the near-end in the current 15 minute interval. This is an optional attribute                                                                                             | imaLinkCurrentTable | IMA-MIB | No |
| imaLinkCurrentNeSevErroredSecs | Count of one second intervals containing >= 30% of the ICP cells counted as IV-IMAs, or one or more link defects (e. g., LOS, OOF/ LOF, AIS, or LCD), LIF defects, or LODS defects, except during UAS-IMA condition, in the current 15 minute interval | imaLinkCurrentTable | IMA-MIB | No |
| imaLinkCurrentFeSevErroredSecs | Count of one second intervals containing one or more RDI-IMA defects, except during UAS-IMA-FE condition, in the current 15 minute interval                                                                                                            | imaLinkCurrentTable | IMA-MIB | No |
| imaLinkCurrentNeUnavailSecs    | Count of unavailable seconds at near-end in the current 15 minute interval: unavailability begins at the onset of 10 contiguous SES-IMA and ends at the onset of 10 contiguous seconds with no SES-IMA                                                 | imaLinkCurrentTable | IMA-MIB | No |
| imaLinkCurrentFeUnavailSecs    | Count of unavailable seconds at far-end in the current 15 minute interval: unavailability begins at the onset of 10 contiguous SES-IMA-FE and ends at the onset of 10 contiguous seconds with no SES-IMA-FE                                            | imaLinkCurrentTable | IMA-MIB | No |
| imaLinkCurrentNeTxUnusableSecs | Tx Unusable seconds: count of Unusable seconds at the near-end Tx LSM in the current 15 minute interval                                                                                                                                                | imaLinkCurrentTable | IMA-MIB | No |
| imaLinkCurrentNeRxUnusableSecs | Rx Unusable seconds: count of Unusable seconds at the near-end Rx LSM in the current 15 minute interval                                                                                                                                                | imaLinkCurrentTable | IMA-MIB | No |
| imaLinkCurrentFeTxUnusableSecs | Tx Unusable seconds at far-end: count of seconds with Tx Unusable indications from the far-end Tx LSM in the current 15 minute interval                                                                                                                | imaLinkCurrentTable | IMA-MIB | No |
| imaLinkCurrentFeRxUnusableSecs | Rx Unusable seconds at far-end: count of seconds with Rx Unusable indications from the far-end Rx LSM in the current 15 minute interval                                                                                                                | imaLinkCurrentTable | IMA-MIB | No |
| imaLinkCurrentNeTxNumFailures  | The number of times a near-end transmit failure alarm condition has been entered on this link (i.e., some form of implementation specific transmit fault) in the current 15 minute interval                                                            | imaLinkCurrentTable | IMA-MIB | No |

|                                 |                                                                                                                                                                                                                                                                                 |                      |         |     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------|-----|
| imaLinkCurrentNeRxNumFailures   | The number of times a near-end receive failure alarm condition has been entered on this link (i.e., LIF, LODS, RFI-IMA, Mis-Connected, or some form of implementation specific receive fault) in the current 15 minute interval                                                 | imaLinkCurrentTable  | IMA-MIB | No  |
| imaLinkCurrentFeTxNumFailures   | The number of times a far-end transmit failure alarm condition has been entered on this link (i.e., Tx-Unusable-FE) in the current 15 minute interval. This is an optional attribute                                                                                            | imaLinkCurrentTable  | IMA-MIB | No  |
| imaLinkCurrentFeRxNumFailures   | The number of times a far-end receive failure alarm condition has been entered on this link (i.e., Rx-Unusable-FE) in the current 15 minute interval. This is an optional attribute                                                                                             | imaLinkCurrentTable  | IMA-MIB | No  |
| imaLinkCurrentTxStuffs          | Count of stuff events inserted in the transmit direction in the current 15 minute interval. This is an optional attribute                                                                                                                                                       | imaLinkCurrentTable  | IMA-MIB | No  |
| imaLinkCurrentRxStuffs          | Count of stuff events detected in the receive direction in the current 15 minute interval. This is an optional attribute                                                                                                                                                        | imaLinkCurrentTable  | IMA-MIB | No  |
| <b>imaLinkIntervalTable</b>     |                                                                                                                                                                                                                                                                                 |                      |         |     |
| imaLinkIntervalImaViolations    | ICP violations: count of errored, invalid or missing ICP cells, except during SES-IMA or UAS-IMA conditions, in one of the previous 96, individual 15 minute, intervals                                                                                                         | imaLinkIntervalTable | IMA-MIB | Yes |
| imaLinkIntervalOifAnomalies     | The number of OIF anomalies, except during SES-IMA or UAS-IMA conditions, at the near-end in one of the previous 96, individual 15 minute, intervals. This is an optional attribute                                                                                             | imaLinkIntervalTable | IMA-MIB | Yes |
| imaLinkIntervalNeSevErroredSecs | Count of one second intervals containing >= 30% of the ICP cells counted as IV-IMAs, or one or more link defects (e. g., LOS, OOF/ LOF, AIS, or LCD), LIF defects, or LODS defects, except during UAS-IMA condition, in one of the previous 96, individual 15 minute, intervals | imaLinkIntervalTable | IMA-MIB | Yes |
| imaLinkIntervalFeSevErroredSecs | Count of one second intervals containing one or more RDI-IMA defects, except during UAS-IMA-FE condition, in one of the previous 96, individual 15 minute, intervals                                                                                                            | imaLinkIntervalTable | IMA-MIB | No  |
| imaLinkIntervalNeUnavailSecs    | Count of unavailable seconds at near-end in one of the previous 96, individual 15 minute, intervals: unavailability begins at the onset of 10 contiguous SES-IMA and ends at the onset of 10 contiguous seconds with no SES-IMA                                                 | imaLinkIntervalTable | IMA-MIB | Yes |
| imaLinkIntervalFeUnavailSecs    | Count of unavailable seconds at far-end in one of the previous 96, individual 15 minute, intervals: unavailability begins at the onset of 10 contiguous SES-IMA-FE and ends at the onset of 10 contiguous seconds with no SES-IMA-FE                                            | imaLinkIntervalTable | IMA-MIB | No  |
| imaLinkIntervalNeTxUnusableSecs | Tx Unusable seconds: count of Unusable seconds at the near-end Tx LSM in one of the previous 96, individual 15 minute, intervals                                                                                                                                                | imaLinkIntervalTable | IMA-MIB | Yes |

|                                 |                                                                                                                                                                                                                                                            |                      |         |     |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------|-----|
| imaLinkIntervalNeRxUnusableSecs | Rx Unusable seconds: count of Unusable seconds at the near-end Rx LSM in one of the previous 96, individual 15 minute, intervals                                                                                                                           | imaLinkIntervalTable | IMA-MIB | Yes |
| imaLinkIntervalFeTxUnusableSecs | Tx Unusable seconds at far-end: count of seconds with Tx Unusable indications from the far-end Tx LSM in one of the previous 96, individual 15 minute, intervals                                                                                           | imaLinkIntervalTable | IMA-MIB | No  |
| imaLinkIntervalFeRxUnusableSecs | Rx Unusable seconds at far-end: count of seconds with Rx Unusable indications from the far-end Rx LSM in one of the previous 96, individual 15 minute, intervals.                                                                                          | imaLinkIntervalTable | IMA-MIB | No  |
| imaLinkIntervalNeTxNumFailures  | The number of times a near-end transmit failure alarm condition has been entered on this link (i.e., some form of implementation specific transmit fault) in one of the previous 96, individual 15 minute, intervals                                       | imaLinkIntervalTable | IMA-MIB | Yes |
| imaLinkIntervalNeRxNumFailures  | The number of times a near-end receive failure alarm condition has been entered on this link (i.e., LIF, LODS, RFI-IMA, Mis-Connected, or some form of implementation specific receive fault) in one of the previous 96, individual 15 minute, intervals   | imaLinkIntervalTable | IMA-MIB | Yes |
| imaLinkIntervalFeTxNumFailures  | The number of times a far-end transmit failure alarm condition has been entered on this link (i.e., Tx-Unusable-FE) in one of the previous 96, individual 15 minute, intervals.<br>This is an optional attribute                                           | imaLinkIntervalTable | IMA-MIB | No  |
| imaLinkIntervalFeRxNumFailures  | The number of times a far-end receive failure alarm condition has been entered on this link (i.e., Rx-Unusable-FE) in one of the previous 96, individual 15 minute, intervals.<br>This is an optional attribute                                            | imaLinkIntervalTable | IMA-MIB | No  |
| imaLinkIntervalTxStuffs         | Count of stuff events inserted in the transmit direction in one of the previous 96, individual 15 minute, intervals. This is an optional attribute                                                                                                         | imaLinkIntervalTable | IMA-MIB | Yes |
| imaLinkIntervalRxStuffs         | Count of stuff events detected in the receive direction in one of the previous 96, individual 15 minute, intervals. This is an optional attribute                                                                                                          | imaLinkIntervalTable | IMA-MIB | Yes |
| <b>imaLinkTotalTable</b>        |                                                                                                                                                                                                                                                            |                      |         |     |
| imaLinkTotalImaViolations       | ICP violations: count of errored, invalid or missing ICP cells, except during SES-IMA or UAS-IMA conditions, in the previous 24 hour interval                                                                                                              | imaLinkTotalTable    | IMA-MIB | No  |
| imaLinkTotalOifAnomalies        | The number of OIF anomalies, except during SES-IMA or UAS-IMA conditions, at the near-end in the previous 24 hour interval. This is an optional attribute                                                                                                  | imaLinkTotalTable    | IMA-MIB | No  |
| imaLinkTotalNeSevErroredSecs    | Count of one second intervals containing $\geq 30\%$ of the ICP cells counted as IV-IMAs, or one or more link defects (e. g., LOS, OOF/ LOF, AIS, or LCD), LIF defects, or LODS defects, except during UAS-IMA condition, in the previous 24 hour interval | imaLinkTotalTable    | IMA-MIB | No  |
| imaLinkTotalFeSevErroredSecs    | Count of one second intervals containing one or more RDI-IMA defects, except during UAS-IMA-FE condition, in the previous 24 hour interval                                                                                                                 | imaLinkTotalTable    | IMA-MIB | No  |



|                              |                                                                                                                                                                                                                                |                       |                  |    |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------|----|
| imaLinkTotalNeUnavailSecs    | Count of unavailable seconds at near-end in the previous 24 hour interval: unavailability begins at the onset of 10 contiguous SES-IMA and ends at the onset of 10 contiguous seconds with no SES-IMA                          | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalFeUnavailSecs    | Count of unavailable seconds at far-end in the previous 24 hour interval: unavailability begins at the onset of 10 contiguous SES-IMA-FE and ends at the onset of 10 contiguous seconds with no SES-IMA-FE                     | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalNeTxUnusableSecs | Tx Unusable seconds: count of Unusable seconds at the near-end Tx LSM in the previous 24 hour interval                                                                                                                         | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalNeRxUnusableSecs | Rx Unusable seconds: count of Unusable seconds at the near-end Rx LSM in the previous 24 hour interval                                                                                                                         | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalFeTxUnusableSecs | Tx Unusable seconds at far-end: count of seconds with Tx Unusable indications from the far-end Tx LSM in the previous 24 hour interval                                                                                         | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalFeRxUnusableSecs | Rx Unusable seconds at far-end: count of seconds with Rx Unusable indications from the far-end Rx LSM in the previous 24 hour interval                                                                                         | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalNeTxNumFailures  | The number of times a near-end transmit failure alarm condition has been entered on this link (i.e., some form of implementation specific transmit fault) in the previous 24 hour interval                                     | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalNeRxNumFailures  | The number of times a near-end receive failure alarm condition has been entered on this link (i.e., LIF, LODS, RFI-IMA, Mis-Connected, or some form of implementation specific receive fault) in the previous 24 hour interval | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalFeTxNumFailures  | The number of times a far-end transmit failure alarm condition has been entered on this link (i.e., Tx-Unusable-FE) in the previous 24 hour interval. This is an optional attribute                                            | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalFeRxNumFailures  | The number of times a far-end receive failure alarm condition has been entered on this link (i.e., Rx-Unusable-FE) in the previous 24 hour interval. This is an optional attribute                                             | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalTxStuffs         | Count of stuff events inserted in the transmit direction in the previous 24 hour interval. This is an optional attribute                                                                                                       | imaLinkTotalTable     | IMA-MIB          | No |
| imaLinkTotalRxStuffs         | Count of stuff events detected in the receive direction in the previous 24 hour interval. This is an optional attribute                                                                                                        | imaLinkTotalTable     | IMA-MIB          | No |
| <b>UEMG-PERFMON-MIB</b>      |                                                                                                                                                                                                                                |                       |                  |    |
| <b>nnPmUtilOmRecentTable</b> | This table contains measurements of CPU, Ram, Flash and Channel Usage. Measurements in this table are rolling (peak and average values) on the most recent 15 minutes.                                                         |                       |                  |    |
| nnPmUtilRecentCpuPeak        | Peak CPU Occupancy (as a percentage of usage)                                                                                                                                                                                  | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No |
| nnPmUtilRecentCpuAvg         | Average CPU Occupancy (as a percentage of usage)                                                                                                                                                                               | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No |
| nnPmUtilRecentRamPeak        | Peak RAM Usage (as a percentage of usage)                                                                                                                                                                                      | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No |
| nnPmUtilRecentRamAvg         | Average RAM Usage (as a percentage of usage)                                                                                                                                                                                   | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No |

|                              |                                                                                                                                                                                                            |                       |                  |     |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------|-----|
| nnPmUtilRecentFlashPeak      | Peak Flash Memory Usage (as a percentage of usage)                                                                                                                                                         | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  |
| nnPmUtilRecentFlashAvg       | Average Flash Memory Usage (as a percentage of usage)                                                                                                                                                      | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  |
| nnPmUtilRecentChanPeak       | Peak Channel Usage (as a percentage of usage)                                                                                                                                                              | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  |
| nnPmUtilRecentChanAvg        | Average Channel Usage (as a percentage of usage)                                                                                                                                                           | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  |
| <b>nnPmUtilOmIntervTable</b> | This table contains history measurements of CPU, Ram, Flash and Channel Usage. Measurements in this table are rolling (peak and average values) of each 15 minute interval up to 24 hours old.             |                       |                  |     |
| nnPmUtilIntervCpuPeak        | Peak CPU Occupancy (as a percentage of usage)                                                                                                                                                              | nnPmUtilOmIntervTable | UEMG-PERFMON-MIB | Yes |
| nnPmUtilIntervCpuAvg         | Average CPU Occupancy (as a percentage of usage)                                                                                                                                                           | nnPmUtilOmIntervTable | UEMG-PERFMON-MIB | Yes |
| nnPmUtilIntervRamPeak        | Peak RAM Usage (as a percentage of usage)                                                                                                                                                                  | nnPmUtilOmIntervTable | UEMG-PERFMON-MIB | Yes |
| nnPmUtilIntervRamAvg         | Average RAM Usage (as a percentage of usage)                                                                                                                                                               | nnPmUtilOmIntervTable | UEMG-PERFMON-MIB | Yes |
| nnPmUtilIntervFlashPeak      | Peak Flash Memory Usage (as a percentage of usage)                                                                                                                                                         | nnPmUtilOmIntervTable | UEMG-PERFMON-MIB | Yes |
| nnPmUtilIntervFlashAvg       | Average Flash Memory Usage (as a percentage of usage)                                                                                                                                                      | nnPmUtilOmIntervTable | UEMG-PERFMON-MIB | Yes |
| nnPmUtilIntervChanPeak       | Peak Channel Usage (as a percentage of usage)                                                                                                                                                              | nnPmUtilOmIntervTable | UEMG-PERFMON-MIB | Yes |
| nnPmUtilIntervChanAvg        | Average Channel Usage (as a percentage of usage)                                                                                                                                                           | nnPmUtilOmIntervTable | UEMG-PERFMON-MIB | Yes |
| nnPmSnmpRecentRequestsPeak   | The Peak number of SNMP Requests/PDUs in the most recent 15 minutes. These are accumulated on 1 minute cycles.                                                                                             | N/A                   | UEMG-PERFMON-MIB | No  |
| nnPmSnmpRecentRequestsAvg    | The average number of SNMP Requests/PDUs in the most recent 15 minutes. These are accumulated on 1 minute cycles. Thus, the average is the average of the last 15 x 1-minute cycles.                       | N/A                   | UEMG-PERFMON-MIB | No  |
| nnPmSnmpRecentNotifsPeak     | The Peak number of SNMP Notifications sent in the most recent 15 minutes. These are accumulated on 1-minute cycles.                                                                                        | N/A                   | UEMG-PERFMON-MIB | No  |
| nnPmSnmpRecentNotifsAvg      | The average number of SNMP Notifications sent in the most recent 15 minutes. These are accumulated on 1-minute cycles. Thus, the average is the average of the last 15 x 1-minute cycles.                  | N/A                   | UEMG-PERFMON-MIB | No  |
| <b>nnPmSnmpOmIntervTable</b> | This table contains measurements of SNMP requests and events. Measurements in this table are rolling (peak and average values) of each 15 minute interval up to 24 hours old.                              |                       |                  |     |
| nnPmSnmpIntervReqPeak        | The Peak number of SNMP Requests/PDUs in the most Recent 15 mins. These are accumulated on 1 minute cycles.                                                                                                | nnPmSnmpOmIntervTable | UEMG-PERFMON-MIB | Yes |
| nnPmSnmpIntervReqAvg         | The Avg number of SNMP Requests/PDUs in the most Recent 15 mins. These are accumulated on 1 minute cycles. Thus, the avg is the avg of the last 15x 1-minute cycles. Precision is tenths, thus 816 is 81.6 | nnPmSnmpOmIntervTable | UEMG-PERFMON-MIB | Yes |
| nnPmSnmpIntervNotifPeak      | The Peak number of SNMP Notifications in the most Recent 15 mins. These are accumulated on 1-minute cycles.                                                                                                | nnPmSnmpOmIntervTable | UEMG-PERFMON-MIB | Yes |

|                                    |                                                                                                                                                                                                                 |                             |                  |     |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------|-----|
| nnPmSnmpIntervNotifAvg             | The Avg number of SNMP Notifications sent in the most Recent 15 mins. These are accumulated on 1 minute cycles. Thus, the avg is the avg of the last 15x 1-minute cycles. Precision is tenths, thus 816 is 81.6 | nnPmSnmpOmIntervTable       | UEMG-PERFMON-MIB | Yes |
| nnPmOvldRscDccIntervTable          |                                                                                                                                                                                                                 |                             | UEMG-PERFMON-MIB |     |
| nnPmOvldRscDccIntervPduRatePeak    | Peak # received AAL5 PDUs per sec for this 15 minute interval                                                                                                                                                   | nnPmOvldRscDccIntervTable   | UEMG-PERFMON-MIB | Yes |
| nnPmOvldRscDccIntervPduRateAvg     | Avg num recvd AAL5 PDUs per sec for this 15 minute interval                                                                                                                                                     | nnPmOvldRscDccIntervTable   | UEMG-PERFMON-MIB | Yes |
| nnPmOvldRscDccIntervCbnMsgRPeak    | Peak recvd conn request msgs per sec for this 15 minute interval                                                                                                                                                | nnPmOvldRscDccIntervTable   | UEMG-PERFMON-MIB | Yes |
| nnPmOvldRscDccIntervCbnMsgRAvg     | Avg conn request msgs per sec for this 15 minute interval                                                                                                                                                       | nnPmOvldRscDccIntervTable   | UEMG-PERFMON-MIB | Yes |
| nnPmOvldRscDccIntervConQDelPeak    | Milliseconds...peak time a connRequest is pending in its queue for this 15 minute interval                                                                                                                      | nnPmOvldRscDccIntervTable   | UEMG-PERFMON-MIB | Yes |
| nnPmOvldRscDccIntervConQDelAvg     | Milliseconds...Avg time a connRequest is pending in its queue for this 15 minute interval                                                                                                                       | nnPmOvldRscDccIntervTable   | UEMG-PERFMON-MIB | Yes |
| nnPmOvldRscDccIntervCpuUtilPeak    | Peak cpu occupancy for this 15 minute interval                                                                                                                                                                  | nnPmOvldRscDccIntervTable   | UEMG-PERFMON-MIB | Yes |
| nnPmOvldRscDccIntervCpuUtilAvg     | Avg cpu occupancy this 15 minute interval                                                                                                                                                                       | nnPmOvldRscDccIntervTable   | UEMG-PERFMON-MIB | Yes |
| <b>nnPmOvldConnDenyIntervTable</b> |                                                                                                                                                                                                                 |                             |                  |     |
| nnPmOvldConnDenyIntervCount        | Count of the number of Connection requests Denied for this 15 minute interval                                                                                                                                   | nnPmOvldConnDenyIntervTable | UEMG-PERFMON-MIB | Yes |
| <b>DS3-MIB</b>                     |                                                                                                                                                                                                                 |                             |                  |     |
| <b>dsx3CurrentTable</b>            |                                                                                                                                                                                                                 |                             |                  |     |
| dsx3CurrentPESs                    | The counter associated with the number of P - bit Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                           | dsx3CurrentTable            | DS3 - MIB        | No  |
| dsx3CurrentPSEsSs                  | The counter associated with the number of P - bit Severely Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                  | dsx3CurrentTable            | DS3 - MIB        | No  |
| dsx3CurrentSEFSs                   | The counter associated with the number of Severely Errored Framing Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                  | dsx3CurrentTable            | DS3 - MIB        | No  |
| dsx3CurrentUASs                    | The counter associated with the number of Unavailable Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                               | dsx3CurrentTable            | DS3 - MIB        | No  |
| dsx3CurrentPCVs                    | The counter associated with the number of P - bit Coding Violations encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                         | dsx3CurrentTable            | DS3 - MIB        | No  |
| dsx3CurrentCCVs                    | The counter associated with the number of C - bit Coding Violations encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                         | dsx3CurrentTable            | DS3 - MIB        | No  |
| dsx3CurrentCESs                    | The counter associated with the number of C - bit Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                           | dsx3CurrentTable            | DS3 - MIB        | No  |

|                               |                                                                                                                                                                                                                          |                        |           |    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|----|
| dsx3CurrentCSEss              | The counter associated with the number of C - bit Severely Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                           | dsx3CurrentTable       | DS3 - MIB | No |
| <b>dsx3IntervalTable</b>      |                                                                                                                                                                                                                          |                        |           |    |
| dsx3IntervalPESs              | The counter associated with the number of P - bit Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                                    | dsx3IntervalTable      | DS3 - MIB | No |
| dsx3IntervalPSESs             | The counter associated with the number of P - bit Severely Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours.                      | dsx3IntervalTable      | DS3 - MIB | No |
| dsx3IntervalSEFSs             | The counter associated with the number of Severely Errored Framing Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours.                      | dsx3IntervalTable      | DS3 - MIB | No |
| dsx3IntervalUASs              | The counter associated with the number of Unavailable Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours.                                   | dsx3IntervalTable      | DS3 - MIB | No |
| dsx3IntervalPCVs              | The counter associated with the number of P - bit Coding Violations encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours.                             | dsx3IntervalTable      | DS3 - MIB | No |
| dsx3IntervalCCVs              | The counter associated with the number of C - bit Coding Violations encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours.                             | dsx3IntervalTable      | DS3 - MIB | No |
| dsx3IntervalCESs              | The counter associated with the number of C - bit Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                                    | dsx3IntervalTable      | DS3 - MIB | No |
| dsx3IntervalCSEss             | The counter associated with the number of C - bit Severely Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours.                      | dsx3IntervalTable      | DS3 - MIB | No |
| <b>dsx3FarEndCurrentTable</b> |                                                                                                                                                                                                                          |                        |           |    |
| dsx3FarEndCurrentCESs         | The counter associated with the number of FarEnd Errored Seconds encountered by a SONET (STS1 with DS3 payload selected) interface in the current 15 minute interval.                                                    | dsx3FarEndCurrentTable | DS3 - MIB | No |
| dsx3FarEndCurrentCSEss        | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET (STS1 with DS3 payload selected) Path interface in the current 15 minute interval.                                     | dsx3FarEndCurrentTable | DS3 - MIB | No |
| dsx3FarEndCurrentCCVs         | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET (STS1 with DS3 payload selected) Path interface in the current 15 minute interval. | dsx3FarEndCurrentTable | DS3 - MIB | No |

|                                       |                                                                                                                                                                                                                                                 |                                |                           |     |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------|-----|
| dsx3FarEndCurrentUASs                 | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET (STS1 with DS3 payload selected) Path interface in the current 15 minute interval.                                                                 | dsx3FarEndCurrentTable         | DS3 - MIB                 | No  |
| <b>dsx3FarEndIntervalTable</b>        |                                                                                                                                                                                                                                                 |                                |                           |     |
| dsx3FarEndIntervalCESs                | The counter associated with the number of Far End Errored Seconds encountered by a SONET (STS1 with DS3 payload selected) Path interface in a particular 15- minute interval in the past 24 hours.                                              | dsx3FarEndIntervalTable        | DS3 - MIB                 | No  |
| dsx3FarEndIntervalCSESs               | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET (STS1 with DS3 payload selected) Path interface in a particular 15- minute interval in the past 24 hours.                                     | dsx3FarEndIntervalTable        | DS3 - MIB                 | No  |
| dsx3FarEndIntervalCCVs                | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET (STS1 with DS3 payload selected) Path interface in a particular 15- minute interval in the past 24 hours. | dsx3FarEndIntervalTable        | DS3 - MIB                 | No  |
| dsx3FarEndIntervalUASs                | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET (STS1 with DS3 payload selected) Path interface in a particular 15- minute interval in the past 24 hours.                                          | dsx3FarEndIntervalTable        | DS3 - MIB                 | No  |
| <b>NORTEL-UEMG-RELMSGING-MIB</b>      |                                                                                                                                                                                                                                                 |                                |                           |     |
| <b>nnRelMsgSctpAssocOmCurrTable</b>   |                                                                                                                                                                                                                                                 |                                |                           |     |
| nnRelMsgSctpAscCurrClosed             | number of times that this association closed (both aborts and shutdowns)                                                                                                                                                                        | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscCurrAbort              | number of times that this association aborted.                                                                                                                                                                                                  | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscCurrOutPacks           | number of packets transmitted                                                                                                                                                                                                                   | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | No  |
| nnRelMsgSctpAscCurrInPacks            | number of packets received, this association                                                                                                                                                                                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | No  |
| nnRelMsgSctpAscCurrDiscPacks          | number of packets discarded by this association.                                                                                                                                                                                                | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | No  |
| nnRelMsgSctpAscCurrRetranPacks        | number of packets retransmitted by this association, this interval                                                                                                                                                                              | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | No  |
| nnRelMsgSctpAscCurrT1expires          | number of T1 Expires                                                                                                                                                                                                                            | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | No  |
| nnRelMsgSctpAscCurrT2expires          | number of T2 expires.                                                                                                                                                                                                                           | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | No  |
| nnRelMsgSctpAscCurrT3expires          | number of T3 expires                                                                                                                                                                                                                            | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | No  |
| nnRelMsgSctpAscCurrCongCount          | number of times this assoc entered congestion.                                                                                                                                                                                                  | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | No  |
| nnRelMsgSctpAscCurrCongCleared        | number of times congestion cleared by audit.                                                                                                                                                                                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMSGING-MIB | No  |
| <b>nnRelMsgSctpAssocOmIntervTable</b> |                                                                                                                                                                                                                                                 |                                |                           |     |
| nnRelMsgSctpAscIntervClosed           | number of times that this association closed (both aborts and shutdowns)                                                                                                                                                                        | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscIntervAbort            | number of times that this association aborted.                                                                                                                                                                                                  | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscIntervOutPacks         | number of packets transmitted                                                                                                                                                                                                                   | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscIntervInPacks          | number of packets received, this association                                                                                                                                                                                                    | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscIntervDiscPacks        | number of packets discarded by this association.                                                                                                                                                                                                | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscIntervRetranPacks      | number of packets retransmitted by this association, this interval                                                                                                                                                                              | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscIntervT1expires        | number of T1 Expires                                                                                                                                                                                                                            | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |

|                                  |                                                                                           |                                |                           |     |
|----------------------------------|-------------------------------------------------------------------------------------------|--------------------------------|---------------------------|-----|
| nnRelMsgSctpAscIntervT2expires   | number of T2 expires.                                                                     | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscIntervT3expires   | number of T3 expires                                                                      | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscIntervCongCount   | number of times this assoc entered congestion.                                            | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |
| nnRelMsgSctpAscIntervCongCleared | number of times congestion cleared by audit.                                              | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMSGING-MIB | Yes |
| <b>NORTEL-UEMG-GIGE_mib</b>      |                                                                                           |                                |                           |     |
| <b>nnGLinkOmCurrTable</b>        |                                                                                           |                                |                           |     |
| nnGLinkCurrESSs                  | current Errored Seconds                                                                   | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrSESSs                 | current Severely Errored Seconds                                                          | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrUASSs                 | current Unavailable Seconds                                                               | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrOPT                   | current Optical Transmit Current                                                          | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrOPR                   | current Optical Power Receive                                                             | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrTBC                   | current Transmit Bus Current                                                              | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrVCC                   | current Voltage                                                                           | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrTEMP                  | current Temperature                                                                       | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrTxFifoOverruns        | current Transmit Fifo Overruns                                                            | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrTxFifoUnderruns       | current Transmit Fifo Underruns                                                           | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrTxBytesOverflow       | current Transmit Bytes, Overflow                                                          | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrTxBytes               | current Transmit Bytes                                                                    | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrRxFcSFail             | current Receive Fcs Failures                                                              | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrRxLenTypeFail         | current Receive LEN Type Failures                                                         | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrRxGoodPause           | current Receive Good Pause                                                                | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrRxBadOpCntlFrames     | current Receive Bad Opcode Control Frames                                                 | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrRxControlFrames       | current Receive Control Frames                                                            | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkCurrRxPauseFrames         | current Receive Pause Frames                                                              | nnGLinkOmCurrTable             | NORTEL-UEMG-GIGE_mib      |     |
| <b>nnGLinkOmIntervTable</b>      |                                                                                           |                                |                           |     |
| nnGLinkIntervESSs                | history, nth interval Errored Seconds                                                     | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervSESSs               | history, nth interval Severely Errored Seconds                                            | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervUASSs               | history, nth interval Unavailable Seconds                                                 | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervOPT                 | history, nth interval Optical Transmit Current                                            | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervOPR                 | history, nth interval Optical Power Receive                                               | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervTBC                 | history, nth interval Transmit Bus Current                                                | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervVCC                 | history, nth interval Voltage                                                             | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervTEMP                | history, nth interval Temperature                                                         | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervTxFifoOverruns      | history, nth interval Transmit Fifo Overruns                                              | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervTxFifoUnderruns     | history, nth interval Transmit Fifo Underruns                                             | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervTxBytesOverflow     | history, nth interval Transmit Bytes, Overflow                                            | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervTxBytes             | history, nth interval Transmit Bytes                                                      | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervRxFcSFail           | history, nth interval Receive Fcs Failures                                                | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervRxLenTypeFail       | history, nth interval Receive LEN Type Failures                                           | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervRxGoodPause         | history, nth interval Receive Good Pause                                                  | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervRxBadOpCntlFrames   | history, nth interval Receive Bad Opcode Control Frames                                   | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkIntervRxControlFrames     | history, nth interval Receive Control Frames                                              | nnGLinkOmIntervTable           | NORTEL-UEMG-GIGE_mib      |     |
| <b>nnGLinkThresholdTable</b>     |                                                                                           |                                |                           |     |
| nnGLinkThreshType                | Threshold Type...The Performance Measure, Counter to which the following thresholds apply | nnGLinkThresholdTable          | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkThreshShortPeriod         | Interval for short period,                                                                | nnGLinkThresholdTable          | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkThreshShortRatio          | Threshold to cross for a ShortPeriod performance measure. Ratio Expressed in %            | nnGLinkThresholdTable          | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkThreshLongPeriod          | Interval for long period,                                                                 | nnGLinkThresholdTable          | NORTEL-UEMG-GIGE_mib      |     |
| nnGLinkThreshLongRatio           | Threshold to cross for a LongPeriod performance measure. Ratio                            | nnGLinkThresholdTable          | NORTEL-UEMG-GIGE_mib      |     |

|                                      |                                                                                                                                                                                                                                                                                                                                                                     |                       |                               |  |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------|--|
| nnGLinkThreshNotify                  | Indicates whether a notification should be generated if the thresholds (either) are breached for this performanceMeasure                                                                                                                                                                                                                                            | nnGLinkThresholdTable | NORTEL-UEMG-GIGE_mib          |  |
| <b>Ethernet-Like MIB</b>             |                                                                                                                                                                                                                                                                                                                                                                     |                       |                               |  |
| <b>dot3StatsTable</b>                |                                                                                                                                                                                                                                                                                                                                                                     |                       |                               |  |
| dot3StatsAlignmentErrors             | A count of frames received on a particular interface that are not an integral number of octets in length and do not pass the FCS check.                                                                                                                                                                                                                             | dot3StatsTable        | Ethernet-Like MIB             |  |
| dot3StatsFCSErrors                   | A count of frames received on a particular interface that are an integral number of octets in length but do not pass the FCS check. This count does not include frames received with frame-too-long or frame-too-short error.                                                                                                                                       | dot3StatsTable        | Ethernet-Like MIB             |  |
| dot3StatsInternalMac                 | A count of frames for which transmission on a particular interface fails due to an internal MAC sublayer transmit error. A frame is only counted by an instance of this object if it is not counted by the corresponding instance of either the dot3StatsLateCollisions object, the dot3StatsExcessiveCollisions object, or the dot3StatsCarrierSenseErrors object. | dot3StatsTable        | Ethernet-Like MIB             |  |
| dot3StatsCarrierSenseErrors          | The number of times that the carrier sense condition was lost or never asserted when attempting to transmit a frame on a particular interface.                                                                                                                                                                                                                      | dot3StatsTable        | Ethernet-Like MIB             |  |
| dot3StatsFrameTooLongs               | A count of frames received on a particular interface that exceed the maximum permitted frame size.                                                                                                                                                                                                                                                                  | dot3StatsTable        | Ethernet-Like MIB             |  |
| dot3StatsInternalMacReceiveErrors    | A count of frames for which reception on a particular interface fails due to an internal MAC sublayer receive error. A frame is only counted by an instance of this object if it is not counted by the corresponding instance of either the dot3StatsFrameTooLongs object, the dot3StatsAlignmentErrors object, or the dot3StatsFCSErrors object.                   | dot3StatsTable        | Ethernet-Like MIB             |  |
| dot3StatsSymbolErrors                | For an interface operating at 100 Mb/s, the number of times there was an invalid data symbol when a valid carrier was present.                                                                                                                                                                                                                                      | dot3StatsTable        | Ethernet-Like MIB             |  |
| <b>dot3PauseTable</b>                |                                                                                                                                                                                                                                                                                                                                                                     |                       |                               |  |
| dot3InPauseFrames                    | A count of MAC Control frames received on this interface with an opcode indicating the PAUSE operation                                                                                                                                                                                                                                                              |                       |                               |  |
| dot3OutPauseFrames                   | A count of MAC Control frames transmitted on this interface with an opcode indicating the PAUSE operation                                                                                                                                                                                                                                                           |                       |                               |  |
| <b>Remote Network Monitoring MIB</b> |                                                                                                                                                                                                                                                                                                                                                                     |                       |                               |  |
| <b>etherStatsTable</b>               |                                                                                                                                                                                                                                                                                                                                                                     |                       |                               |  |
| etherStatsDropEvents                 | The total number of events in which packets were dropped by the probe due to lack of resources. Note that this number is not necessarily the number packets dropped; it is just the number of times this condition has been detected.                                                                                                                               | etherStatsTable       | Remote Network Monitoring MIB |  |
| etherStatsBroadcastPkts              | The total number of good packets received that were directed to the broadcast address. Note that this does not include multicast packets.                                                                                                                                                                                                                           | etherStatsTable       | Remote Network Monitoring MIB |  |

|                           |                                                                                                                                                                                                                                                                                                                        |                   |                               |  |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------|--|
| etherStatsMulticastPkts   | The total number of good packets received that were directed to a multicast address. Note that this number does not include packets directed to the broadcast address.                                                                                                                                                 | etherStatsTable   | Remote Network Monitoring MIB |  |
| etherStatsCRCAlignErrors  | The total number of packets received that had a length (excluding framing bits, but including FCS octets) of between 64 and 1518 octets, inclusive, but had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error). | etherStatsTable   | Remote Network Monitoring MIB |  |
| etherStatsUndersizePkts   | The total number of packets received that were less than 64 octets long (excluding framing bits, but including FCS octets) and were otherwise well formed.                                                                                                                                                             | etherStatsTable   | Remote Network Monitoring MIB |  |
| etherStatsOversizePkts    | The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.                                                                                                                                                              | etherStatsTable   | Remote Network Monitoring MIB |  |
| etherStatsFragments       | The total number of packets received that were less than 64 octets in length (excluding framing bits but including FCS octets) and had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error)                       | etherStatsTable   | Remote Network Monitoring MIB |  |
| etherStatsJabbers         | The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error)                           | etherStatsTable   | Remote Network Monitoring MIB |  |
| etherStatsCollisions      | The best estimate of the total number of collisions on this Ethernet segment.                                                                                                                                                                                                                                          | etherStatsTable   | Remote Network Monitoring MIB |  |
| <b>etherHistoryTable</b>  |                                                                                                                                                                                                                                                                                                                        |                   |                               |  |
| etherHistoryDropEvents    | The total number of events in which packets were dropped by the probe due to lack of resources during this sampling interval. Note that this number is not necessarily the number of packets dropped, it is just the number of times this condition has been detected.                                                 | etherHistoryTable | Remote Network Monitoring MIB |  |
| etherHistoryOctets        | The total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets).                                                                                                                                                                         | etherHistoryTable | Remote Network Monitoring MIB |  |
| etherHistoryPkts          | The number of packets (including bad packets) received during this sampling interval.                                                                                                                                                                                                                                  | etherHistoryTable | Remote Network Monitoring MIB |  |
| etherHistoryBroadcastPkts | The number of good packets received during this sampling interval that were directed to the broadcast address.                                                                                                                                                                                                         | etherHistoryTable | Remote Network Monitoring MIB |  |
| etherHistoryMulticastPkts | The number of good packets received during this sampling interval that were directed to a multicast address. Note that this number does not include packets addressed to the broadcast                                                                                                                                 | etherHistoryTable | Remote Network Monitoring MIB |  |



|                                      |                                                                                                                                                                                                                                                                                                                                            |                               |                               |  |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------|--|
| etherHistoryCRCAAlignErrors          | The number of packets received during this sampling interval that had a length (excluding framing bits but including FCS octets) between 64 and 1518 octets, inclusive, but had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error). | etherHistoryTable             | Remote Network Monitoring MIB |  |
| etherHistoryUndersizePkts            | The number of packets received during this sampling interval that were less than 64 octets long (excluding framing bits but including FCS octets) and were otherwise well formed.                                                                                                                                                          | etherHistoryTable             | Remote Network Monitoring MIB |  |
| etherHistoryOversizePkts             | The number of packets received during this sampling interval that were longer than 1518 octets (excluding framing bits but including FCS octets) but were otherwise well formed.                                                                                                                                                           | etherHistoryTable             | Remote Network Monitoring MIB |  |
| etherHistoryFragments                | The total number of packets received during this sampling interval that were less than 64 octets in length (excluding framing bits but including FCS octets) had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error)                 | etherHistoryTable             | Remote Network Monitoring MIB |  |
| etherHistoryJabbers                  | The number of packets received during this sampling interval that were longer than 1518 octets (excluding framing bits but including FCS octets), and had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error)                        | etherHistoryTable             | Remote Network Monitoring MIB |  |
| etherHistoryCollisions               | The best estimate of the total number of collisions on this Ethernet segment during this sampling interval.                                                                                                                                                                                                                                | etherHistoryTable             | Remote Network Monitoring MIB |  |
| etherHistoryUtilization              | The best estimate of the mean physical layer network utilization on this interface during this sampling interval, in hundredths of a percent.                                                                                                                                                                                              | etherHistoryTable             | Remote Network Monitoring MIB |  |
| <b>HC-RMON-MIB</b>                   |                                                                                                                                                                                                                                                                                                                                            |                               |                               |  |
| <b>etherStatsHighCapacityTable</b>   |                                                                                                                                                                                                                                                                                                                                            |                               |                               |  |
| etherStatsHighCapacityOverflowPkts   | The number of times the associated etherStatsPkts counter has overflowed.                                                                                                                                                                                                                                                                  | etherStatsHighCapacityTable   | HC-RMON-MIB                   |  |
| etherStatsHighCapacityPkts           | The total number of packets (including bad packets, broadcast packets, and multicast packets) received.                                                                                                                                                                                                                                    | etherStatsHighCapacityTable   | HC-RMON-MIB                   |  |
| etherStatsHighCapacityOverflowOctets | The number of times the associated etherStatsOctets counter has overflowed.                                                                                                                                                                                                                                                                | etherStatsHighCapacityTable   | HC-RMON-MIB                   |  |
| etherStatsHighCapacityOctets         | The total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets)                                                                                                                                                                                              | etherStatsHighCapacityTable   | HC-RMON-MIB                   |  |
| <b>etherHistoryHighCapacityTable</b> |                                                                                                                                                                                                                                                                                                                                            |                               |                               |  |
| etherHistoryHighCapacityOverflowPkts | The number of times the associated etherHistoryPkts Gauge overflowed during this sampling interval.                                                                                                                                                                                                                                        | etherHistoryHighCapacityTable | HC-RMON-MIB                   |  |

|                                        |                                                                                                                                                                              |                               |                       |  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------|--|
| etherHistoryHighCapacityPkts           | The total number of packets (including bad packets, broadcast packets, and multicast packets) received during this sampling interval.                                        | etherHistoryHighCapacityTable | HC-RMON-MIB           |  |
| etherHistoryHighCapacityOverflowOctets | The number of times the associated etherHistoryOctets counter has overflowed during this sampling interval.                                                                  | etherHistoryHighCapacityTable | HC-RMON-MIB           |  |
| etherHistoryHighCapacityOctets         | The total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets) during this sampling interval. | etherHistoryHighCapacityTable | HC-RMON-MIB           |  |
| <b>SMON-MIB</b>                        |                                                                                                                                                                              |                               |                       |  |
| <b>smonVlanIdStatsTable</b>            |                                                                                                                                                                              |                               |                       |  |
| smonVlanIdStatsTotalPkts               | The total number of packets counted on this VLAN.                                                                                                                            | smonVlanIdStatsTable          | SMON-MIB              |  |
| smonVlanIdStatsTotalHCPkts             | The total number of packets counted on this VLAN.                                                                                                                            | smonVlanIdStatsTable          | SMON-MIB              |  |
| smonVlanIdStatsTotalOctets             | The total number of octets counted on this VLAN.                                                                                                                             | smonVlanIdStatsTable          | SMON-MIB              |  |
| smonVlanIdStatsTotalHCOctets           | The total number of octets counted on this VLAN.                                                                                                                             | smonVlanIdStatsTable          | SMON-MIB              |  |
| smonVlanIdStatsNUcastPkts              | The total number of non-unicast packets counted on this VLAN.                                                                                                                | smonVlanIdStatsTable          | SMON-MIB              |  |
| smonVlanIdStatsNUcastHCPkts            | The total number of non-unicast packets counted on this VLAN.                                                                                                                | smonVlanIdStatsTable          | SMON-MIB              |  |
| smonVlanIdStatsNUcastOctets            | The total number of non-unicast octets counted on this VLAN.                                                                                                                 | smonVlanIdStatsTable          | SMON-MIB              |  |
| smonVlanIdStatsNUcastOverflowOctets    | The number of times the associated smonVlanIdStatsNUcastOctets counter has overflowed.                                                                                       | smonVlanIdStatsTable          | SMON-MIB              |  |
| smonVlanIdStatsNUcastHCOctets          | The total number of Non-unicast octets counted on this VLAN.                                                                                                                 | smonVlanIdStatsTable          | SMON-MIB              |  |
| <b>NORTEL-UEMG-IPSEC-MIB</b>           |                                                                                                                                                                              |                               |                       |  |
| <b>nnlpsecOmCurrentTable</b>           |                                                                                                                                                                              |                               |                       |  |
| nnlpsecOmCurrentPacketsTx              | Number of Transmitted Packets this 15min interval                                                                                                                            | nnlpsecOmCurrentTable         | NORTEL-UEMG-IPSEC-MIB |  |
| nnlpsecOmCurrentPacketsRx              | Number of Received Packets this 15min interval                                                                                                                               | nnlpsecOmCurrentTable         | NORTEL-UEMG-IPSEC-MIB |  |
| nnlpsecOmCurrentPacketsDiscardedOut    | Number of Dropped Outbound Packets this 15min interval                                                                                                                       | nnlpsecOmCurrentTable         | NORTEL-UEMG-IPSEC-MIB |  |
| nnlpsecOmCurrentPacketsDiscardedIn     | Number of Dropped Inbound Packets this 15min interval                                                                                                                        | nnlpsecOmCurrentTable         | NORTEL-UEMG-IPSEC-MIB |  |
| <b>nnlpsecOmIntervalTable</b>          |                                                                                                                                                                              |                               |                       |  |
| nnlpsecOmIntervalPacketsTx             | Number of Transmitted Packets this 15min interval                                                                                                                            | nnlpsecOmIntervalTable        | NORTEL-UEMG-IPSEC-MIB |  |
| nnlpsecOmIntervalPacketsRx             | Number of Received Packets this 15min interval                                                                                                                               | nnlpsecOmIntervalTable        | NORTEL-UEMG-IPSEC-MIB |  |
| nnlpsecOmIntervalPacketsDiscardedOut   | Number of Dropped Outbound Packets this 15min interval                                                                                                                       | nnlpsecOmIntervalTable        | NORTEL-UEMG-IPSEC-MIB |  |
| nnlpsecOmIntervalPacketsDiscardedIn    | Number of Dropped Inbound Packets this 15min interval                                                                                                                        | nnlpsecOmIntervalTable        | NORTEL-UEMG-IPSEC-MIB |  |

# Appendix C: VOA/IP MSS15000, MG15000, and MDM Alarm Log Summary

## 1. Introduction

This document provides a list of Multiservice Switch 15000 (MSS15000), Media Gateway 15000 (MG15000) (formerly known as PVG) and Multiservice Data Manager (MDM) alarm logs applicable to up to release SN08 for Voice over ATM (VOA) and Voice over IP (VOIP) solutions.

The purpose of this document includes:

- It provides a Nortel VOA/VOIP customer (and more specifically an OSS Fault application writer) a summarized subset of the possible alarms that can appear when MSS15000 and MDM are configured for a VOA/VOIP application. The descriptions of the alarms are found in [6] and [3].
- When configured to receive MSS15000/MDM Alarm logs in SCC2 format from the Supernode Data Manager (SDM), it also provides the mapping information needed to interpret the SCC2 format.
- It is also input to solution-level OSS Guide information which is in progress of being delivered to provide this information in the FCAPS-based solution documentation.

## 2. SCC2 Log Format

The SCC2 log report for MSS15000 and MDM alarms comprises a one line header, followed by seven lines of body text, as per the following example:

```
37 PPEM300 8169 TBL
time: 2002 01 11 15 37 06
event: clear
compld: EM P15KF LP 7 SONET 3
severity: cleared
faultCode: 70115201
alarmType: communications
commentData: Loss of frame condition has been cleared.
```

The header is of format:

```
aabbccdddeeffgghhijjj
```

Each field, as applicable for MSS15000 and MDM alarms, is described in Table 1.

**Table 1 MSS15000 and MDM SCC2 Header Field Description**

| Field | Description                                       | Applicable Log Values                                                                                                                                                        |
|-------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| aa    | Alarm severity<br>MSS15000/MDM alarm log severity | "*C" = critical alarm<br>"***" = major alarm<br>"* " = minor and warning and indeterminate alarm<br>" " = clear alarm<br>Two characters, left justified, padded with blanks. |

| Field                     | Description                                                                                                                                                                       | Applicable Log Values                                                                                                                                                                                                                                     |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| bb                        | Minute indicator<br>Two numeric character indicator representing the minutes after the hour. Generated by SDM at time SDM receives the alarm log from MDM.                        | Ranges from 00 to 59, right justified, padded with zeros.                                                                                                                                                                                                 |
| c                         | single space                                                                                                                                                                      | " "                                                                                                                                                                                                                                                       |
| dddd                      | Log Name<br>Assigned by SDM. Based upon the first four digits ("Index Group") of the eight-digit MSS15000 or MDM alarm identifier.                                                | Four characters, left justified, padded with blanks.<br>"CA " for index group 0000.<br>"PPEM" for index groups beginning with 70xx and some fault codes in group 0999.<br>"MDM " for index groups beginning with 30xx and some fault codes in group 0999. |
| eee                       | Log Number<br>Three numeric characters representing the MSS15000 or MDM Alarm Type. Note that the Alarm Type "debug" is not translated as a fault, but rather as information log. | "300" = communications<br>"301" = quality of service<br>"302" = processing<br>"303" = equipment<br>"304" = environmental<br>"305" = security<br>"306" = operator<br>"307" = unknown                                                                       |
| f                         | A single space for all MSS15000 and MDM alarm logs.                                                                                                                               | " "                                                                                                                                                                                                                                                       |
| gg                        | Global Sequence Number<br>Generated by SDM. Two numeric characters, incremented by SDM upon receipt of every alarm log.                                                           | Ranges from 00 to 99, right justified, padded with zeros.                                                                                                                                                                                                 |
| hh                        | Device Sequence Number<br>Generated by SDM. Two numeric characters, incremented by SDM upon receipt of every device specific alarm log from MDM (originated by MSS15000 or MDM).  | Ranges from 00 to 99, right justified, padded with zeros.                                                                                                                                                                                                 |
| i                         | single space                                                                                                                                                                      | " "                                                                                                                                                                                                                                                       |
| jjjj                      | Event Type<br>Assigned by SDM. String assigned for all MSS15000 and MDM alarm logs.                                                                                               | "TBL "<br>Four characters, left justified, padded with blanks.                                                                                                                                                                                            |
| Lines 2, 3, 4, 5, 6, 7, 8 | Body Text<br>Seven textual lines, each of form <AlarmFieldName>: <AlarmFieldValue>                                                                                                | "time: "<br>"event: "<br>"compld: "<br>"severity: "<br>"faultCode: "<br>"alarmType: "<br>"commentData: "<br>Comment data is truncated so that entire log does not exceed 900 bytes.                                                                       |

### 3. MSS15000 Alarm Logs

Table 2 presents the list of MSS15000 set/clear alarm logs that are applicable for Succession VOA/VOIP.

Table 2 does not explicitly state all MSS15000 clear alarm logs that correspond to each set. The SCC2 header for the clear differs from its corresponding set by only the first two characters. The characters “aa” are replaced by “ ” (two spaces). This format is presented in Table 1.

The MSS15000 alarm identifier consists of an eight-digit number identifying the alarm. The first four digits comprise the **Index Group**, which represents logical groupings of alarms. The last four digits are the **SubIndex**, which is an identifier within each index group.

**Component Name** indicates the managed object against which the alarm Log is generated. This table contains the CLI format of a component name. The “compld” field in SCC2 format contains this information (with the module’s <nodename> pre-pended). Also, “compld” follows the MDM API-style format (with component type and instance separated by a space instead of a slash, and ‘\$’ appearing in place of a null instance value). Variables (usually instance value ranges) are denoted by <> and the reader should reference the Alarms NTP’s [3] and [6] for further information.

**Table 2 MSS15000 Set/Clear Alarms Supported for Succession**

| MSS15000 Index Group | Component Name                                                                                                                          | MSS15000/MG 15000 configuration (N/A) | MSS15000 Subindex | Importance Category (N/A) | SCC2 Header                                                                   |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------|---------------------------|-------------------------------------------------------------------------------|
| 0000                 | OSI administrative state changes, general engineering and memory alarms, internal software error detected, etc.                         |                                       |                   |                           |                                                                               |
|                      | This alarm can apply to many MSS15000 components.                                                                                       |                                       | 0000              |                           | bb CA eee gghh<br>TBL<br>where:<br>eee = 302, 303, 306                        |
|                      | This alarm can apply to many MSS15000 components.                                                                                       |                                       | 1000              |                           | aabb CA eee gghh<br>TBL<br>where:<br>aa = “*C”, “***”, “* ”<br>eee = 300, 306 |
|                      | This alarm can apply to many MSS15000 components.                                                                                       |                                       | 1001              |                           | aabb CA 303 gghh<br>TBL<br>where:<br>aa = “*C”, “***”, “* ”                   |
|                      | This alarm can apply to many MSS15000 components.                                                                                       |                                       | 3000              |                           | aabb CA eee gghh<br>TBL<br>where:<br>aa = “*C”, “***”, “* ”<br>eee = 300, 302 |
|                      | This alarm can apply to many MSS15000 components.                                                                                       |                                       | 3001<br>3002      |                           | aabb CA 302 gghh<br>TBL<br>where:<br>aa = “*C”, “***”, “* ”                   |
| 7000                 | Provisioning alarms. These alarms apply to failures resulting from provisioning attempts. e.g., loading a provisioning file has failed. |                                       |                   |                           |                                                                               |
|                      | Prov                                                                                                                                    |                                       | 0007              |                           | aabb PPEM306 gghh<br>TBL<br>where:<br>aa = “*C”, “***”, “* ”                  |

| MSS15000 Index Group | Component Name                                                                                                                                                                                                                                                   | MSS15000/MG 15000 configuration (N/A) | MSS15000 Subindex | Importance Category (N/A) | SCC2 Header                                       |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------|---------------------------|---------------------------------------------------|
|                      | This alarm can apply to many MSS15000 components.                                                                                                                                                                                                                |                                       | 0010              |                           | * bb PPEM302 gghh TBL                             |
|                      | Prov Migration                                                                                                                                                                                                                                                   |                                       | 0033              |                           | aabb PPEM306 gghh TBL<br>where:<br>aa = “*C”, “*” |
|                      | Prov                                                                                                                                                                                                                                                             |                                       | 0036              |                           | aabb PPEM301 gghh TBL<br>where:<br>aa = “*”, “*”  |
|                      | Prov                                                                                                                                                                                                                                                             |                                       | 0037              |                           | *Cbb PPEM301 gghh TBL                             |
|                      | Prov                                                                                                                                                                                                                                                             |                                       | 0038              |                           | * bb PPEM301 gghh TBL                             |
|                      | Prov                                                                                                                                                                                                                                                             |                                       | 0040              |                           | **bb PPEM302 gghh TBL                             |
|                      | Provisioning Patch                                                                                                                                                                                                                                               |                                       | 0041              |                           | * bb PPEM306 gghh TBL or<br>*Cbb PPEM306 gghh TBL |
| 7002                 | Backplane control system alarms; e.g., communication failure between a card and the backplane. Note:<br>FabricCard instance range (<i>): X, Y<br>Card instance range (<n>): 0-15                                                                                 |                                       |                   |                           |                                                   |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                                       | 0002              |                           | **bb PPEM303 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                                       | 0003              |                           | *Cbb PPEM304 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                                       | 0004              |                           | *Cbb PPEM304 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                                       | 0005              |                           | **bb PPEM302 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                                       | 0006              |                           | **bb PPEM302 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                                       | 0007              |                           | **bb PPEM302 gghh TBL                             |
|                      | Shelf Card/<n>                                                                                                                                                                                                                                                   |                                       | 0008              |                           | * bb PPEM303 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                                       | 0009              |                           | * bb PPEM303 gghh TBL                             |
| 7003                 | Data collection system alarms; e.g., an alarm or log queue size has exceeded a threshold.<br>Collector instance range (<t>): accounting, alarm, log, debug, scn, trap, stats, rtStats, appl<br>Agent instance range (<n>): 0-15<br>LP instance range (<n>): 0-15 |                                       |                   |                           |                                                   |
|                      | Collector/<t> Agent/<n>                                                                                                                                                                                                                                          |                                       | 0001              |                           | **bb PPEM301 gghh TBL                             |
|                      | Collector/<t> Spooler                                                                                                                                                                                                                                            |                                       | 0002              |                           | **bb PPEM302 gghh TBL                             |
|                      | Collector/<t> Spooler                                                                                                                                                                                                                                            |                                       | 0003              |                           | * bb PPEM301 gghh TBL                             |

| MSS15000 Index Group | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MSS15000/MG 15000 configuration (N/A) | MSS15000 Subindex | Importance Category (N/A) | SCC2 Header           |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------|---------------------------|-----------------------|
|                      | LP/<n> Eng AAList                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                       | 0007              |                           | **bb PPEM301 gghh TBL |
| 7006                 | Radius security alarms.<br>Ac Radius                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                       | 0100              |                           | *Cbb PPEM305 gghh TBL |
| 7008                 | File system alarms.<br>Disk instance range (<n>): 0-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       |                   |                           |                       |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | 1001              |                           | **bb PPEM302 gghh TBL |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | 1002              |                           | *Cbb PPEM302 gghh TBL |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | 1004              |                           | *Cbb PPEM303 gghh TBL |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | 1005              |                           | * bb PPEM303 gghh TBL |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | 1006              |                           | **bb PPEM302 gghh TBL |
|                      | FileSystem Disk/<n>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | 1008              |                           | **bb PPEM303 gghh TBL |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       | 1009              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       | 1010              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       | 1011              |                           |                       |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | 1019              |                           | * bb PPEM303 gghh TBL |
| 7011                 | Port management system and Automatic Protection Switching alarms.<br>LP instance range (<n>): 0-15<br>Port types (<type>): Sonet, EDS1, DS3, BridgedSonet(Bso), Ethernet, Sdh<br>Sonet instance range (<n2>): 0-15 (16-port); 0-3 (4-port)<br>EDS1 instance range (<n2>): 0-1<br>IMA instance range (<n3>): 0-13<br>LK instance range (<n4>): 0-31<br>DS3 instance range (<n2>): 0-3 (4-port); 0-11 (12-port)<br>DS1 instance range (<n3>): 1-28<br>Ethernet instance range (<n2>): 0-3<br>LAPS instance range (<n>): 0-15999<br>Chan instance range (<n4>): 0-23<br>Bso instance range (<n2>): 0-15<br>Pbg instance range (<n>): 0-15999<br>Sdh instance range (<n2>): 0-n, where n is 1 less than the number of ports<br>Sts instance range (<n2>): 0-11<br>Lag instance range (<y>): 0-7<br>Lag link instance range (<z>): 0-31 |                                       |                   |                           |                       |
|                      | LP/<n> DS3/<n2> IMA <n3>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                       | 1100              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> IMA/<n3>...<br>...LK/<n4>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       | 1200              |                           | *Cbb PPEM300 gghh TBL |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       | 1210              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       | 1211              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       | 1212              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       | 1213              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       | 1214              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       | 1215              |                           |                       |

| MSS15000 Index Group | Component Name                                                                                                                                | MSS15000/MG 15000 configuration (N/A) | MSS15000 Subindex | Importance Category (N/A) | SCC2 Header           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------|---------------------------|-----------------------|
|                      |                                                                                                                                               |                                       | 1216              |                           |                       |
|                      | LP/<n> Lag/<y>                                                                                                                                |                                       | 1500              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> Lag/<y> Link/<z>                                                                                                                       |                                       | 1501              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> <type>/<n2>                                                                                                                            |                                       | 2000              |                           | *Cbb PPEM303 gghh TBL |
|                      | LP/0 EDS1/<n2><br>LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/0 Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1 |                                       | 5000              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/0 EDS1/<n2><br>LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/0 Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1 |                                       | 5001              |                           | * bb PPEM300 gghh TBL |
|                      | LP/0 EDS1/<n2><br>Lp/<n> Sdh/0 Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1                             |                                       | 5002              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1                |                                       | 5003              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1                |                                       | 5004              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1                |                                       | 5005              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1                |                                       | 5006              |                           | **bb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1<br>Lp/<n> Sdh/0 Vc4/0 Vc12/{1-3,1-7,1-3} E1                   |                                       | 5010              |                           | * bb PPEM300 gghh TBL |



| MSS15000 Index Group | Component Name                                                                                              | MSS15000/MG 15000 configuration (N/A) | MSS15000 Subindex | Importance Category (N/A) | SCC2 Header                                        |
|----------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------|---------------------------|----------------------------------------------------|
|                      | LP/<n> DS3/<n2> DS1/<n3>                                                                                    |                                       | 5011              |                           | * bb PPEM300 gghh TBL                              |
|                      | LP/0 EDS1/<n2>                                                                                              |                                       | 5050              |                           | aabb PPEM303 gghh TBL<br>where:<br>aa = “*C”, “* “ |
|                      | LP/<n> DS3/<n2>                                                                                             |                                       | 5100              |                           | *Cbb PPEM300 gghh TBL                              |
|                      | LP/<n> DS3/<n2>                                                                                             |                                       | 5101              |                           | *Cbb PPEM300 gghh TBL                              |
|                      |                                                                                                             |                                       | 5102              |                           |                                                    |
|                      |                                                                                                             |                                       | 5103              |                           |                                                    |
|                      |                                                                                                             |                                       | 5104              |                           |                                                    |
|                      | LP/<n> DS3/<n2>                                                                                             |                                       | 5105              |                           | * bb PPEM300 gghh TBL                              |
|                      | LP/<n> DS3/<n2>                                                                                             |                                       | 5110              |                           | *Cbb PPEM300 gghh TBL                              |
|                      | LP/<n> DS3/<n2>                                                                                             |                                       | 5111              |                           | * bb PPEM300 gghh TBL                              |
|                      |                                                                                                             |                                       | 5120              |                           |                                                    |
|                      |                                                                                                             |                                       | 5121              |                           |                                                    |
|                      |                                                                                                             |                                       | 5122              |                           |                                                    |
|                      | LP/<n> Sonet/<n2><br>LP/<n> Sdh/<n2>                                                                        |                                       | 5200              |                           | *Cbb PPEM300 gghh TBL                              |
|                      |                                                                                                             |                                       | 5201              |                           |                                                    |
|                      |                                                                                                             |                                       | 5202              |                           |                                                    |
|                      | LP/<n> Sonet/<n2><br>LP/<n> Sdh/<n2>                                                                        |                                       | 5203              |                           | * bb PPEM300 gghh TBL                              |
|                      |                                                                                                             |                                       | 5204              |                           |                                                    |
|                      |                                                                                                             |                                       | 5210              |                           |                                                    |
|                      |                                                                                                             |                                       | 5211              |                           |                                                    |
|                      | LP/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> Sdh/<n2> Vc4/0<br>LAPS/<n> Sts/<n2><br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0 |                                       | 5250              |                           | *Cbb PPEM300 gghh TBL                              |
|                      |                                                                                                             |                                       | 5251              |                           |                                                    |
|                      | LP/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> sdh/<n2> Vc4/0<br>LAPS/<n> Sts/<n2><br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0 |                                       | 5252              |                           | * bb PPEM300 gghh TBL                              |
|                      | LP/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> Sdh/<n2> Vc4/0<br>LAPS/<n> Sts/<n2><br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0 |                                       | 5253              |                           | *Cbb PPEM300 gghh TBL                              |

| MSS15000 Index Group | Component Name                                                                                                                                                                                                                              | MSS15000/MG 15000 configuration (N/A) | MSS15000 Subindex | Importance Category (N/A) | SCC2 Header           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------|---------------------------|-----------------------|
|                      | LP/<n> Sonet/<n2> Sts/0<br>Lp/<n> Sdh/<n2> Vc4/0<br>LAPS/<n> Sts/0<br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0                                                                                                                                       |                                       | 5254              |                           | *Cbb PPEM300 gghh TBL |
|                      | Lp/<n> Sonet/<n2> Path/<n2><br>Lp/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> Sonet/<n2> Vc4/<n2><br>Lp/<n> Sdh/<n2> Path/0<br>Lp/<n> Sdh/<n2> Sts/0<br>Lp/<n> Sdh/<n2> Vc4/0<br>LAPS/<n> Path/0<br>LAPS/<n> Sts/0<br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0 |                                       | 5255              |                           | *Cbb PPEM300 gghh TBL |
|                      | Lp/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> Sdh/<n2> Vc4/0<br>Lp/<num1> Sdh/<n2> Vc4/0<br>Vc12/{1-3, 1-7, 1-3}<br>Laps/<n> Sts/<num3><br>Laps/<n> Sdh/<num2> Vc4/0<br>Laps/<n> Sdh/<n2> Vc4/0<br>Vc12/{1-3, 1-7, 1-3}<br>Pbg/<n> Sts/{0-11}        |                                       | 5256              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> Sonet/<n2> Sts/<n2><br>LP/<n> Sdh/<n2> Vc4/0<br>LAPS/<n> Sts/<n2><br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0                                                                                                                                 |                                       | 5260              |                           | * bb PPEM300 gghh TBL |
|                      |                                                                                                                                                                                                                                             |                                       | 5261              |                           |                       |
|                      | LAPS/<n>                                                                                                                                                                                                                                    |                                       | 5270              |                           | **bb PPEM300 gghh TBL |
|                      | LAPS/<n>                                                                                                                                                                                                                                    |                                       | 5271              |                           | * bb PPEM300 gghh TBL |
|                      | LAPS/<n>                                                                                                                                                                                                                                    |                                       | 5272              |                           | * bb PPEM300 gghh TBL |
|                      | LAPS/<n>                                                                                                                                                                                                                                    |                                       | 5273              |                           | * bb PPEM300 gghh TBL |
|                      | LAPS/n                                                                                                                                                                                                                                      |                                       | 5274              |                           | * bb PPEM300 gghh TBL |
|                      | LAPS/<n>                                                                                                                                                                                                                                    |                                       | 5275              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> Sdh/<n2> Vc4/0<br>Vc12/{1-3,1-7,1-3}<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4}<br>LAPS/<n> Vc4/0 Vc12/{1-3,1-7,1-3}<br>LAPS/<n> Sts/<n2> Vt1dot5/{1-7,1-4}                                                                  |                                       | 5290              |                           | * bb PPEM303 gghh TBL |
|                      |                                                                                                                                                                                                                                             |                                       | 5291              |                           |                       |
|                      |                                                                                                                                                                                                                                             |                                       | 5292              |                           |                       |
|                      |                                                                                                                                                                                                                                             |                                       | 5293              |                           |                       |
|                      |                                                                                                                                                                                                                                             |                                       | 5294              |                           |                       |

| MSS15000 Index Group | Component Name                                                                                                                                                          | MSS15000/MG 15000 configuration (N/A) | MSS15000 Subindex | Importance Category (N/A) | SCC2 Header                                        |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------|---------------------------|----------------------------------------------------|
|                      | LP/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3}<br>Lp/<n> Sonet/<n2> Sts/<n2> Vt1dot5/{1-7,1-4}<br>LAPS/<n> Vc4/0 Vc12/{1-3,1-7,1-3}<br>LAPS/<n> Sts/<n2> Vt1dot5/{1-7,1-4}    |                                       | 5295<br>5296      |                           | *Cbb PPEM303 gghh TBL                              |
|                      | LP/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3}<br>Lp/<n> Sonet/<n2> Sts/<n2> Vt1dot5/{1-7,1-4}<br>LAPS/<n> Vc4/0 Vc12/{1-3,1-7,1-3}<br>LAPS/<n> Sts/<n2> Vt1dot5/{1-7,1-4}    |                                       | 5297              |                           | *Cbb PPEM303/6 gghh TBL                            |
|                      | LP/<n> Ethernet/<n2><br>LP/<n> Ethernet/<n2><br>LP/<n> Ethernet/<n2><br>LP/<n> Ethernet/<n2><br>LP/<n> Ethernet/<n2><br>OpticalModule                                   |                                       | 5400              |                           | *Cbb PPEM300 gghh TBL                              |
|                      |                                                                                                                                                                         |                                       | 5401              |                           | *Cbb PPEM300 gghh TBL                              |
|                      |                                                                                                                                                                         |                                       | 5402              |                           | *Cbb PPEM300 gghh TBL                              |
|                      |                                                                                                                                                                         |                                       | 5403              |                           | *Cbb PPEM300 gghh TBL                              |
|                      |                                                                                                                                                                         |                                       | 5480              |                           | **bb PPEM300 gghh TBL                              |
|                      | LP/<n> Sonet/<n2><br>LP/<n> Sonet/<n2> Sts/0<br>LAPS/<n> Sts/0<br>LP/<n> DS3/<n2><br>LP/<n> DS3/<n2> DS1/<n3><br>LP/<n> DS3/<n2> DS1/<n3><br>Chan/<n4><br>Pbg/<n> Sts/0 |                                       | 5501              |                           | **bb PPEM300 gghh TBL                              |
|                      | LP/<n> DS3/<n2>                                                                                                                                                         |                                       | 5601<br>5602      |                           | * bb PPEM300 gghh TBL                              |
|                      | LP/<n> DS3/<n2>                                                                                                                                                         |                                       | 5603<br>5604      |                           | **bb PPEM300 gghh TBL                              |
| 7012                 | Processor control system alarms.<br>LP instance range (<n>): 0-15<br>Card instance range (<n>): 0-15<br>FabricCard instance range (<i>): X, Y                           |                                       |                   |                           |                                                    |
|                      | Shelf                                                                                                                                                                   |                                       | 0050              |                           | **bb PPEM303 gghh TBL                              |
|                      | Shelf                                                                                                                                                                   |                                       | 0051              |                           | aabb PPEM303 gghh TBL<br>where:<br>aa = “*C”, “**” |
|                      | Shelf<br>Shelf FabricCard/<i>                                                                                                                                           |                                       | 0052              |                           | **bb PPEM303 gghh TBL                              |

| MSS150<br>00<br>Index<br>Group | Component Name                                    | MSS15000/MG<br>15000<br>configuration<br>(N/A) | MSS1<br>5000<br>Subln<br>dex | Impor<br>tance<br>Categ<br>ory<br>(N/A) | SCC2 Header                                            |
|--------------------------------|---------------------------------------------------|------------------------------------------------|------------------------------|-----------------------------------------|--------------------------------------------------------|
|                                | Shelf                                             |                                                | 0053                         |                                         | **bb PPEM303 gghh                                      |
| 7013                           | Shelf                                             |                                                | 0055                         |                                         | TBL<br>aabb PPEM303 gghh                               |
|                                | Shelf                                             |                                                | 0056                         |                                         | TBL<br>where:<br>aa = "***", "**"<br>* bb PPEM303 gghh |
|                                | Shelf                                             |                                                | 0057                         |                                         | TBL<br>**bb PPEM303 gghh                               |
|                                | Shelf                                             |                                                | 0058                         |                                         | TBL                                                    |
|                                | Shelf                                             |                                                | 0059                         |                                         | *Cbb PPEM304 gghh                                      |
|                                | Shelf Card/<n>                                    |                                                | 0100                         |                                         | TBL<br>aabb PPEM303 gghh                               |
|                                | Shelf Card/<n>                                    |                                                | 0103                         |                                         | TBL<br>where:<br>aa = "**C", "**"<br>**bb PPEM303 gghh |
|                                | Shelf Card/<n>                                    |                                                | 0104                         |                                         | TBL                                                    |
|                                | Shelf Card/<n>                                    |                                                | 0105                         |                                         | * bb PPEM306 gghh                                      |
|                                | LP/<n>                                            |                                                | 0200                         |                                         | TBL<br>*Cbb PPEM302 gghh                               |
|                                | LP/<n>                                            |                                                | 0202                         |                                         | TBL<br>* bb PPEM306 gghh                               |
|                                | Shelf Card/<n> SpServ                             |                                                | 0301                         |                                         | TBL<br>* bb PPEM302 gghh                               |
|                                | Message block usage alarms.                       |                                                |                              |                                         | TBL                                                    |
|                                | LP instance range (<n>): 0-15<br>LP/<n>           |                                                | 0000                         |                                         | * bb PPEM301 gghh                                      |
|                                | LP/<n>                                            |                                                | 0001                         |                                         | TBL<br>**bb PPEM301 gghh                               |
|                                | LP/<n>                                            |                                                | 0002                         |                                         | TBL<br>* bb PPEM301 gghh                               |
|                                | LP/<n>                                            |                                                | 0003                         |                                         | TBL                                                    |
|                                | LP/<n>                                            |                                                | 0004                         |                                         |                                                        |
|                                | LP/<n>                                            |                                                | 0005                         |                                         |                                                        |
|                                | LP/<n>                                            |                                                | 0011                         |                                         |                                                        |
|                                | LP/<n>                                            |                                                | 0021                         |                                         | **bb PPEM301 gghh                                      |
|                                | LP/<n>                                            |                                                | 0022                         |                                         | TBL<br>* bb PPEM301 gghh                               |
| 7014                           | Memory management alarms                          |                                                |                              |                                         | TBL                                                    |
| 7015                           | LP/<n>                                            |                                                | 0000                         |                                         | * bb PPEM301 gghh                                      |
|                                | LP/<n>                                            |                                                | 0001                         |                                         | TBL<br>**bb PPEM301 gghh                               |
|                                | Network time-of-day (TOD) synchronization alarms. |                                                |                              |                                         | TBL                                                    |
|                                | Server instance range (<n>): 1-10<br>Time         |                                                | 0000                         |                                         | **bb PPEM304 gghh                                      |
|                                |                                                   |                                                |                              |                                         |                                                        |

| MSS150<br>00<br>Index<br>Group | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | MSS15000/MG<br>15000<br>configuration<br>(N/A) | MSS1<br>5000<br>Subln<br>dex | Impor<br>tance<br>Categ<br>ory<br>(N/A) | SCC2 Header                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------|-----------------------------------------|---------------------------------|
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                | 0002                         |                                         | TBL                             |
| 7017                           | Time Server/<n>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                | 0010                         |                                         | * bb PPEM300 gggh               |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                | 0011                         |                                         | TBL                             |
|                                | Time Server/<n>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                | 0012                         |                                         | * bb PPEM300 gggh               |
|                                | Network clock synchronization alarms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |                              |                                         | TBL                             |
| 7021                           | NS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                | 1000                         |                                         | * bb PPEM300 gggh               |
|                                | Internet protocol alarms. For Succession VOA, the IP stack is used only for network management connectivity purposes. For VOIP VR is used to connect to IP network. More than 1 VR may be provisioned in this configuration.<br>VR instance range (<i>): any string, but often specified simply as a digit (e.g., "0")<br>Cache instance range (<n>): 0-15<br>Name of the vrf (<y>)<br>LP number (<lpnum>): 0-15<br>IP address (<ipaddress>): address of the local IpLogicalInterface<br>Protocol Port Id (<ppld>)<br>VirtualIfEntry identifier (<virtIfld>)<br>Vr/<i> Ip Cache/<n> |                                                | 0006                         |                                         | **bb PPEM302 gggh               |
| 7026                           | Vr/<i> Ip Cpp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                | 0013                         |                                         | TBL<br>* bb PPEM305 gggh        |
|                                | IsolatedDa/<ipaddress>,<br><lpnum><br>Rtr/<i> Cpp<br>IsolatedDa/<ipaddress>,<br><lpnum><br>Rtr/<i> Vrf/<y> Cpp<br>IsolatedDa/<ipaddress>,<br><lpnum><br>Vr/<i> Pp/<ppld> IpPort                                                                                                                                                                                                                                                                                                                                                                                                     |                                                | 0014                         |                                         | TBL<br>**bb PPEM305 gggh        |
|                                | logically/<ipaddress><br>OspfIf<br>Rtr/<i> Interface/<ipaddress><br>OspfIf<br>Vr/<i> Ip Ospf                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                | 1002                         |                                         | **bb PPEM305 gggh               |
|                                | VirtIfEntry/<virtIfld>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                | 1003                         |                                         | TBL                             |
|                                | VR/<i> Ip OSPF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                | 1017                         |                                         | * bb PPEM305 gggh               |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                |                              |                                         | TBL                             |
|                                | LAN port management system alarms. For Succession VOA, the LAN port management system is used only for network management connectivity purposes Same alarms are used for VOIP.<br>LP/0 OamEnet/0                                                                                                                                                                                                                                                                                                                                                                                    |                                                | 3000                         |                                         | *Cbb PPEMeee gggh               |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                |                              |                                         | TBL<br>where:<br>eee = 300, 303 |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                |                              |                                         |                                 |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                |                              |                                         |                                 |

| MSS150<br>00<br>Index<br>Group | Component Name                                                                                                                       | MSS15000/MG<br>15000<br>configuration<br>(N/A) | MSS1<br>5000<br>Subln<br>dex | Impor<br>tance<br>Categ<br>ory<br>(N/A) | SCC2 Header                                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------|-----------------------------------------|-------------------------------------------------------|
|                                | LP/0 OamEnet/0                                                                                                                       |                                                | 3005                         |                                         | * bb PPEMeee ggghh                                    |
| 7039                           | ATM Core alarms.                                                                                                                     |                                                |                              |                                         | TBL<br>where:<br>eee = 300, 303                       |
| 7041                           | AtmIf instance range (<n>): 1-4095<br>Vcc instance range (<n2.n3>): n2 is VPI; n3 is VCI<br>Atmif/<n>                                |                                                |                              |                                         |                                                       |
|                                |                                                                                                                                      |                                                | 1000                         |                                         | * bb PPEM300 ggghh                                    |
|                                | Atmif/<n> Vcc/<n2.n3>                                                                                                                |                                                | 2000                         |                                         | TBL<br>* bb PPEM302 ggghh                             |
|                                | Atmif/<n> Vpt/<n2>                                                                                                                   |                                                | 2003<br>3000                 |                                         | TBL<br>* bb PPEM300 ggghh                             |
|                                | Atmif/<n>                                                                                                                            |                                                | 4001                         |                                         | TBL<br>**bb PPEM300 ggghh                             |
|                                | Atmif/<n>                                                                                                                            |                                                | 5000                         |                                         | TBL<br>*Cbb PPEM300 ggghh                             |
|                                | ATM Networking alarms.                                                                                                               |                                                |                              |                                         | TBL                                                   |
|                                | AtmIf instance range (<n>): 1-4095<br>Vpt instance range (<n2>): 0-4095<br>CfgNode instance range (<n>): 0-104<br>Atmif/<n> Uni Ilmi |                                                |                              |                                         |                                                       |
|                                |                                                                                                                                      |                                                | 0050                         |                                         | **bb PPEMeee ggghh                                    |
|                                | Atmif/<n> Uni Ilmi                                                                                                                   |                                                | 0052                         |                                         | TBL<br>where:<br>eee = 300, 303<br>*Cbb PPEM300 ggghh |
|                                | Atmif/<n> Uni Sig                                                                                                                    |                                                | 0150                         |                                         | TBL<br>**bb PPEM300 ggghh                             |
|                                | Atmif/<n> Pnni Sig<br>Atmif/<n> Uni Sig                                                                                              |                                                | 0200                         |                                         | TBL<br>**bb PPEM300 ggghh                             |
|                                | Atmif/<n> Pnni Sig<br>Atmif/<n> Uni Ilmi<br>Atmif/<n> Pnni Rcc<br>Atmif/<n> Pnni Rcc                                                 |                                                | 0250                         |                                         | TBL<br>**bb PPEM300 ggghh                             |
|                                | Atmif/<n> Pnni Rcc                                                                                                                   |                                                | 0253                         |                                         | TBL<br>**bb PPEM300 ggghh                             |
|                                | Artg Pnni                                                                                                                            |                                                | 0301                         |                                         | TBL<br>**bb PPEM300 ggghh                             |
|                                | Artg Pnni CfgNode<n> Rcc                                                                                                             |                                                | 0302                         |                                         | TBL<br>**bb PPEM300 ggghh                             |
|                                | Atmif/<n> Uni                                                                                                                        |                                                | 0400                         |                                         | TBL<br>* bb PPEM300 ggghh                             |
|                                | Atmif/<n> Pnni<br>Atmif/<n>                                                                                                          |                                                | 0401                         |                                         | TBL<br>**bb PPEM30? ggghh                             |
|                                | Atmif/<n> Uni                                                                                                                        |                                                | 0500                         |                                         | TBL<br>* bb PPEM300 ggghh                             |
|                                | Atmif/<n> Pnni<br>Atmif/<n> Uni                                                                                                      |                                                | 0600                         |                                         | TBL<br>* bb PPEM302 ggghh                             |
|                                | Atmif/<n> Pnni                                                                                                                       |                                                | 0601                         |                                         | TBL                                                   |

| MSS150                                                                              | Component Name                          | MSS15000/MG               | MSS1          | Importance Category | SCC2 Header              |
|-------------------------------------------------------------------------------------|-----------------------------------------|---------------------------|---------------|---------------------|--------------------------|
| 00 Index Group                                                                      |                                         | 15000 configuration (N/A) | 5000 SubIndex | Category (N/A)      |                          |
|                                                                                     | Artg Pnni CfgNode /<n>                  |                           | 0700          |                     | **bb PPEM300 gggh        |
| 7042                                                                                | Atmif/<n> Pnni Rcc                      |                           | 0701          |                     | TBL<br>**bb PPEM300 gggh |
|                                                                                     | Artg Pnni CfgNode /<n>                  |                           | 0703          |                     | TBL<br>* bb PPEM300 gggh |
|                                                                                     |                                         |                           |               |                     | TBL                      |
|                                                                                     | Circuit Emulation Service (CES) alarms. |                           |               |                     |                          |
| 7054                                                                                | Aal1Ces instance range (<n>) : 1-16383  |                           |               |                     |                          |
|                                                                                     | Aal1Ces/<n>                             |                           | 0001          |                     | **bb PPEM301 gggh        |
|                                                                                     | Aal1Ces/<n>                             |                           | 0002          |                     | TBL<br>**bb PPEM302 gggh |
|                                                                                     | Aal1Ces/<n>                             |                           | 0003          |                     | TBL<br>**bb PPEM300 gggh |
|                                                                                     | Sparing panel subsystem alarms.         |                           |               |                     | TBL                      |
| 7056                                                                                | Card instance range (<n>): 0-15         |                           |               |                     |                          |
|                                                                                     | Shelf Card/<n>                          |                           | 0100          |                     | **bb PPEM303 gggh        |
|                                                                                     |                                         |                           | 0101          |                     | TBL                      |
|                                                                                     |                                         |                           | 0102          |                     |                          |
|                                                                                     |                                         |                           | 0103          |                     |                          |
|                                                                                     |                                         |                           | 0104          |                     |                          |
|                                                                                     |                                         |                           | 0105          |                     |                          |
| Voice Services Processor (VSP) / Narrowband Service Trunk over ATM (Nsta)           |                                         |                           |               |                     |                          |
| This group is specific to MG15000 application (e.g. severe failure of the VSP card) |                                         |                           |               |                     |                          |
| Lp instance range (<x>): 0-15                                                       |                                         |                           |               |                     |                          |
| PModule instance range (<y>): 1-24                                                  |                                         |                           |               |                     |                          |
| PBlock instance range (<z>): 1-2                                                    |                                         |                           |               |                     |                          |
| NSTA instance range (<i>): 0-15999                                                  |                                         |                           |               |                     |                          |
| GigE instance range (<m>): 0-1                                                      |                                         |                           |               |                     |                          |
| Control instance range (<n>): mg or sg                                              |                                         |                           |               |                     |                          |
| Conn instance range (<l>): 0-128                                                    |                                         |                           |               |                     |                          |
| Brag instance range (<d>): 0-159999                                                 |                                         |                           |               |                     |                          |
| Q921 instance range (<r>): 1-31                                                     |                                         |                           |               |                     |                          |
| LapV5 instance value (<w>): 15, 16, 31                                              |                                         |                           |               |                     |                          |
| Tag instance range (<u>): 0-16777215                                                |                                         |                           |               |                     |                          |
| AtmTConn instance range (<h>): 1-2700 (max 4094)                                    |                                         |                           |               |                     |                          |
| dBrag instance range (<t>): 0-127                                                   |                                         |                           |               |                     |                          |
| BragS instance range (<k>): 0-15                                                    |                                         |                           |               |                     |                          |
| CasDefn instance range (<z>): 0-24                                                  |                                         |                           |               |                     |                          |
|                                                                                     | Lp/<x> Vsp PModule/<y>                  |                           | 0002          |                     | ** bb PPEM306 gggh       |
|                                                                                     | Lp/<x> Vsp PModule/<y>                  |                           | 0003          |                     | TBL<br>*Cbb PPEM303 gggh |
|                                                                                     | PBlock/<z>                              |                           |               |                     | TBL                      |
|                                                                                     | Lp/<x> Vsp GigE/<m>                     |                           | 0500          |                     | ** bb PPEM300 gggh       |
|                                                                                     |                                         |                           | 0501          |                     | TBL                      |
|                                                                                     |                                         |                           | 0502          |                     |                          |
|                                                                                     | Nsta/<i> Conn/<l>                       |                           | 1000          |                     | **bb PEM300 gggh         |
|                                                                                     | Nsta/<i> Vgs AtmTConn/<h>               |                           |               |                     | TBL                      |

| MSS150<br>00<br>Index<br>Group | Component Name                                                                                                                                                                                                                                                                           | MSS15000/MG<br>15000<br>configuration<br>(N/A) | MSS1<br>5000<br>Subln<br>dex | Impor<br>tance<br>Categ<br>ory<br>(N/A) | SCC2 Header                                            |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------|-----------------------------------------|--------------------------------------------------------|
|                                | Nsta/<l> Vgs                                                                                                                                                                                                                                                                             |                                                | 1200                         |                                         | * bb PPEM300 gghh                                      |
|                                | Nsta/<i> Vgs IpMConn                                                                                                                                                                                                                                                                     |                                                | 1201                         |                                         | TBL<br>** bb PPEM300 gghh                              |
|                                | Nsta/<i> Vgs Control/<n><br>Mediagateway                                                                                                                                                                                                                                                 |                                                | 1202                         |                                         | TBL<br>** bb PPEM300 gghh                              |
|                                | Nsta/<i> Vgs Control/<n><br>Signalingateway                                                                                                                                                                                                                                              |                                                | 1203                         |                                         | TBL<br>** bb PPEM300 gghh                              |
|                                | Nsta/<i> Vgs Control/<n><br>MediaGataway Aap<br>Nsta/<i> Vgs Control/<n><br>Signalinggateway Aap<br>Nsta/<i>Vgs Control/<n><br>SpvcAp<br>Nsta/<i> Vgs IpMConn Aap<br>Nsta/<i> Vgs IpMConn SpvcAp<br>Nsta/<i> Vgs AtmTConn/<h><br>Aap<br>Nsta/<l> Vgs AtmTConn/<h><br>Aap<br>Nsta/<i> Vgs |                                                | 1204                         |                                         | TBL<br>* bb PPEM302 gghh                               |
|                                | Nsta/<i> Vgs CasDefn/<z>                                                                                                                                                                                                                                                                 |                                                | 1208                         |                                         | TBL<br>* bb PPEM302 gghh                               |
|                                | Lp/<x> Vsp PModule/y>                                                                                                                                                                                                                                                                    |                                                | 1209                         |                                         | TBL<br>* bb PPEM303 gghh                               |
|                                | Nsta/<x> Vgs Brag/<d><br>Q921/<r><br>Nsta/<i> Vgs BragS/<k><br>dBrag/<t> Q921<br>Nsta/<x> Vgs lua                                                                                                                                                                                        |                                                | 1210<br>1211                 |                                         | TBL<br>** bb PPEM300 gghh<br>TBL<br>** bb PPEM300 gghh |
|                                | Nsta/<x> Vgs Brag/<d> V5Link<br>LapV5/<w><br>Nsta/<x> Vgs Tag/<u>                                                                                                                                                                                                                        |                                                | 1213<br>1217                 |                                         | TBL<br>** bb PPEM300 gghh<br>TBL<br>*Cbb PPEM302 gghh  |
| 7060                           | ATM and Frame Resource Control alarms.                                                                                                                                                                                                                                                   |                                                |                              |                                         | TBL                                                    |
|                                | LP instance range (<n>): 0-15<br>Aqm instance range (<n2>): 0-3<br>LP/<n> Eng Fcrc                                                                                                                                                                                                       |                                                | 1000                         |                                         | **bb PPEM300 gghh                                      |
|                                | LP/<n> Eng Arc Aqm/<n2>                                                                                                                                                                                                                                                                  |                                                | 1100                         |                                         | TBL<br>* bb PPEM300 gghh                               |
|                                |                                                                                                                                                                                                                                                                                          |                                                |                              |                                         | TBL                                                    |

The following table specifies the alarms where field “event” has the value “message”. There won’t be a “clear” for these, but some action may still be required (e.g., security issue).



**Table 3 MSS15000 Message Alarms Supported for Succession VOA/VOIP**

| MSS15000 Index Group | Component Name                                                                                                                                                                                          | Solution Notes | MSS15000 Subindex | Importance Category | SCC2 Header              |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|---------------------|--------------------------|
| 0000                 | OSI administrative state changes, general engineering and memory alarms, etc.                                                                                                                           |                |                   |                     |                          |
| 7000                 | These alarms can apply to many MSS15000 components. Often, it is:<br>EM/<nodename>                                                                                                                      |                | 9000              |                     | * bb CA eee gghh         |
|                      | Provisioning alarms. These alarms apply to failures resulting from provisioning attempts. e.g., loading a provisioning file has failed.                                                                 |                | 9001              |                     | TBL                      |
|                      |                                                                                                                                                                                                         |                | 9002              |                     | where:                   |
|                      |                                                                                                                                                                                                         |                | 9003              |                     | eee = 300, 302           |
| 7002                 | Prov                                                                                                                                                                                                    |                | 0001              |                     | *Cbb PPEM302 gghh        |
|                      | Prov                                                                                                                                                                                                    |                | 0002              |                     | TBL<br>* bb PPEM302 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0003              |                     | TBL<br>*Cbb PPEM302 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0004              |                     | TBL<br>*Cbb PPEM302 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0005              |                     | TBL<br>* bb PPEM302 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0006              |                     | TBL<br>*Cbb PPEM302 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0008              |                     | TBL<br>**bb PPEM302 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0009              |                     | TBL<br>**bb PPEM302 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0012              |                     | TBL<br>* bb PPEM306 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0013              |                     | TBL<br>* bb PPEM302 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0015              |                     | TBL<br>* bb PPEM302 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0016              |                     | TBL<br>* bb PPEM30? gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0029              |                     | TBL<br>* bb PPEM30? gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0030              |                     | TBL<br>* bb PPEM30? gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0031              |                     | TBL<br>* bb PPEM302 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0032              |                     | TBL<br>* bb PPEM30? gghh |
|                      | This alarm can apply to many MSS15000 components.                                                                                                                                                       |                | 0035              |                     | TBL<br>* bb PPEM307 gghh |
|                      | Prov                                                                                                                                                                                                    |                | 0039              |                     | TBL<br>* bb PPEM306 gghh |
|                      | Backplane control system alarms; e.g., communication failure between a card and the backplane. Note:<br>Card instance range (<n>): 0-15<br>FabricCard instance range (<i>): X,Y<br>Shelf FabricCard/<i> |                |                   |                     |                          |
|                      |                                                                                                                                                                                                         |                | 0010              |                     | * bb PPEM303 gghh        |
|                      |                                                                                                                                                                                                         |                |                   |                     | TBL                      |

| MSS150<br>00<br>Index<br>Group | Component Name                                                                                                                                                                                              | Solution<br>Notes | MSS1<br>5000<br>Subin<br>dex | Impor<br>tance<br>Categ<br>ory | SCC2 Header                                             |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------|--------------------------------|---------------------------------------------------------|
|                                | Shelf FabricCard/<i>                                                                                                                                                                                        |                   | 0012                         |                                | * bb PPEM303 gghh                                       |
| 7003                           | Shelf FabricCard/<i>                                                                                                                                                                                        |                   | 0013                         |                                | TBL<br>* bb PPEM303 gghh                                |
|                                | Shelf FabricCard/<i>                                                                                                                                                                                        |                   | 0014                         |                                | TBL<br>* bb PPEM303 gghh                                |
|                                | Shelf Card/<n>                                                                                                                                                                                              |                   | 1000                         |                                | TBL<br>*Cbb PPEM303 gghh                                |
|                                |                                                                                                                                                                                                             |                   |                              |                                | TBL                                                     |
|                                | Data collection system alarms; e.g., an alarm or log queue size has exceeded a threshold.                                                                                                                   |                   |                              |                                |                                                         |
| 7006                           | Collector instance range (<t>): accounting, alarm, log, debug, scn, trap, stats, rtstats, appl<br>Agent instance range (<n>): 0-15<br>Collector/<t> Agent/<n>                                               |                   | 0004                         |                                | * bb PPEM301 gghh                                       |
|                                | Collector/log Spooler                                                                                                                                                                                       |                   | 0008                         |                                | TBL<br>* bb PPEM306 gghh                                |
|                                |                                                                                                                                                                                                             |                   |                              |                                | TBL                                                     |
|                                | Network Management Interface system alarms and Radius security alarms.                                                                                                                                      |                   |                              |                                |                                                         |
|                                | Management Interface type (<type>): Fmip, Ftp, Local, Telnet<br>Session instance range (<n>): 1-35 (Fmip); 1-16 (Ftp); 1-2 (Local); 1-16 (Telnet)<br>Radius Server instance range (<m>): 0-1<br>Nmis <type> |                   |                              |                                |                                                         |
|                                |                                                                                                                                                                                                             |                   | 0001                         |                                | **bb PPEM305 gghh                                       |
|                                | Nmis <type> Session/<n>                                                                                                                                                                                     |                   | 0002                         |                                | TBL<br>* bb PPEM305 gghh                                |
|                                | Nmis <type> Session/<n>                                                                                                                                                                                     |                   | 0003                         |                                | TBL<br>**bb PPEM300 gghh                                |
|                                | Nmis Ftp                                                                                                                                                                                                    |                   | 0005                         |                                | TBL<br>**bb PPEM302 gghh                                |
|                                | Nmis Fmip                                                                                                                                                                                                   |                   | 0006                         |                                | TBL<br>**bb PPEM305 gghh                                |
|                                | Nmis <type> Session/<n>                                                                                                                                                                                     |                   | 0007                         |                                | TBL<br>**bb PPEM300 gghh                                |
|                                | Nmis Fmip                                                                                                                                                                                                   |                   | 0008                         |                                | TBL<br>**bb PPEM300 gghh                                |
|                                | Ac                                                                                                                                                                                                          |                   | 0009                         |                                | TBL<br>* bb PPEM300 gghh                                |
|                                | Ac Radius Server/<m>                                                                                                                                                                                        |                   | 0101                         |                                | TBL or<br>* bb PPEM305 gghh<br>TBL<br>**bb PPEM305 gghh |
|                                | Ac Radius Server/<m>                                                                                                                                                                                        |                   | 0102                         |                                | TBL<br>**bb PPEM305 gghh                                |
|                                | Ac Radius                                                                                                                                                                                                   |                   | 0103                         |                                | TBL<br>**bb PPEM305 gghh                                |
|                                | Ac Radius                                                                                                                                                                                                   |                   | 0104                         |                                | TBL<br>**bb PPEM305 gghh                                |
|                                | Ac Radius Server/<m>                                                                                                                                                                                        |                   | 0105                         |                                | TBL<br>**bb PPEM305 gghh                                |
| 7008                           | File system alarms.                                                                                                                                                                                         |                   |                              |                                | TBL                                                     |
|                                | Disk instance range (<n>): 0-1<br>Card instance range (<x>): 0-1                                                                                                                                            |                   |                              |                                |                                                         |

| MSS150<br>00<br>Index<br>Group | Component Name                                                                                                                                                                                                 | Solution<br>Notes | MSS1<br>5000<br>Subin<br>dex<br>1003 | Impor<br>tance<br>Categ<br>ory | SCC2 Header               |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------|--------------------------------|---------------------------|
|                                | FileSystem                                                                                                                                                                                                     |                   |                                      |                                | **bb PPEM302 gghh         |
|                                | FileSystem Disk/<n>                                                                                                                                                                                            |                   | 1012                                 |                                | TBL<br>* bb PPEM303 gghh  |
|                                | FileSystem Disk/<n>                                                                                                                                                                                            |                   | 1013                                 |                                | TBL<br>**bb PPEM303 gghh  |
|                                | FileSystem Disk/<n>                                                                                                                                                                                            |                   | 1014                                 |                                | TBL<br>**bb PPEM307 gghh  |
|                                | FileSystem Disk/<n>                                                                                                                                                                                            |                   | 1015                                 |                                | TBL<br>* bb PPEM307 gghh  |
|                                | FileSystem Disk/<n>                                                                                                                                                                                            |                   | 1016                                 |                                | TBL<br>* bb PPEM307 gghh  |
|                                | FileSystem Disk/<n>                                                                                                                                                                                            |                   | 1018                                 |                                | TBL<br>* bb PPEM303 gghh  |
|                                | FileSystem                                                                                                                                                                                                     |                   | 1020                                 |                                | TBL<br>* bb PPEM303 gghh  |
|                                | Shelf Card/<x>                                                                                                                                                                                                 |                   | 1021                                 |                                | TBL<br>**bb PPEM303 gghh  |
| 7011                           | Port management system and Automatic Protection Switching alarms.                                                                                                                                              |                   |                                      |                                | TBL                       |
|                                | LP instance range (<n>): 0-15<br>Port types (<type>): Sonet, DS3<br>Sonet instance range (<n2>): 0-15 (16-port); 0-3 (4-port)<br>DS3 instance range (<n2>): 0-11 (12-port); 0-3 (4-port)<br>LP/<n> <type>/<n2> |                   |                                      |                                | 2002<br>**bb PPEM303 gghh |
|                                | LP/<n> DS3/<n2>                                                                                                                                                                                                |                   | 5112                                 |                                | TBL<br>* bb PPEM300 gghh  |
|                                | LP/<n> <type>/<n2>                                                                                                                                                                                             |                   | 8000                                 |                                | TBL<br>* bb PPEM300 gghh  |
| 7012                           | Processor control system alarms.                                                                                                                                                                               |                   |                                      |                                | TBL                       |
|                                | LP instance range (<n>): 0-15<br>Card instance range (<n>): 0-15<br>Shelf                                                                                                                                      |                   |                                      |                                | 0054<br>**bb PPEM303 gghh |
|                                | Shelf Card/<n>                                                                                                                                                                                                 |                   | 0101                                 |                                | TBL<br>* bb PPEM303 gghh  |
|                                | Shelf Card/<n>                                                                                                                                                                                                 |                   | 0102                                 |                                | TBL<br>* bb PPEM301 gghh  |
|                                | Shelf Card/<n>                                                                                                                                                                                                 |                   | 0151                                 |                                | TBL<br>**bb PPEM302 gghh  |
|                                | Shelf Card/<n>                                                                                                                                                                                                 |                   | 0152                                 |                                | TBL<br>**bb PPEM303 gghh  |
|                                |                                                                                                                                                                                                                |                   | 0153                                 |                                |                           |
|                                |                                                                                                                                                                                                                |                   | 0154                                 |                                |                           |
|                                | LP/<n>                                                                                                                                                                                                         |                   | 0155                                 |                                | TBL<br>* bb PPEM306 gghh  |
|                                |                                                                                                                                                                                                                |                   | 0156                                 |                                |                           |
|                                |                                                                                                                                                                                                                |                   | 0201                                 |                                |                           |
|                                | LP/0                                                                                                                                                                                                           |                   | 0203                                 |                                | TBL<br>* bb PPEM303 gghh  |
|                                | LP/<n>                                                                                                                                                                                                         |                   | 0204                                 |                                | TBL<br>* bb PPEM306 gghh  |
|                                |                                                                                                                                                                                                                |                   |                                      |                                | TBL                       |

| MSS150<br>00<br>Index<br>Group | Component Name                                                                                                                                                                                                                                             | Solution<br>Notes | MSS1<br>5000<br>Subin<br>dex<br>0300 | Impor<br>tance<br>Categ<br>ory | SCC2 Header                                 |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------|--------------------------------|---------------------------------------------|
|                                | Shelf Card/<n> SpServ                                                                                                                                                                                                                                      |                   |                                      |                                | aabb PPEMeee gghh                           |
| 7015                           | Network time-of-day (TOD) synchronization alarms.                                                                                                                                                                                                          |                   |                                      |                                | TBL<br>where:<br>aa = “*C”, “* “<br>eee=any |
|                                | Time                                                                                                                                                                                                                                                       |                   | 0001                                 |                                | * bb PPEMeee gghh                           |
| 7017                           | Network clock synchronization alarms.                                                                                                                                                                                                                      |                   |                                      |                                | TBL<br>eee=304, 306, 307                    |
|                                | Ns                                                                                                                                                                                                                                                         |                   | 1001                                 |                                | * bb PPEM301 gghh                           |
| 7021                           | Internet protocol alarms. For Succession VOA, the IP stack is used only for network                                                                                                                                                                        |                   |                                      |                                | TBL                                         |
|                                | management connectivity purposes. For VOIP VR is used to connect to IP network. OSPF and IP static Routes can be used. More than 1 VR can be provisioned. VR instance range (<i>): any string, but often specified simply as a digit (e.g., “0”) VR/<i> Ip |                   | 0000                                 |                                | * bb PPEM302 gghh                           |
|                                | VR/<i> Ip OSPF                                                                                                                                                                                                                                             |                   | 1000                                 |                                | TBL                                         |
|                                | VR/<i> Ip OSPF                                                                                                                                                                                                                                             |                   | 1001                                 |                                |                                             |
|                                |                                                                                                                                                                                                                                                            |                   |                                      |                                |                                             |
|                                | VR/<i> Ip OSPF                                                                                                                                                                                                                                             |                   | 1011                                 |                                |                                             |
|                                |                                                                                                                                                                                                                                                            |                   |                                      |                                |                                             |
|                                |                                                                                                                                                                                                                                                            |                   |                                      |                                |                                             |
|                                | VR/<i> Ip OSPF                                                                                                                                                                                                                                             |                   | 1016                                 |                                | **bb PPEM302 gghh                           |
|                                | VR/<i> Ip OSPF                                                                                                                                                                                                                                             |                   | 1100                                 |                                | TBL<br>* bb PPEM300 gghh                    |
|                                | Vr/<i>                                                                                                                                                                                                                                                     |                   | 1021                                 |                                | TBL<br>**bb PPEM302 gghh                    |
|                                | Vr/<i> Ip Ospf                                                                                                                                                                                                                                             |                   | 1101                                 |                                | TBL<br>* bb PPEM302 gghh                    |
| 7026                           | LAN port management system alarms. For Succession VOA, the LAN port management                                                                                                                                                                             |                   |                                      |                                | TBL                                         |
|                                | system is used only for network management connectivity purposes. For VOIP same alarms are used. LP/0 OamEnet/0                                                                                                                                            |                   | 3002                                 |                                | * bb PPEM30? gghh                           |
|                                | LP/0 OamEnet/0                                                                                                                                                                                                                                             |                   | 3003                                 |                                | TBL<br>* bb PPEM303 gghh                    |
|                                | LP/0 OamEnet/0                                                                                                                                                                                                                                             |                   | 3006                                 |                                | TBL<br>* bb PPEM302 gghh                    |
| 7039                           | ATM Core alarms.                                                                                                                                                                                                                                           |                   |                                      |                                | TBL                                         |
|                                | AtmIf instance range (<n>): 1-4095<br>Vcc instance range (<n2.n3>): n2 is VPI; n3 is VCI<br>Atmif/<n> Vcc/<n2.n3>                                                                                                                                          |                   | 2001                                 |                                | * bb PPEM302 gghh                           |
|                                | Atmif/<n>                                                                                                                                                                                                                                                  |                   | 4000                                 |                                | TBL<br>* bb PPEM300 gghh                    |
|                                |                                                                                                                                                                                                                                                            |                   |                                      |                                | TBL                                         |

| MSS150               | Component Name                                                                                                                                                                                                                                                                                                                                                                | Solution | MSS1             | Importance | SCC2 Header               |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------|------------|---------------------------|
| 00<br>Index<br>Group |                                                                                                                                                                                                                                                                                                                                                                               | Notes    | 5000<br>Subindex | Category   |                           |
| 7041                 | ATM Networking alarms.                                                                                                                                                                                                                                                                                                                                                        |          |                  |            |                           |
|                      | AtmIf instance range (<n>): 1-4095<br>CfgNode instance range (<n>): 0-104<br>Top instance range (<n>): 0-104<br>Node instance range (<id>): 44-hex digit id<br>Vpt instance range (<n2>): 0-4095<br>Atmif/<n> Uni                                                                                                                                                             |          |                  |            |                           |
|                      |                                                                                                                                                                                                                                                                                                                                                                               |          | 0000             |            | * bb PPEM306 gghh         |
|                      | Atmif/<n> Uni                                                                                                                                                                                                                                                                                                                                                                 |          | 0001             |            | TBL<br>* bb PPEM303 gghh  |
|                      | Atmif/<n> Uni Ilmi                                                                                                                                                                                                                                                                                                                                                            |          | 0051             |            | TBL<br>**bb PPEM300 gghh  |
|                      | Atmif/<n> Uni                                                                                                                                                                                                                                                                                                                                                                 |          | 0151             |            | TBL<br>*Cbb PPEM300 gghh  |
|                      | Atmif/<n> Pnni<br>Atmif/<n> Vpt/<n2> Uni<br>Atmif/<n> Vpt/<n2> Pnni<br>Atmif/<n> Pnni Rcc                                                                                                                                                                                                                                                                                     |          | 0251             |            | TBL<br>**bb PPEM300 gghh  |
|                      | Atmif/<n> Pnni Rcc                                                                                                                                                                                                                                                                                                                                                            |          | 0252             |            | TBL<br>**bb PPEM300 gghh  |
|                      | Artg Pnni Top/<n> Node/<id>                                                                                                                                                                                                                                                                                                                                                   |          | 0602             |            | TBL<br>**bb PPEM301 gghh  |
|                      | Artg                                                                                                                                                                                                                                                                                                                                                                          |          | 0603             |            | TBL<br>**bb PPEM303 gghh  |
|                      |                                                                                                                                                                                                                                                                                                                                                                               |          |                  |            | TBL                       |
| 7056                 | Voice Services Processor (VSP) / Narrowband Service Trunk over ATM (Nsta)                                                                                                                                                                                                                                                                                                     |          |                  |            |                           |
|                      | This group is specific to MG15000 application (e.g. severe failure of the VSP card)<br>Lp instance range (<x>): 0-15<br>PModule instance range (<y>): 1-24<br>PBlock instance range (<z>): 1-2<br>NSTA instance range (<i>): 0-15999<br>Conn instance range (<l>): 0-128<br>Brag instance range (<d>): 0-159999<br>BragS instance range (<p>): 0-15<br>Lp/<x> Vsp PModule/<y> |          |                  |            |                           |
|                      |                                                                                                                                                                                                                                                                                                                                                                               |          | 0006             |            | * bb PPEM303 gghh         |
|                      | Nsta/<i> Conn/<l> Brag/<d> Ccst                                                                                                                                                                                                                                                                                                                                               |          | 1101             |            | TBL<br>* bb PPEM300 gghh  |
|                      | Nsta/<i> Vgs lua                                                                                                                                                                                                                                                                                                                                                              |          | 1212             |            | TBL<br>* bb PPEM300 gghh  |
|                      |                                                                                                                                                                                                                                                                                                                                                                               |          | 1214             |            | TBL<br>**bb PPEM302 gghh  |
|                      | Lp/<x> Vsp PModule/<y><br>Nsta/<i> Vgs BragS/<p>                                                                                                                                                                                                                                                                                                                              |          | 1215             |            | TBL<br>** bb PPEM302 gghh |
|                      |                                                                                                                                                                                                                                                                                                                                                                               |          |                  |            | TBL                       |
| 7060                 | ATM and Frame Resource Control alarms.                                                                                                                                                                                                                                                                                                                                        |          |                  |            |                           |
|                      | LP instance range (<n>): 0-15                                                                                                                                                                                                                                                                                                                                                 |          |                  |            |                           |
|                      | LP/<n> Eng Arc Ov                                                                                                                                                                                                                                                                                                                                                             |          | 1200             |            | * bb PPEM301 gghh         |
|                      | LP/<n> Eng                                                                                                                                                                                                                                                                                                                                                                    |          | 1300             |            | TBL                       |
|                      | LP/<n> Eng                                                                                                                                                                                                                                                                                                                                                                    |          | 1400             |            |                           |
|                      | LP/<n> Eng                                                                                                                                                                                                                                                                                                                                                                    |          | 1500             |            |                           |
|                      | LP/<n> Eng                                                                                                                                                                                                                                                                                                                                                                    |          | 1600             |            |                           |

| MSS150               | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                   | Solution | MSS1             | Importance | SCC2 Header       |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------|------------|-------------------|
| 00<br>Index<br>Group |                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Notes    | 5000<br>Subindex | Category   |                   |
| 7061                 | Security policy violation alarms.                                                                                                                                                                                                                                                                                                                                                                                                                |          |                  |            |                   |
| 7071                 | VR instance range (<i>): any string, but often specified simply as a digit.<br><spd_name>: name of the security policy database<br><pol_id>: instance number of the Policy component<br><ip_addr,esp,spi>: IP address of the peer with which this SecurityAssociation component is established, the security protocol (ESP), and the Security Parameter Index (SPI) value<br>Vr/<i>      Ip      Spd/<spd_name>      0001      **bb PPEM305 gghh |          |                  |            |                   |
|                      | Pol/<pol_id> Sa/<ip_addr,esp,spi>                                                                                                                                                                                                                                                                                                                                                                                                                |          |                  |            | TBL               |
|                      | LAN ApplicationLAN application instance (<n>): 0-255                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |            |                   |
|                      | LA/<n>                                                                                                                                                                                                                                                                                                                                                                                                                                           |          | 1000             |            | *Cbb PPEM302 gghh |
| 7080                 | Software file system.                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                  |            |                   |
|                      | <name> = name of the software application                                                                                                                                                                                                                                                                                                                                                                                                        |          |                  |            |                   |
|                      | Sw Av/<name>                                                                                                                                                                                                                                                                                                                                                                                                                                     |          | 0100             |            | **bb PPEM302 gghh |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |                  |            | TBL               |

Reference [6] provides detailed descriptions of MSS15000 alarm logs, of which only a portion are applicable for Succession VOA/VOIP.

## 4. MDM Alarm Logs

Table 4 presents the list of MDM and MDM proxy set/clear alarm logs that are applicable for Succession VOA/VOIP. Table 5 presents the list of MDM and MDM proxy message alarm logs that are applicable for Succession VOA/VOIP.

Applicable MDM set/clear alarms logs include those due to MDM software failure, and alarms related to the monitoring of the platform on which MDM is operating. MDM proxy alarm logs are alarms that MDM initiates on behalf of MSS15000 (for a number of reasons) and injects into the MSS15000 alarm log stream.

The table does not explicitly state all MDM clear alarm logs that correspond to each set. The clear differs from its corresponding set by only the first two characters. The characters “aa” are replaced by “ ” (two spaces). This format is presented in Table 1.

The MDM alarm identifier consists of an eight-digit number identifying the alarm. The first four digits comprise the **Index Group**, which represents logical groupings of alarms. The last four digits are the **SubIndex**, which is an identifier within each index group.

**Component Name** indicates the managed object against which the alarm Log is generated. This table contains the CLI format of a component name. The “compld” field in SCC2 format contains this information (with the module’s <nodename> pre-pended). Also, “compld” follows the MDM API-style format (with component type and instance separated by a space instead of a slash, and ‘\$’ appearing in place of a null instance value). Variables (usually instance value ranges) are denoted by <> and the reader should reference the Alarms NTP’s [3] and [4] for further information.

**Table 4 MDM Set/Clear Alarms Supported for Succession VOA/VOIP**

| MDM<br>Index<br>Group | Component Name                                                                                                                                                                                                                                                                            | N/A | MDM<br>SubIndex | Importance<br>category<br>(N/A) | SCC2 Header                                                                              |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------|---------------------------------|------------------------------------------------------------------------------------------|
| 0999                  | Loss of access to a MSS15000 shelf from MDM.                                                                                                                                                                                                                                              |     |                 |                                 |                                                                                          |
|                       | MDM tries to reconnect and when it succeeds in doing so, will do a “state walk” of major components on the shelf and issue alarms for those components that are out-of-service.<br>EM instance range (<nodename>): a string, typically the CLLI identifier for the MSS15000 EM/<nodename> |     | 0001            |                                 | *Cbb MDM 303 gghh                                                                        |
| 0999                  | MDM Proxy-alarm. MDM-originated alarm sent on behalf of the MSS15000, either due to a state walk or a state-change notification.<br>This alarm can apply to many                                                                                                                          |     | 0012            |                                 | TBL                                                                                      |
|                       | MSS15000 components.                                                                                                                                                                                                                                                                      |     |                 |                                 | **bb PPEMeee gghh<br>TBL<br>where:<br>eee = 300, 301, 302,<br>303, 304, 305, 306,<br>307 |

| MDM Index Group | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | N/A | MDM SubIndex | Importance category (N/A) | SCC2 Header                                                  |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------------|---------------------------|--------------------------------------------------------------|
| 3010            | Indicates faults on MDM server processes, which are needed by the MDM tools/applications.<br>The MDM Log Display GUI or corresponding Unix Utility (nmslog) may also be used to find the information for the cause of the problem.<br>NMS instance range (<x>): a string, typically the hostname of the MDM server platform<br>APP instance range (<a>): a string, denoting the name of an MDM software application<br>Autopatch nodes (<nodes parameter>): typically, this is the name of an HGDS group or a node name or file name containing a list of node names.<br>EM node name (<node name>): the name of the MSS15000 or MG15000 shelf<br>NMS/<x> APP/<a> 0000 **bb MDM 302 gghh                                                                                                                                                                                                                                                            |     |              |                           |                                                              |
|                 | NMS/<x> APP/ PPAUTOPATCH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     | 0801         |                           | TBL<br>*bb MDM 306 gghh                                      |
|                 | NMS/<x> APP/ PPAUTOPATCH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     | 0802         |                           | TBL<br>*bb MDM 302 gghh                                      |
|                 | NODES/<nodes parameter><br>NMS/<x> APP/ PPAUTOPATCH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     | 0803         |                           | TBL<br>**bb MDM 302 gghh                                     |
|                 | NODES/<nodes parameter><br>NMS/<x> APP/ PPAUTOPATCH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     | 0820         |                           | TBL<br>**bb MDM 302 gghh                                     |
|                 | EM/<node name><br>NMS/<x> APP/ PPAUTOPATCH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     | 0821         |                           | TBL<br>**bb MDM 302 gghh                                     |
|                 | EM/<node name>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |              |                           | TBL                                                          |
| 3011            | MDM Platform monitoring; e.g. Solaris and Sun monitoring, including: CPU, disk space, memory, local ports and connectivity to adjacent neighbors. The severity of resource problems are determined via thresholds. Connectivity problems are determined using ping command.<br><br>The alarms 3011 xxFF (where xx can be 01,02,03,04,05,06, or 07) are clear alarms only. A single 3011xxFF alarm clears all outstanding alarms from 3011xx00 through 3011xx99.<br><br>NMS instance range (<x>): a string, typically the hostname of the MDM server platform<br>APP instance range (<a>): a string, denoting the name of an MDM software application<br>DISK instance range (<v>): a string, denoting disk volume name<br>CPU instance range (<c>): a string, denoting the CPU id<br>PORT and CONNECTION instance range (<ip>): an IP address or host name<br>SDS instance range (<d>): logical disk name<br>NMS/<x> APP/<a> 0001 *Cbb MDM 303 gghh |     |              |                           |                                                              |
|                 | NMS/<x> DISK/<v>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     | 0100         |                           | TBL<br>aabb MDM 303 gghh                                     |
|                 | NMS/<x> CPU/<c>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     | 0200         |                           | TBL<br>where:<br>aa = "C", " ", " " " "<br>aabb MDM 303 gghh |
|                 | NMS/<x> MEMORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | 0300         |                           | TBL<br>where:<br>aa = "C", " ", " " " "<br>aabb MDM 303 gghh |
|                 | NMS/<x> PORT/<ip>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | 0401         |                           | TBL<br>where:<br>aa = "C", " ", " " " "<br>**bb MDM 303 gghh |
|                 | NMS/<x> CONNECTION/<ip>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     | 0501         |                           | TBL<br>*Cbb MDM 303 gghh                                     |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |              |                           | TBL                                                          |



| MDM<br>Index<br>Group | Component Name  | N/A | MDM<br>SubIndex | Importance<br>category<br>(N/A) | SCC2 Header                                          |
|-----------------------|-----------------|-----|-----------------|---------------------------------|------------------------------------------------------|
|                       | NMS/<x> SDS/<d> |     | 0600            |                                 | *Cbb MDM 303 gghh                                    |
|                       | NMS/<x>         |     | 0700            |                                 | TBL<br>aabb MDM 303 gghh                             |
|                       | NMS/<x>         |     | 01FF            |                                 | TBL<br>where:<br>aa = “*C”, “***”<br>bb MDM 303 gghh |
|                       |                 |     | 02FF            |                                 | TBL<br>bb MDM 303 gghh                               |
|                       |                 |     | 03FF            |                                 | TBL<br>bb MDM 303 gghh                               |
|                       |                 |     | 04FF            |                                 | TBL<br>bb MDM 303 gghh                               |
|                       |                 |     | 05FF            |                                 | TBL<br>bb MDM 303 gghh                               |
|                       |                 |     | 06FF            |                                 | TBL<br>bb MDM 303 gghh                               |
|                       |                 |     | 07FF            |                                 | TBL<br>bb MDM 303 gghh                               |
|                       |                 |     |                 |                                 | TBL                                                  |

Reference [4] provides detailed descriptions of MDM and MDM proxy alarm logs, of which only a portion are applicable for Succession VOA/VOIP.

**Table 5 MDM Message Alarms Supported for Succession VOA/VOIP**

| MDM<br>Index<br>Group | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | N/A | MDM<br>SubIndex | Importance<br>category<br>(N/A) | SCC2 Header              |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------|---------------------------------|--------------------------|
| 0999                  | MDM proxy-alarm. Issued when a loss of redundancy of alarm feed occurs. The MDM has lost its direct network alarm feed, but is still collecting them from its mate MDM.<br>Note that this message alarm will not be issued for all conditions that could lead to a loss of redundancy, nor is it “cleared” when the problem is resolved. Thus, we do not recommend that this alarm be keyed upon, but include it here because it is likely to be seen.<br><deviceType> is any IP-enabled device, such as “EM” or “PP8600”.<br><nodeName> is the name of the device or shelf.<br><deviceType>/<nodeName> |     |                 |                                 |                          |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     | 0100            |                                 | * bb MDM 303 gghh        |
| 3010                  | Indicates faults on MDM server processes, which are needed by the MDM tools/applications.<br>The MDM Log Display GUI or corresponding Unix Utility (nmslog) may also be used to find the information for the cause of the problem.<br>NMS instance range (<x>): a string, typically the hostname of the MDM server platform<br>GROUP instance range (<g>): a string, which is the HGDS group name for a set of MSS15000s<br>PP instance range (<nodename>): a string, typically the CLLI identifier for the MSS15000<br>NMS/<x> GROUP/<g>                                                               |     |                 |                                 |                          |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     | 0700            |                                 | * bb MDM 305 gghh        |
|                       | NMS/<x> PP/<nodename>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | 0701            |                                 | TBL<br>* bb MDM 300 gghh |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                 |                                 | TBL                      |

| MDM<br>Index<br>Group | Component Name                                                                                                                                                                                   | N/A | MDM<br>SubIndex | Importance<br>category<br>(N/A) | SCC2 Header                                                     |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------|---------------------------------|-----------------------------------------------------------------|
|                       | NMS/<x> PP/<nodename>                                                                                                                                                                            |     | 0702            |                                 | * bb MDM 300 gghh                                               |
| 600x                  | NMS/<x>                                                                                                                                                                                          |     | 0703            |                                 | TBL<br>* bb MDM 304 gghh                                        |
|                       | APPL/TODCHANGE<br>MDP application alarms.                                                                                                                                                        |     |                 |                                 | TBL                                                             |
|                       | NMS instance range (<x>): a string, typically the hostname of the MDM server platform<br>MDP instance range (<a>): a string, denoting the name of an MDP software application<br>NMS/<x> MDP/<a> |     |                 |                                 |                                                                 |
|                       |                                                                                                                                                                                                  |     | 00001-<br>40000 |                                 | aabb MDM 307 gghh<br><br>TBL<br>where:<br>aa = “*C”, “**”, “* “ |

## 5. SN06(VOA)-to-SN06.2(VOA/VOIP) Delta Summary

The following table captures the SN06.2 (VOA/VOIP) alarm log delta that includes MG15000 application as compared with SN06 (VOA) documentation that did not include any MG15000 application specifics

**Table 6 SN06 (non MG15000 content) -to-SN06.2 (including MG15000 content) Change Summary Description**

| Fault Code     | Description of Change |
|----------------|-----------------------|
| SET ALARMS     |                       |
| 70115400       | New                   |
| 70115401       | New                   |
| 70115402       | New                   |
| 70115403       | New                   |
| 70115480       | New                   |
|                |                       |
| 7026 3000      | New                   |
|                |                       |
| 7056 0002      | New                   |
| 7056 0003      | New                   |
| 7056 0500      | New                   |
| 7056 0501      | New                   |
| 7056 0502      | New                   |
| 7056 1000      | New                   |
| 7056 1200      | New                   |
| 7056 1201      | New                   |
| 7056 1202      | New                   |
| 7056 1203      | New                   |
| 7056 1204      | New                   |
| 7056 1209      | New                   |
| 7056 1210      | New                   |
| 7056 1211      | New                   |
| 7056 1213      | New                   |
|                |                       |
| MESSAGE Alarms |                       |
|                |                       |
| 7000 0039      | New                   |
|                |                       |
| 7021 1000      | New                   |
| 7021 1002      | New                   |
| 7021 1003      | New                   |
| 7021 1004      | New                   |
| 7021 1005      | New                   |
| 7021 1006      | New                   |
| 7021 100B      | New                   |
| 7021 1100      | New                   |
|                |                       |
| 7056 1101      | New                   |
| 7056 1212      | New                   |
| 70561214       | New                   |
| 7056 1215      | New                   |
|                |                       |
|                |                       |

|           |     |
|-----------|-----|
| 7060 1300 | New |
| 7060 1400 | New |
| 7060 1500 | New |
| 7060 1600 | New |
|           |     |
| 7071 1200 | New |
|           |     |

## 6. SN06.2-to-SN07(VOA/VOIP) Delta Summary

The following table captures the SN07 (VOA/VOIP) alarm log delta as compared with SN06.2 (VOA/VOIP) documentation.

**Table 7 SN06.2-to-SN07 Change Summary Description**

| <b>Fault Code</b> | <b>Description of Change</b> |
|-------------------|------------------------------|
| SET ALARMS        |                              |
| 7000 0041         | New                          |
|                   |                              |
| 7011 1500         | New                          |
| 7011 1501         | New                          |
| 7011 5254         | New                          |
| 7011 5255         | New                          |
| 7011 5256         | New                          |
|                   |                              |
| 7012 0059         | New                          |
|                   |                              |
| 7021 0013         | New                          |
| 7021 0014         | New                          |
|                   |                              |
| 7041 0700         | New                          |
| 7041 0701         | New                          |
| 7041 0703         | New                          |
|                   |                              |
| 7056 1208         | New                          |
| 7056 1217         | New                          |
|                   |                              |
| 0999 0004         | New                          |
| 3011 01FF         | New                          |
| 3011 02FF         | New                          |
| 3011 03FF         | New                          |
| 3011 04FF         | New                          |
| 3011 05FF         | New                          |
| 3011 06FF         | New                          |
| 3011 07FF         | New                          |
|                   |                              |
| MESSAGE Alarms    |                              |
| 7003 0008         | New                          |
| 7008 1021         | New                          |
|                   |                              |
| 7021 1021         | New                          |
| 7021 1101         | New                          |
|                   |                              |
|                   |                              |

|           |     |
|-----------|-----|
| 7041 0151 | New |
| 7056 0006 | New |
| 7080 0100 | New |
|           |     |

## 7. SN07-to-SN08 (VOA/VOIP) Delta Summary

The following table captures the SN08 (VOA/VOIP) alarm log delta as compared with SN07 (VOA/VOIP) documentation.

**Table 8 SN07-to-SN08 Change Summary Description**

| <b>Fault Code</b> | <b>Description of Change</b>                                   |
|-------------------|----------------------------------------------------------------|
| SET ALARMS        |                                                                |
| 7000 0041         | Changed                                                        |
| 7002 0003         | Changed                                                        |
| 7002 0004         | New                                                            |
| 7006 0100         | New                                                            |
| 7021 1002         | Changed                                                        |
| 7021 1003         | Changed                                                        |
| 7041 0052         | New                                                            |
| 0999 0004         | Removed (applies only to PP8600 and other DCD managed devices) |
| 3010 0801         | New                                                            |
| 3010 0802         | New                                                            |
| 3010 0803         | New                                                            |
| 3010 0820         | New                                                            |
| 3010 0821         | New                                                            |
|                   |                                                                |
| MESSAGE Alarms    |                                                                |
| 0999 0100         | New                                                            |
| 7006 0009         | New                                                            |
| 7006 0101         | New                                                            |
| 7006 0102         | New                                                            |
| 7006 0103         | New                                                            |
| 7006 0104         | New                                                            |
| 7006 0105         | New                                                            |
| 7061 0001         | New                                                            |
|                   |                                                                |
|                   |                                                                |
|                   |                                                                |

## 8. References

1. Passports and MDM Logs, draft 1.2, March 2001 (PassportMDMLog\_v1.2.doc), by the SDM team.
2. Passport 15000 for Universal Access – AAL1 (SN06) Integrated Solution Specification, Issue 3.04, Oct 22, 2002

3. NTP 241-6001-501 Nortel Networks Multiservice Data Manager Alarms Reference, 15.2D1, Oct 2004.
4. NTP 241-6001-309 Preside MDM Management Data Provider User Guide, 14.3RSUP, 2003.
5. Supernode Data Manager - Log Applications Enhancement Design Summary (DSUM), 2002.
6. NTP NN10600-500 Multiservice Switch 7400/15000/20000 Alarms Reference, 6.1S2, Nov 2004
7. NTP NN10092-911 Nortel Networks Multiservice Switch 15000 Media Gateway 15000 and Preside MDM in Succession Networks Fault Management Overview PT-AAL1/UA-AAL1/UA-IP, SN07S1, Dec 2004

## Appendix D: USP Operational Measurements

| OM TYPE         | OM TITLE                                          | OM DESCRIPTION                                                                                                                                                                                                                                                                                                                                           |
|-----------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | ATM Driver Messaging, Plane 1 CRC Error Count     | This OM measures the number of Plane 1 CRC errors.                                                                                                                                                                                                                                                                                                       |
| Accumulation OM | AS Master, BICC Discard Count                     | This OM measures the number of BICC origination messages that were discarded due to Core Overload Control.                                                                                                                                                                                                                                               |
| Accumulation OM | AS Master, BSSAP Discard Count                    | This OM measures the number of SCCP connection request messages for the BSSAP subsystem that were discarded due to Core Overload Control.                                                                                                                                                                                                                |
| Accumulation OM | AS Master, Core Overload Duration                 | This OM measures the total time, in seconds, that the Core was in Overload.                                                                                                                                                                                                                                                                              |
| Accumulation OM | AS Master, ISUP Discard Count                     | This OM measures the number of ISUP origination messages that were discarded due to Core Overload Control.                                                                                                                                                                                                                                               |
| Accumulation OM | AS Master, RANAP Discard Count                    | This OM measures the number of SCCP connection request messages for the RANAP subsystem that were discarded due to Core Overload Control.                                                                                                                                                                                                                |
| Accumulation OM | AS Master, TUP Discard Count                      | This OM measures the number of TUP origination messages that were discarded due to Core Overload Control.                                                                                                                                                                                                                                                |
| Accumulation OM | ASP Path Management, Path Down Time               | This OM measures the total time that a Path was in the Down state.                                                                                                                                                                                                                                                                                       |
| Accumulation OM | ASP Path Management, Path entered Down state      | This OM measures the total number of times per measurement period that a Path entered the Down state.                                                                                                                                                                                                                                                    |
| Accumulation OM | ASP Path Management, Path entered Restoring state | This OM measures the total number of times per measurement period that a Path entered the Restoring state.                                                                                                                                                                                                                                               |
| Accumulation OM | ASP Path Management, Path entered Up state        | This OM measures the total number of times per measurement period that a Path entered the Up state.                                                                                                                                                                                                                                                      |
| Accumulation OM | ASP Path Management, Path Restore Time            | This OM measures the total time that a Path was in the Restoring state.                                                                                                                                                                                                                                                                                  |
| Accumulation OM | ASP Path Management, Path Up Time                 | This OM measures the total time that a Path was in the Up state.                                                                                                                                                                                                                                                                                         |
| Accumulation OM | ASP Path Traffic, Discarded MSUs Count            | This OM measures the total number of received MSUs on an ASP Path which were discarded because the Network Appearance (or System Identity) associated with the incoming message was not found on the USP                                                                                                                                                 |
| Accumulation OM | ASP Path Traffic, Discarded MTP3b MSUs Count      | This OM measures the total number of received MTP3B MSUs (> 272 octets) on an ASP Path which were discarded because the outgoing link is not MTP3B capable. This doesn't apply to SCCP/LUDT messages since on IPS7 Paths, these messages will be segmented and then sent out. For non-SCCP messages such as BICC messages > 272 octets, this will apply. |
| Accumulation OM | ASP Path Traffic, Originated MSUs Count           | This OM measures the number of originated MSUs (MSUs that contain the PC or capability code for the USP in the OPC field) that are successfully passed to the ASP Path for transmission (for example, network management messages).                                                                                                                      |
| Accumulation OM | ASP Path Traffic, Received MSUs Count             | This OM measures the total number of received MSUs on an ASP Path                                                                                                                                                                                                                                                                                        |

| OM TYPE         | OM TITLE                                          | OM DESCRIPTION                                                                                                                                                                                                                              |
|-----------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | ASP Path Traffic, Sent MSUs Count                 | This OM measures the number of through-switched MSUs (MSUs that do not contain the PC or capability code for the USP in either the OPC or DPC) that are acknowledged, translated, and successfully passed to the ASP Path for transmission. |
| Accumulation OM | ASP Path Traffic, Terminated MSUs Count           | This OM measures the number of terminated MSUs (acknowledged, incoming MSUs that contain the PC or capability code of the USP in the DPC field) received.                                                                                   |
| Accumulation OM | ASP Path Utilization, DAUD Received Count         | This OM measures the number of destination audit (DAUD) messages transmitted.                                                                                                                                                               |
| Accumulation OM | ASP Path Utilization, DAVA Transmitted Count      | This OM measures the number of destination available (DAVA) messages transmitted.                                                                                                                                                           |
| Accumulation OM | ASP Path Utilization, DUNA Transmitted Count      | This OM measures the number of destination unavailable messages transmitted.                                                                                                                                                                |
| Accumulation OM | ASP Path Utilization, DUPU Transmitted Count      | This OM measures the number of destination user part unavailable messages transmitted.                                                                                                                                                      |
| Accumulation OM | ASP Path Utilization, SCON Transmitted Count      | This OM measures the number of Signaling Congestion (SCON) messages transmitted.                                                                                                                                                            |
| Accumulation OM | ATM Driver Messaging, Duplicate Messages Count    | This OM measures the number of duplicate messages.                                                                                                                                                                                          |
| Accumulation OM | ATM Driver Messaging, IP Message Count            | This OM measures the number of incoming IP messages.                                                                                                                                                                                        |
| Accumulation OM | ATM Driver Messaging, Plane 1 Messages Count      | This OM measures the number of incoming Plane 1 messages.                                                                                                                                                                                   |
| Accumulation OM | ATM Driver Messaging, Plane 2 CRC Error Count     | This OM measures the number of Plane 2 CRC errors.                                                                                                                                                                                          |
| Accumulation OM | ATM Driver Messaging, Plane 2 Messages Count      | This OM measures the number of incoming Plane 2 messages.                                                                                                                                                                                   |
| Accumulation OM | ATM Driver Messaging, Raw Cell Count              | This OM measures the number of raw cells. Raw cells are typically bad cells or OAM cells.                                                                                                                                                   |
| Accumulation OM | ATM Driver Messaging, Raw Message Count           | This OM measures the number of ATM raw messages. Raw messages are messages not assigned to a protocol.                                                                                                                                      |
| Accumulation OM | ATM Driver Messaging, Sequence Number Reset Count | This OM measures the number of times the sequence numbers are reset due to the receipt of five consecutive duplicate cells.                                                                                                                 |
| Accumulation OM | ATM Driver Messaging, SSCOP Message Count         | This OM measures the number of incoming SSCOP messages.                                                                                                                                                                                     |
| Accumulation OM | ATM Link Traffic, Discarded cells with HEC Viol.  | This OM measures the number of ATM cells discarded due to Header Error Control (HEC) violations.                                                                                                                                            |
| Accumulation OM | ATM Link Traffic, Discarded cells with Prot. Errs | This OM measures the number of cells discarded due to Protocol (ATM-Layer Header) Errors.                                                                                                                                                   |
| Accumulation OM | ATM Link Traffic, In NDC-valid cells on HSL VCL   | This OM measures the number of incoming Network Data Collection (NDC) valid cells on the High Speed Links (HSL) VCL.                                                                                                                        |
| Accumulation OM | ATM Link Traffic, Incoming ATM UI cells           | This OM measures the number of incoming ATM User Information (UI) cells.                                                                                                                                                                    |
| Accumulation OM | ATM Link Traffic, OCD Anomalies                   | This OM measures the number of Out of Cell Delineation (OCD) anomalies.                                                                                                                                                                     |



| OM TYPE         | OM TITLE                                                 | OM DESCRIPTION                                                                                                                                                                                                                                           |
|-----------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | ATM Link Traffic, Out NDC-valid cells on HSL VCL         | This OM measures the number of outgoing Network Data Collection (NDC) valid cells on the High Speed Links (HSL) VCL.                                                                                                                                     |
| Accumulation OM | ATM Link Traffic, Outgoing ATM UI cells                  | This OM measures the number of outgoing ATM User Information (UI) cells.                                                                                                                                                                                 |
| Accumulation OM | BICC Received Message Counts, BICC Call P Received Count | This OM measures the number of BICC call processing messages received from the SS7 Network.                                                                                                                                                              |
| Accumulation OM | BICC Received Message Counts, BICC Error No OPC Route    | This OM measures the number of BICC messages discarded as a result of not being able to find the associated OPC route for the received BICC message                                                                                                      |
| Accumulation OM | BICC Received Message Counts, BICC Error No Path         | This OM measures the number of BICC messages discarded as a result of not being able to find an inservice path to a given AS.                                                                                                                            |
| Accumulation OM | BICC Received Message Counts, BICC Error No Route        | This OM measures the number of BICC messages discarded as a result of not being able to find a route to a given AS.                                                                                                                                      |
| Accumulation OM | BICC Received Message Counts, BICC Maint Received Count  | This OM measures the number of BICC maintenance messages received from the SS7 Network.                                                                                                                                                                  |
| Accumulation OM | BICC Received Message Counts, Wrong NE Received Count    | This OM measures the number of BICC messages discarded as a result of not receiving the message for a SG Network Element                                                                                                                                 |
| Accumulation OM | Carrier, Far End Line - Errored Seconds                  | This OM measures the Far End Performance data: Far End Errored Seconds - Line.                                                                                                                                                                           |
| Accumulation OM | Carrier, Far End P - Sev Err Frm/AIS Sec                 | This OM measures the Far End Performance data: Far End Severely Errored Frame/AIS Seconds - Path.                                                                                                                                                        |
| Accumulation OM | Carrier, Far End P - Severely Err Secs                   | This OM measures the Far End Performance data: Far End Severely Errored Seconds - Path.                                                                                                                                                                  |
| Accumulation OM | Carrier, Far End P - Unavailable Seconds                 | This OM measures the Far End Performance data: Far End Unavailable Seconds - Path.                                                                                                                                                                       |
| Accumulation OM | Carrier, Far End Path - Code Violations                  | This OM measures the Far End Performance data: Far End Code Violations - Path.                                                                                                                                                                           |
| Accumulation OM | Carrier, Far End Path - Controlled Slips                 | This OM measures the Far End Performance data: Far End Controlled Slips - Path                                                                                                                                                                           |
| Accumulation OM | Carrier, Far End Path - Errored Seconds                  | This OM measures the Far End Performance data: Far End Errored Seconds - Path.                                                                                                                                                                           |
| Accumulation OM | Carrier, Far End Path - Failure Count                    | This OM measures the Far End Performance data: Far End Failure Count - Path.                                                                                                                                                                             |
| Accumulation OM | Carrier, Line - Code Violations                          | This OM measures the Near End Performance data: Code Violations - Line.                                                                                                                                                                                  |
| Accumulation OM | Carrier, Line - Errored Seconds                          | This OM measures the Near End Performance data: Errored Seconds - Line.                                                                                                                                                                                  |
| Accumulation OM | Carrier, Line - Loss of Signal Seconds                   | This OM measures the Near End Performance data: Loss of Signal Seconds - Line. All performance parameters including this parameter are defined in ANSI T1.231-1997 'Digital Hierarchy - Layer 1 in-Service Digital Transmission Performance Monitoring'. |
| Accumulation OM | Carrier, Line - Severely Errored Seconds                 | This OM measures the Near End Performance data: Severely Errored Seconds - Line.                                                                                                                                                                         |

| OM TYPE         | OM TITLE                                                   | OM DESCRIPTION                                                                                                                                                                                                                                                                                                       |
|-----------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | Carrier, P - Severely Err Frame/AIS Secs                   | This OM measures the Near End Performance data: Severely Errored Frame/AIS Seconds - Path.                                                                                                                                                                                                                           |
| Accumulation OM | Carrier, Path - AIS Seconds                                | This OM measures the Near End Performance data: AIS Seconds - Path.                                                                                                                                                                                                                                                  |
| Accumulation OM | Carrier, Path - Code Violations                            | This OM measures the Near End Performance data: Code Violations - Path.                                                                                                                                                                                                                                              |
| Accumulation OM | Carrier, Path - Errored Seconds                            | This OM measures the Near End Performance data: Errored Seconds - Path.                                                                                                                                                                                                                                              |
| Accumulation OM | Carrier, Path - Failure Count                              | This OM measures the Near End Performance data: Failure Count - Path.                                                                                                                                                                                                                                                |
| Accumulation OM | Carrier, Path - Severely Errored Seconds                   | This OM measures the Near End Performance data: Severely Errored Seconds - Path.                                                                                                                                                                                                                                     |
| Accumulation OM | Carrier, Path - Unavailable Seconds                        | This OM measures the Near End Performance data: Unavailable Seconds - Path.                                                                                                                                                                                                                                          |
| Accumulation OM | Gateway Screening Results, Disallowed Cld Party Addr Count | This OM measures the number of MSUs rejected on a particular link, because of disallowed SCCP Called Party Addresses.                                                                                                                                                                                                |
| Accumulation OM | Gateway Screening Results, Disallowed ISUP Count           | This OM measures the number of MSUs rejected on a particular link, because of a disallowed ISDN User Part message type.                                                                                                                                                                                              |
| Accumulation OM | Gateway Screening Results, Disallowed Trans Type Count     | This OM measures the number of MSUs rejected on a particular link, because of a disallowed SCCP GTT type.                                                                                                                                                                                                            |
| Accumulation OM | Gateway Screening Results, Invalid Affct Destination Count | This OM measures the number of MSUs rejected on a particular link, because the destination fields in signaling-routeset-test, TFX/TCx, or TFC messages from the MSUs did not pass GWS checking based on the provisioned criteria.                                                                                    |
| Accumulation OM | Gateway Screening Results, Invalid Affct PC-SSN Count      | This OM measures the number of MSUs rejected on a particular link, because the affected PCs in SCCP subsystem-prohibited (SSP) and subsystem-allowed (SSA) messages and an invalid PC or SSN in SCCP subsystem-status-test (SST) messages from the MSUs did not pass GWS checking based on the provisioned criteria. |
| Accumulation OM | Gateway Screening Results, Invalid Cng Party Addr Count    | This OM measures the number of MSUs rejected on a particular link, because the Calling Party Addresses (PC or SSN) from the MSUs did not pass GWS checking based on the provisioned criteria.                                                                                                                        |
| Accumulation OM | Gateway Screening Results, Invalid DPC Count               | This OM measures the number of MSUs rejected on a particular link, because the DPCs from the MSUs did not pass GWS checking based on the provisioned criteria.                                                                                                                                                       |
| Accumulation OM | Gateway Screening Results, Invalid OPC Count               | This OM measures the number of MSUs rejected on a particular link, because the OPCs from the MSUs did not pass GWS checking based on the provisioned criteria.                                                                                                                                                       |
| Accumulation OM | Gateway Screening Results, Invalid SIO Count               | This OM measures the number of MSUs rejected on a particular link, because the SIOs from the MSUs did not pass GWS checking based on the provisioned criteria.                                                                                                                                                       |
| Accumulation OM | GTT Type, GTTs Not Performed Count                         | This OM measures the total number of GTTs that could not be performed for a particular translation type (all reasons).                                                                                                                                                                                               |
| Accumulation OM | GTT Type, GTTs Performed Count                             | This OM measures the total number of MSUs that successfully completed GTT (that is, a match was found for the global title) for a particular translation type.                                                                                                                                                       |

| OM TYPE         | OM TITLE                                          | OM DESCRIPTION                                                                                                                                                                                |
|-----------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | GTT Type, No Translation for Addr Count           | This OM measures the number of times the Address Not Found error was encountered for a particular translation type (that is, there was no match found for the global title in the GTT table). |
| Accumulation OM | ISUP Received Message Counts, ACM Received Count  | This OM measures the number of ISUP Address Complete Messages (ACM) received from the SS7 Network. (Only for SG Identities)                                                                   |
| Accumulation OM | ISUP Received Message Counts, ALT Received Count  | This OM measures the number of ISUP Altering Messages (ALT) received from the SS7 Network. (Only for SG Identities)                                                                           |
| Accumulation OM | ISUP Received Message Counts, ANM Received Count  | This OM measures the number of ISUP Answer Messages (ANM) received from the SS7 Network. (Only for SG Identities)                                                                             |
| Accumulation OM | ISUP Received Message Counts, BLA Received Count  | This OM measures the number of ISUP Blocking Acknowledgement (BLA) received from the SS7 Network. (Only for SG Identities)                                                                    |
| Accumulation OM | ISUP Received Message Counts, BLO Received Count  | This OM measures the number of ISUP Blocking Messages (BLO) received from the SS7 Network. (Only for SG Identities)                                                                           |
| Accumulation OM | ISUP Received Message Counts, CCR Received Count  | This OM measures the number of ISUP Continuity Check Request Messages (CCR) received from the SS7 Network. (Only for SG Identities)                                                           |
| Accumulation OM | ISUP Received Message Counts, CFN Received Count  | This OM measures the number of ISUP Confusion Messages (CFN) received from the SS7 Network. (Only for SG Identities)                                                                          |
| Accumulation OM | ISUP Received Message Counts, CGB Received Count  | This OM measures the number of ISUP Circuit Group Blocking Messages (CGB) received from the SS7 Network. (Only for SG Identities)                                                             |
| Accumulation OM | ISUP Received Message Counts, CGBA Received Count | This OM measures the number of ISUP Circuit Group Blocking Acknowledgement Messages (CGBA) received from the SS7 Network. (Only for SG Identities)                                            |
| Accumulation OM | ISUP Received Message Counts, CGU Received Count  | This OM measures the number of ISUP Circuit Group Unblocking Messages (CGU) received from the SS7 Network. (Only for SG Identities)                                                           |
| Accumulation OM | ISUP Received Message Counts, CGUA Received Count | This OM measures the number of ISUP Circuit Group Unblocking Acknowledgement Messages (CGUA) received from the SS7 Network. (Only for SG Identities)                                          |
| Accumulation OM | ISUP Received Message Counts, CMC Received Count  | This OM measures the number of ISUP Call Modification Completed Messages (CMC) received from the SS7 Network. (Only for SG Identities)                                                        |
| Accumulation OM | ISUP Received Message Counts, CMR Received Count  | This OM measures the number of ISUP Call Modification Request Messages (CMR) received from the SS7 Network. (Only for SG Identities)                                                          |
| Accumulation OM | ISUP Received Message Counts, CMRJ Received Count | This OM measures the number of ISUP Call Modification Rejected Messages (CMRJ) received from the SS7 Network. (Only for SG Identities)                                                        |
| Accumulation OM | ISUP Received Message Counts, CON Received Count  | This OM measures the number of ISUP Connect Messages (CON) received from the SS7 Network. (Only for SG Identities)                                                                            |
| Accumulation OM | ISUP Received Message Counts, COT Received Count  | This OM measures the number of ISUP Continuity Test Messages (COT) received from the SS7 Network. (Only for SG Identities)                                                                    |
| Accumulation OM | ISUP Received Message Counts, CPG Received Count  | This OM measures the number of ISUP Call Progress Messages (CPG) received from the SS7 Network. (Only for SG Identities)                                                                      |

| OM TYPE         | OM TITLE                                          | OM DESCRIPTION                                                                                                                                                  |
|-----------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | ISUP Received Message Counts, CQM Received Count  | This OM measures the number of ISUP Circuit Query Messages (CQM) received from the SS7 Network. (Only for SG Identities)                                        |
| Accumulation OM | ISUP Received Message Counts, CQR Received Count  | This OM measures the number of ISUP Circuit Query Response Messages (CQR) received from the SS7 Network. (Only for SG Identities)                               |
| Accumulation OM | ISUP Received Message Counts, CRA Received Count  | This OM measures the number of ISUP Circuit Reservation Acknowledgement Messages (CRA) received from the SS7 Network. (Only for SG Identities)                  |
| Accumulation OM | ISUP Received Message Counts, CRG Received Count  | This OM measures the number of ISUP Charge Information Messages (CRG) received from the SS7 Network. (Only for SG Identities)                                   |
| Accumulation OM | ISUP Received Message Counts, CRM Received Count  | This OM measures the number of ISUP Circuit Reservation Messages (CRM) received from the SS7 Network. (Only for SG Identities)                                  |
| Accumulation OM | ISUP Received Message Counts, CSVN Received Count | This OM measures the number of ISUP Closed User Group Selection and Validation Request Messages (CSVN) received from the SS7 Network. (Only for SG Identities)  |
| Accumulation OM | ISUP Received Message Counts, CSVS Received Count | This OM measures the number of ISUP Closed User Group Selection and Validation Response Messages (CSVS) received from the SS7 Network. (Only for SG Identities) |
| Accumulation OM | ISUP Received Message Counts, CVR Received Count  | This OM measures the number of ISUP Circuit Validation Response Messages (CVR) received from the SS7 Network. (Only for SG Identities)                          |
| Accumulation OM | ISUP Received Message Counts, CVT Received Count  | This OM measures the number of ISUP Circuit Validation Test Messages (CVT) received from the SS7 Network. (Only for SG Identities)                              |
| Accumulation OM | ISUP Received Message Counts, DRS Received Count  | This OM measures the number of ISUP Delayed Release Messages (DRS) received from the SS7 Network. (Only for SG Identities)                                      |
| Accumulation OM | ISUP Received Message Counts, EXM Received Count  | This OM measures the number of ISUP Exit Messages (EXM) received from the SS7 Network. (Only for SG Identities)                                                 |
| Accumulation OM | ISUP Received Message Counts, FAA Received Count  | This OM measures the number of ISUP Facility Accepted Messages (FAA) received from the SS7 Network. (Only for SG Identities)                                    |
| Accumulation OM | ISUP Received Message Counts, FAC Received Count  | This OM measures the number of ISUP Facility Messages (FAC) received from the SS7 Network. (Only for SG Identities)                                             |
| Accumulation OM | ISUP Received Message Counts, FAD Received Count  | This OM measures the number of ISUP Facility Deactivated Messages (FAD) received from the SS7 Network. (Only for SG Identities)                                 |
| Accumulation OM | ISUP Received Message Counts, FAI Received Count  | This OM measures the number of ISUP Facility Information Messages (FAM) received from the SS7 Network. (Only for SG Identities)                                 |
| Accumulation OM | ISUP Received Message Counts, FAR Received Count  | This OM measures the number of ISUP Facility Request Messages (FAR) received from the SS7 Network. (Only for SG Identities)                                     |
| Accumulation OM | ISUP Received Message Counts, FOT Received Count  | This OM measures the number of ISUP Forward Transfer Messages (FOT) received from the SS7 Network. (Only for SG Identities)                                     |

| OM TYPE         | OM TITLE                                                   | OM DESCRIPTION                                                                                                                                        |
|-----------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | ISUP Received Message Counts, FRJ Received Count           | This OM measures the number of ISUP Facility Rejected Messages (FRJ) received from the SS7 Network. (Only for SG Identities)                          |
| Accumulation OM | ISUP Received Message Counts, GRA Received Count           | This OM measures the number of ISUP Circuit Group Reset Acknowledgement Messages (GRA) received from the SS7 Network. (Only for SG Identities)        |
| Accumulation OM | ISUP Received Message Counts, GRS Received Count           | This OM measures the number of ISUP Circuit Group Reset Messages (GRS) received from the SS7 Network. (Only for SG Identities)                        |
| Accumulation OM | ISUP Received Message Counts, IAM Received Count           | This OM measures the number of ISUP Initial Address Message Messages (IAM) received from the SS7 Network. (Only for SG Identities)                    |
| Accumulation OM | ISUP Received Message Counts, IAMN1 Received Count         | This OM measures the number of ISUP Initial Address Message Not Priority One Messages (IAMN1) received from the SS7 Network. (Only for SG Identities) |
| Accumulation OM | ISUP Received Message Counts, IDR Received Count           | This OM measures the number of ISUP Identification Request Messages (IDR) received from the SS7 Network. (Only for SG Identities)                     |
| Accumulation OM | ISUP Received Message Counts, INF Received Count           | This OM measures the number of ISUP Information Messages (INF) received from the SS7 Network. (Only for SG Identities)                                |
| Accumulation OM | ISUP Received Message Counts, INR Received Count           | This OM measures the number of ISUP Information Request Messages (INR) received from the SS7 Network. (Only for SG Identities)                        |
| Accumulation OM | ISUP Received Message Counts, IRS Received Count           | This OM measures the number of ISUP Identification Response Messages (IRS) received from the SS7 Network. (Only for SG Identities)                    |
| Accumulation OM | ISUP Received Message Counts, ISUP Error No AS for OPC/CIC | This OM measures the number of ISUP messages discarded as a result of not being able to find a valid AS for a given OPC/CIC. (Only for SG Identities) |
| Accumulation OM | ISUP Received Message Counts, ISUP Error No OPC/CIC Data   | This OM measures the number of ISUP messages discarded as a result of missing database entry for a given OPC/CIC. (Only for SG Identities)            |
| Accumulation OM | ISUP Received Message Counts, ISUP Error No Path           | This OM measures the number of ISUP messages discarded as a result of not being able to find a path to a given AS. (Only for SG Identities)           |
| Accumulation OM | ISUP Received Message Counts, ISUP Error No Route          | This OM measures the number of ISUP messages discarded as a result of not being able to find a route to a given AS. (Only for SG Identities)          |
| Accumulation OM | ISUP Received Message Counts, ISUP Error Unknown Message   | This OM measures the number of unrecognized ISUP Messages received from the SS7 Network. (Only for SG Identities)                                     |
| Accumulation OM | ISUP Received Message Counts, LOP Received Count           | This OM measures the number of ISUP Loop Prevention Messages (LOP) received from the SS7 Network. (Only for SG Identities)                            |
| Accumulation OM | ISUP Received Message Counts, LPA Received Count           | This OM measures the number of ISUP Loop Back Acknowledgement Messages (LPA) received from the SS7 Network. (Only for SG Identities)                  |
| Accumulation OM | ISUP Received Message Counts, NRM Received Count           | This OM measures the number of ISUP Network Resource Management Messages (NRM) received from the SS7 Network. (Only for SG Identities)                |

| OM TYPE         | OM TITLE                                                     | OM DESCRIPTION                                                                                                                                            |
|-----------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | ISUP Received Message Counts, PAM Received Count             | This OM measures the number of ISUP Pass Along Message Messages (PAM) received from the SS7 Network. (Only for SG Identities)                             |
| Accumulation OM | ISUP Received Message Counts, PRG Received Count             | This OM measures the number of ISUP Progress Messages (PRG) received from the SS7 Network. (Only for SG Identities)                                       |
| Accumulation OM | ISUP Received Message Counts, REL Received Count             | This OM measures the number of ISUP Release Messages (REL) received from the SS7 Network. (Only for SG Identities)                                        |
| Accumulation OM | ISUP Received Message Counts, RES Received Count             | This OM measures the number of ISUP Resume Messages (RES) received from the SS7 Network. (Only for SG Identities)                                         |
| Accumulation OM | ISUP Received Message Counts, RLC Received Count             | This OM measures the number of ISUP Release Complete Messages (RLC) received from the SS7 Network. (Only for SG Identities)                               |
| Accumulation OM | ISUP Received Message Counts, RPM Received Count             | This OM measures the number of ISUP Reconfiguration Progress Message Messages (ACM) received from the SS7 Network. (Only for SG Identities)               |
| Accumulation OM | ISUP Received Message Counts, RSC Received Count             | This OM measures the number of ISUP Reset Circuit Messages (RSC) received from the SS7 Network. (Only for SG Identities)                                  |
| Accumulation OM | ISUP Received Message Counts, SAM Received Count             | This OM measures the number of ISUP Subsequent Address Message Messages (SAM) received from the SS7 Network. (Only for SG Identities)                     |
| Accumulation OM | ISUP Received Message Counts, SGM Received Count             | This OM measures the number of ISUP Segmentation Messages (SGM) received from the SS7 Network. (Only for SG Identities)                                   |
| Accumulation OM | ISUP Received Message Counts, SUS Received Count             | This OM measures the number of ISUP Suspend Messages (SUS) received from the SS7 Network. (Only for SG Identities)                                        |
| Accumulation OM | ISUP Received Message Counts, UBA Received Count             | This OM measures the number of ISUP Unblocking Acknowledgement Messages (UBA) received from the SS7 Network. (Only for SG Identities)                     |
| Accumulation OM | ISUP Received Message Counts, UBL Received Count             | This OM measures the number of ISUP Unblocking Messages (UBL) received from the SS7 Network. (Only for SG Identities)                                     |
| Accumulation OM | ISUP Received Message Counts, UCIC Received Count            | This OM measures the number of ISUP Unequipped Circuit Identification Code Messages (UCIC) received from the SS7 Network. (Only for SG Identities)        |
| Accumulation OM | ISUP Received Message Counts, UPA Received Count             | This OM measures the number of ISUP User Part Available Messages (UPA) received from the SS7 Network. (Only for SG Identities)                            |
| Accumulation OM | ISUP Received Message Counts, UPT Received Count             | This OM measures the number of ISUP User Part Test Messages (UPT) received from the SS7 Network. (Only for SG Identities)                                 |
| Accumulation OM | ISUP Received Message Counts, USR Received Count             | This OM measures the number of ISUP User-to-User Information Messages (USR) received from the SS7 Network. (Only for SG Identities)                       |
| Accumulation OM | ISUP Received Message Counts, Wrong NE Received Count        | This OM measures the number of ISUP messages discarded as a result of not receiving the message from a SG Network Element.                                |
| Accumulation OM | Link Faults and Performance, Number of negative ack.received | 1.9 of Q.752 This OM measures number of negative acknowledgements received on the link indicating that the far end did not receive the message correctly. |

| OM TYPE         | OM TITLE                                                       | OM DESCRIPTION                                                                                                                                                                  |
|-----------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | Link Faults and Performance, Number of SUs received in error   | 1.8 of Q.752 This OM measures signaling units on a link, received in error.                                                                                                     |
| Accumulation OM | Link Faults and Performance, Octets Retransmitted              | 3.2 of Q.752 This OM counts number of bytes that are retransmitted. This count includes SIO, SIF, opening flags and check bits.                                                 |
| Accumulation OM | Link Faults and Performance, SL alignment or proving failure   | 1.7 of Q.752 This OM measures link synchronization failures during alignment or proving and indicates a signaling data link fault which prevents the SdL moving into service.   |
| Accumulation OM | Link Faults and Performance, SL failure-Abnormal FIBR/BSNR     | 1.3 of Q.752 This OM measures link synchronization failures and indicates complex failures in transmission or an intermittent hardware fault or even designer error.            |
| Accumulation OM | Link Faults and Performance, SL failure-All reasons            | 1.2 of Q.752 This OM measures in-service link failures due to any reason. It does not count link activation failures.                                                           |
| Accumulation OM | Link Faults and Performance, SL failure-Exc. delay of ack      | 1.4 of Q.752 This OM measures link synchronization failures and indicates serious disturbances or an interruption of signaling data link.                                       |
| Accumulation OM | Link Faults and Performance, SL failure-Exc. duration of cong. | 1.6 of Q.752 This OM measures link synchronization failures caused by prolonged congestion on the link.                                                                         |
| Accumulation OM | Link Faults and Performance, SL failure-Excessive error rate   | 1.5 of Q.752 This OM measures link synchronization failures and indicates noisy link.                                                                                           |
| Accumulation OM | Link Faults and Performance, SL failure-Other reasons          | This OM measures link synchronization failures due to reasons other than Abnormal FIBR/BSNR, Excessive delay of ack, Excessive error rate or Excessive duration of congestion . |
| Accumulation OM | Link Management, Changeover Procedure Count                    | This OM measures the number of times the changeover procedure is used to move traffic from a link taken out of service to one or more alternate in-service links.               |
| Accumulation OM | Link Management, Far End Mgmt Inhibit Count                    | This OM measures the number of times a link was successfully inhibited from the far end.                                                                                        |
| Accumulation OM | Link Management, Level 1 Congestion Count                      | This OM measures the number of times a link entered Level 1 congestion from no congestion.                                                                                      |
| Accumulation OM | Link Management, Level 1 Congestion Duration                   | This OM measures the total time, in seconds, a link was in Level 1 congestion.                                                                                                  |
| Accumulation OM | Link Management, Level 2 Congestion Count                      | This OM measures the number of times a link entered Level 2 congestion from Level 1 or no congestion.                                                                           |
| Accumulation OM | Link Management, Level 2 Congestion Duration                   | This OM measures the total time, in seconds, a link was in Level 2 congestion.                                                                                                  |
| Accumulation OM | Link Management, Level 3 Congestion Count                      | This OM measures the number of times a link entered Level 3 congestion from Level 1, Level 2, or no congestion.                                                                 |
| Accumulation OM | Link Management, Level 3 Congestion Duration                   | This OM measures the total time, in seconds, a link was in Level 3 congestion.                                                                                                  |
| Accumulation OM | Link Management, Link Available Duration                       | This OM measures the total time, in seconds, a link was available to MTP Level 3.                                                                                               |
| Accumulation OM | Link Management, Link Deactivated Duration                     | This OM measures the total time, in seconds, a link was manually made unavailable to MTP Level 3 by deactivation.                                                               |
| Accumulation OM | Link Management, Link Local Inhibit Duration                   | This OM measures the total time, in seconds, a link was manually made unavailable to MTP Level 3 by local inhibition.                                                           |

| OM TYPE         | OM TITLE                                           | OM DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | Link Management, Link Remote Inhibit Duration      | This OM measures the total time, in seconds, a link was manually made unavailable to MTP Level 3 by remote inhibition.                                                                                                                                                                                                                                                                                             |
| Accumulation OM | Link Management, Near End Forced Unavailable Count | This OM measures the number of times a link was manually made unavailable to MTP Level 3.                                                                                                                                                                                                                                                                                                                          |
| Accumulation OM | Link Management, RPO Count                         | This OM measures the number of times a link became unavailable to MTP Level 3 after the system received SIPO from the far end. This OM is not applicable for SAAL-based High Speed Links.                                                                                                                                                                                                                          |
| Accumulation OM | Link Management, RPO Cumulative Duration           | This OM measures the total time, in seconds, that a link was unavailable to MTP Level 3 after the system received SIPO from the far end. This OM is not applicable for SAAL-based High Speed Links.                                                                                                                                                                                                                |
| Accumulation OM | Link Management, Unavailable Duration              | This OM measures the total time, in seconds, a link was unavailable (automatically or manually made unavailable) to MTP Level 3.                                                                                                                                                                                                                                                                                   |
| Accumulation OM | Link Traffic, MSUs Received Count                  | This OM measures the number of MSUs received on a link, including those MSUs for which retransmission was requested in the SS7 network. For the SAAL-based High Speed Links, the above description applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                  |
| Accumulation OM | Link Traffic, MSUs Requiring GTT Count             | This OM measures the number of incoming MSUs that require GTT, regardless of the outcome of any GWS operation. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                      |
| Accumulation OM | Link Traffic, MSUs Transmitted Count               | This OM measures the number of MSUs transmitted to the far end, including those MSUs that were retransmitted in the SS7 network. For the SAAL-based High Speed Links, the above description applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                         |
| Accumulation OM | Link Traffic, MTP3b Discard Count                  | This OM measures the number of received MTP3B MSUs (> 272 octets) which were discarded because the outgoing link is not MTP3b capable. This OM only applies to MTP3B links since non-MTP3B links are not capable of receiving message > 272 octets.                                                                                                                                                                |
| Accumulation OM | Link Traffic, Network Indicator Discard Count      | This OM measures the number of received MSUs which were discarded due to a mismatch between the MSU's network indicator (NI) and the NI provisioned in this system. The NI may be provisioned on a network appearance basis. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                        |
| Accumulation OM | Link Traffic, Octets Received Count                | This OM measures the total number of octets actually received for all MSUs counted in the MSUs Received Count OM, before the octets are removed in MTP Level 2 processing for the SS7 network. For the MTP2-based links, this count accounts for MTP User Data + MTP L3 Data + MTP L2 Data octets. For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets). |



| OM TYPE         | OM TITLE                                    | OM DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | Link Traffic, Octets Requiring GTT Count    | This OM measures the total number of MSU octets received for MSUs requiring GTT, including octets removed in MTP Level 2 processing. For the MTP2-based links, this count applies to MSU octets (MTP User Data + MTP L3 Data + MTP L2 Data octets). For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets).                                                                                                                                         |
| Accumulation OM | Link Traffic, Octets Transmitted Count      | This OM measures the total number of octets actually transmitted for all MSUs counted in the MSUs Transmitted Count OM, including octets added in MTP Level 2 processing for the SS7 network. For the MTP2-based links, this count accounts for MTP User Data + MTP L3 Data + MTP L2 Data octets. For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets).                                                                                           |
| Accumulation OM | Link Traffic, OPC Screening Discard Count   | This OM measures the number of received MSUs which were discarded because the OPC in the MSU matches the pointcode of this system ID or the OPC in the MSU matches the mate's pointcode but the MSU is not received from the C-link. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                         |
| Accumulation OM | Link Traffic, Originated MSU Octets Count   | This OM measures the total number of originated MSU octets (MSU that contains the PC or capability code of this system in the OPC field) transmitted, including those octets that were added in MTP Level 2 processing for the SS7 network. For the MTP2-based links, this count accounts for MTP User Data + MTP L3 Data + MTP L2 Data octets. For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets).                                             |
| Accumulation OM | Link Traffic, Originated MSUs Count         | This OM measures the number of originated MSUs (MSUs that contain the PC or capability code of this system in the OPC field) that are successfully passed to Level 2 for transmission (for example, network management messages and MSUs completing GTT) in the SS7 network. For the MTP2-based links, this count applies to MSU octets (MTP User Data + MTP L3 Data + MTP L2 Data octets). For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets). |
| Accumulation OM | Link Traffic, Pri 0 MSU Inbd Discard Count  | This OM measures the number of priority 0 MSUs discarded by the inbound link due to congestion at levels 1, 2, or 3 in the transmit buffers for the outbound link in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                        |
| Accumulation OM | Link Traffic, Pri 0 MSU Outbd Discard Count | This OM measures the number of priority 0 MSUs discarded due to congestion at levels 1, 2, or 3 in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                                                                          |
| Accumulation OM | Link Traffic, Pri 1 MSU Inbd Discard Count  | This OM measures the number of priority 1 MSUs discarded by the inbound link due to congestion at levels 2 or 3 in the transmit buffers in the outbound link in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                             |

| OM TYPE         | OM TITLE                                     | OM DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | Link Traffic, Pri 1 MSU Outbd Discard Count  | This OM measures the number of priority 1 MSUs discarded due to congestion at levels 2 or 3 in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                                                     |
| Accumulation OM | Link Traffic, Pri 2 MSU Inbd Discard Count   | This OM measures the number of priority 2 MSUs discarded by the inbound link due to congestion at level 3 in the transmit buffers for the outbound link in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                         |
| Accumulation OM | Link Traffic, Pri 2 MSU Outbd Discard Count  | This OM measures the number of priority 2 MSUs discarded due to level 3 congestion in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                                                              |
| Accumulation OM | Link Traffic, Pri 3 MSU Inbd Discard Count   | This OM measures the number of priority 3 MSUs discarded by the inbound link due to full transmit buffers for the outbound link in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                 |
| Accumulation OM | Link Traffic, Pri 3 MSU Outbd Discard Count  | This OM measures the number of priority 3 MSUs discarded due to a full transmit buffer in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                                                          |
| Accumulation OM | Link Traffic, Terminated MSU Octets Count    | This OM measures the total number of terminated MSU octets (acknowledged, incoming MSU that contains the PC or capability code of this system in the DPC field) received, including octets removed in MTP Level 2 processing for the SS7 network. For the MTP2-based links, this count accounts for MTP User Data + MTP L3 Data + MTP L2 Data octets. For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets).              |
| Accumulation OM | Link Traffic, Terminated MSUs Count          | This OM measures the number of terminated MSUs (acknowledged, incoming MSUs that contain the PC or capability code of this system in the DPC field) received from the SS7 network. For the MTP2-based links, this count applies to MSUs (MTP User Data + MTP L3 Data + MTP L2 Data). For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data).                                                                                            |
| Accumulation OM | Link Traffic, Through-Switched MSUs Count    | This OM measures the number of through-switched MSUs (MSUs that do not contain the PC or capability code of this system in either the OPC or DPC) that are acknowledged, translated, and successfully passed to MTP Level 2 for transmission in the SS7 network. For the MTP2-based links, this count applies to MSUs (MTP User Data + MTP L3 Data + MTP L2 Data). For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data).              |
| Accumulation OM | Link Traffic, Thru-Switched MSU Octets Count | This OM measures the total number of through-switched MSU octets (MSU that does not contain the PC or capability code of this system in either the OPC or DPC) received, including those octets that were added in MTP Level 2 processing for the SS7 network. For the MTP2-based links, this count accounts for MTP User Data + MTP L3 Data + MTP L2 Data octets. For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets). |

| OM TYPE         | OM TITLE                                           | OM DESCRIPTION                                                                                                                                           |
|-----------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | Linkset Utilization, Linkset Inactivity Duration   | This OM measures the total time, in seconds, that all links in the linkset were unavailable (automatically or manually made unavailable) to MTP Level 3. |
| Accumulation OM | Linkset Utilization, RST Received Count            | This OM measures the number of restart (RST) messages received.                                                                                          |
| Accumulation OM | Linkset Utilization, RST Transmitted Count         | This OM measures the number of restart (RST) messages transmitted.                                                                                       |
| Accumulation OM | Linkset Utilization, TFA and TCA Received Count    | This OM measures the number of transfer-allowed (TFA) and transfer-cluster-allowed (TCA) messages received.                                              |
| Accumulation OM | Linkset Utilization, TFA and TCA Transmitted Count | This OM measures the number of transfer-allowed (TFA) and transfer-cluster-allowed (TCA) messages transmitted.                                           |
| Accumulation OM | Linkset Utilization, TFC Received Count            | This OM measures the number of transfer-controlled (TFC) messages received by the gateway, listed by the originating network.                            |
| Accumulation OM | Linkset Utilization, TFC Transmitted Count         | This OM measures the number of transfer-controlled (TFC) messages transmitted by the gateway, listed by the destination network.                         |
| Accumulation OM | Linkset Utilization, TFP and TCP Received Count    | This OM measures the number of transfer-prohibited (TFP) and transfer-cluster-prohibited (TCP) messages received.                                        |
| Accumulation OM | Linkset Utilization, TFP and TCP Transmitted Count | This OM measures the number of transfer-prohibited (TFP) and transfer-cluster-prohibited (TCP) messages transmitted.                                     |
| Accumulation OM | Linkset Utilization, TFR and TCR Received Count    | This OM measures the number of transfer-restricted (TFR) and transfer-cluster-restricted (TCR) messages received.                                        |
| Accumulation OM | Linkset Utilization, TFR and TCR Transmitted Count | This OM measures the number of transfer-restricted (TFR) and transfer-cluster-restricted (TCR) messages transmitted.                                     |
| Accumulation OM | Linkset Utilization, UPU Received Count            | This OM measures the number of user part unavailable messages received.                                                                                  |
| Accumulation OM | Log Server, Critical Alarms Ack Count              | This OM measures the number of critical alarms acknowledged by the Log server.                                                                           |
| Accumulation OM | Log Server, Critical Alarms Cleared Count          | This OM measures the number of critical alarms cleared by the Log server.                                                                                |
| Accumulation OM | Log Server, Critical Alarms Received Count         | This OM measures the number of critical alarms received by the Log server.                                                                               |
| Accumulation OM | Log Server, Major Alarms Ack Count                 | This OM measures the number of major alarms acknowledged by the Log server.                                                                              |
| Accumulation OM | Log Server, Major Alarms Cleared Count             | This OM measures the number of major alarms cleared by the Log server.                                                                                   |
| Accumulation OM | Log Server, Major Alarms Received Count            | This OM measures the number of major alarms received by the Log server.                                                                                  |
| Accumulation OM | Log Server, Minor Alarms Ack Count                 | This OM measures the number of minor alarms acknowledged by the Log server.                                                                              |
| Accumulation OM | Log Server, Minor Alarms Cleared Count             | This OM measures the number of minor alarms cleared by the Log server.                                                                                   |
| Accumulation OM | Log Server, Minor Alarms Received Count            | This OM measures the number of minor alarms received by the Log server.                                                                                  |

| OM TYPE         | OM TITLE                                     | OM DESCRIPTION                                                                                                                                                                                                                |
|-----------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | NP Database Totals, Add/Change Updates       | This OM measures the total number of add/change updates received from the LSMS.                                                                                                                                               |
| Accumulation OM | NP Database Totals, Delete Updates           | This OM measures the total number of delete updates received from the LSMS.                                                                                                                                                   |
| Accumulation OM | NP Database Totals, Emergency Updates        | This OM measures the total number of application database updates received from the USP debug facility and can only be displayed from the debug facility Note: Debug is only accessible by Nortel Networks Support Personnel. |
| Accumulation OM | NP Database Totals, Operational Time         | This OM measures the total time within the OM interval that the NPDB was operational.                                                                                                                                         |
| Accumulation OM | NP Database Totals, Retransmitted Updates    | This OM measures the total number of updates retransmitted within the system.                                                                                                                                                 |
| Accumulation OM | NP INAP Totals, INAP CdPN Normalize Failures | This OM measures the number of called party number normalization failures.                                                                                                                                                    |
| Accumulation OM | NP INAP Totals, INAP Indeterminate Queries   | This OM measures the number of INAP indeterminate queries.                                                                                                                                                                    |
| Accumulation OM | NP INAP Totals, INAP Invalid Context         | This OM measures the number of INAP queries with invalid application context.                                                                                                                                                 |
| Accumulation OM | NP INAP Totals, INAP Queries Non-Ported      | This OM measures the number of INAP non ported number queries received.                                                                                                                                                       |
| Accumulation OM | NP INAP Totals, INAP Queries Ported          | This OM measures the number of INAP ported number queries received.                                                                                                                                                           |
| Accumulation OM | NP INAP Totals, INAP Queries Ported Across   | This OM measures the number of INAP ported across number queries received.                                                                                                                                                    |
| Accumulation OM | NP INAP Totals, INAP Queries Ported In       | This OM measures the number of INAP ported in number queries received.                                                                                                                                                        |
| Accumulation OM | NP INAP Totals, INAP Queries Ported Out      | This OM measures the number of INAP ported out number queries received.                                                                                                                                                       |
| Accumulation OM | NP INAP Totals, INAP Queries Unknown         | This OM measures the number of INAP queries received for numbers with unknown ported status.                                                                                                                                  |
| Accumulation OM | NP INAP Totals, INAP Query Failures          | This OM measures the number of INAP query failures.                                                                                                                                                                           |
| Accumulation OM | NP INAP Totals, INAP Query Time Outs         | This OM measures the total number of INAP query time outs.                                                                                                                                                                    |
| Accumulation OM | NP INAP Totals, INAP Total Queries           | This OM measures the total number of INAP queries received.                                                                                                                                                                   |
| Accumulation OM | NP LSSI Totals, MR Query Received            | This OM measures the total number of MR queries received by an application database system node.                                                                                                                              |
| Accumulation OM | NP LSSI Totals, NP Query Received            | This OM measures the total number of NP queries received by an application database system node.                                                                                                                              |
| Accumulation OM | NP NETID Totals, MR Failures                 | This OM measures the total number of MR query failures identified. The MR Failures value is based upon the Network ID of a received SCCP message.                                                                             |
| Accumulation OM | NP NETID Totals, MR GTT Overrides            | This OM measures the total number of MR queries receiving GTT override. The MR GTT Overrides value is based upon the Network ID of a received SCCP message.                                                                   |
| Accumulation OM | NP NETID Totals, MR Loop Detection           | This OM measures the total number of potential looping detections. The MR Loop Detection value is based upon the Network ID of a received SCCP message.                                                                       |

| OM TYPE         | OM TITLE                                      | OM DESCRIPTION                                                                                                                                                                                                                              |
|-----------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | NP NETID Totals, MR Non-Ported                | This OM measures the total number of MR queries received for non-ported numbers. The MR Non-Ported value is based upon the Network ID of a received SCCP message.                                                                           |
| Accumulation OM | NP NETID Totals, MR Ported                    | This OM measures the total number of MR queries received for ported numbers. The MR Ported value is based upon the Network ID of a received SCCP message.                                                                                   |
| Accumulation OM | NP NETID Totals, MR Total                     | This OM measures the total number of MR queries received. The MR Total value is based upon the Network ID of a received SCCP message.                                                                                                       |
| Accumulation OM | NP NETID Totals, NP Failures                  | This OM measures the total number of NP query failures. The NP Failures value is based upon the Network ID of a received TCAP message.                                                                                                      |
| Accumulation OM | NP NETID Totals, NP Non-Ported                | This OM measures the total number of NP queries received for non-ported numbers. The NP Non-Ported value is based upon the Network ID in the TCAP message.                                                                                  |
| Accumulation OM | NP NETID Totals, NP Ported                    | This OM measures the total number of NP queries received for ported numbers. The NP Ported value is based upon the Network ID contained in the NETID of a received TCAP message.                                                            |
| Accumulation OM | NP NETID Totals, NP Total                     | This OM measures the total number of NP queries received. The NP Total value is based upon the Network ID of a received TCAP message.                                                                                                       |
| Accumulation OM | NP Service Rule Totals, Service Rule Match    | This OM measures the total number of matches for the Service Rule.                                                                                                                                                                          |
| Accumulation OM | NP Service Rule Totals, Service Rule Mismatch | This OM measures the total number of mismatches for all the Service Rules.                                                                                                                                                                  |
| Accumulation OM | NP Service Totals, Database Mismatches        | This OM measures the total number of Database mismatches. This OM is collected by Service ID.                                                                                                                                               |
| Accumulation OM | NP Service Totals, GTA Normalization Failures | This OM measures the total number of GTA number normalization failures. This OM is collected by Service ID.                                                                                                                                 |
| Accumulation OM | NP Service Totals, GTA Replacement            | This OM measures the total number of service queries receiving GTA replacement. This OM is collected by Service ID.                                                                                                                         |
| Accumulation OM | NP Service Totals, GTT Overrides              | This OM measures the total number of service queries receiving GTT override. This OM is collected by Service ID.                                                                                                                            |
| Accumulation OM | NP Service Totals, RN Check Failures          | This OM measures the total number of RN check failures on incoming messages using the NoA/RN table. This OM is collected by Service ID.                                                                                                     |
| Accumulation OM | NP Service Totals, Service Failures           | This OM measures the total number of Service query failures identified. Service query failures occur when the query logic is unable to process the Service query. This OM is collected by Service ID.                                       |
| Accumulation OM | NP Service Totals, Service Non-Ported         | This OM measures the total number of Service queries received for non-ported numbers. This OM is collected by Service ID.                                                                                                                   |
| Accumulation OM | NP Service Totals, Service Ported             | This OM measures the total number of Service queries received for ported numbers. The Service Ported value is the total of OMR_SERVICE_PORTED_IN, OMR_SERVICE_PORTED_OUT, and OMR_SERVICE_PORTED_ACROSS This OM is collected by Service ID. |

| OM TYPE         | OM TITLE                                       | OM DESCRIPTION                                                                                                                                   |
|-----------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | NP Service Totals, Service Total               | This OM measures the total number of Service queries received. This OM is collected by Service ID.                                               |
| Accumulation OM | NP Service Totals, TT Replacement              | This OM measures the total number of service queries receiving TT replacement. This OM is collected by Service ID.                               |
| Accumulation OM | NP SMI Totals, High Congestion                 | This OM measures the total number of times that the high level congestion state was entered.                                                     |
| Accumulation OM | NP SMI Totals, Login Failures                  | This OM measures the total number of failed LSMS login attempts.                                                                                 |
| Accumulation OM | NP SMI Totals, Low Congestion                  | This OM measures the total number of times that the low level congestion state was entered.                                                      |
| Accumulation OM | NP SMI Totals, Medium Congestion               | This OM measures the total number of times that the medium level congestion state was entered.                                                   |
| Accumulation OM | NP SMI Totals, Messages Invalid                | This OM measures the total number of invalid messages received from the LSMS.                                                                    |
| Accumulation OM | NP SMI Totals, Messages Received               | This OM measures the total number of messages received from the LSMS.                                                                            |
| Accumulation OM | NP SMI Totals, Messages Rejected               | This OM measures the total number of received messages from the LSMS that were rejected.                                                         |
| Accumulation OM | NP SRF Totals, SRF Ind. Routing with Ref. Sub. | This OM measures the number of SRF messages relayed to the subscription network via indirect routing with reference to the subscription network. |
| Accumulation OM | NP SRF Totals, SRF No NP DB Record Found       | This OM measures the number of SRF queries received when no record is found in the NP DB.                                                        |
| Accumulation OM | NP SRF Totals, SRF Queries Non-Ported          | This OM measures the number of SRF non ported number queries received.                                                                           |
| Accumulation OM | NP SRF Totals, SRF Queries Ported Across       | This OM measures the number of SRF ported across number queries received.                                                                        |
| Accumulation OM | NP SRF Totals, SRF Queries Ported In           | This OM measures the number of SRF ported in number queries received.                                                                            |
| Accumulation OM | NP SRF Totals, SRF Queries Ported Out          | This OM measures the number of SRF ported out number queries received.                                                                           |
| Accumulation OM | NP SRF Totals, SRF Queries Unknown             | This OM measures the number of SRF queries received for numbers with unknown ported status.                                                      |
| Accumulation OM | NP SRF Totals, SRF Query Failures              | This OM measures the number of SRF query failures.                                                                                               |
| Accumulation OM | NP SRF Totals, SRF Relayed to HLR              | This OM measures the number of SRF messages relayed to the HLR.                                                                                  |
| Accumulation OM | NP SRF Totals, SRF Successful Messages to MSC  | This OM measures the number of SRF successful messages sent back to the MSC.                                                                     |
| Accumulation OM | NP SRF Totals, SRF Total Queries               | This OM measures the total number of SRF queries received.                                                                                       |
| Accumulation OM | NP SRF Totals, SRF Total Queries Ported        | This OM measures the total number of SRF ported number queries received.                                                                         |
| Accumulation OM | NP SRF Totals, SRF Transaction Errors Sent Out | This OM measures the number of SRF transaction error messages sent out.                                                                          |
| Accumulation OM | NP TnT Totals, TNT Acks Sent                   | This OM measures the number of Tariff non Transparency acknowledgement messages transmitted.                                                     |

| OM TYPE         | OM TITLE                                             | OM DESCRIPTION                                                                                                                                                                                              |
|-----------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | NP TnT Totals, TNT Decode Errors                     | This OM measures the number of Tariff non Transparency MAP decode failures due to incorrect parameters that could not be decoded.                                                                           |
| Accumulation OM | NP TnT Totals, TNT Decode Invalid Params             | This OM measures the number of Tariff non Transparency MAP decode failures due to invalid parameters. (i.e. IMSI instead of MSISDN included)                                                                |
| Accumulation OM | NP TnT Totals, TNT No NP DB Rec Found                | This OM measures the number of Tariff non Transparency queries received for numbers not found in the NP DB.                                                                                                 |
| Accumulation OM | NP TnT Totals, TNT Queries Non-Ported                | This OM measures the number of Tariff non Transparency non ported number queries received.                                                                                                                  |
| Accumulation OM | NP TnT Totals, TNT Queries Ported Across             | This OM measures the number of Tariff non Transparency ported across number queries received.                                                                                                               |
| Accumulation OM | NP TnT Totals, TNT Queries Ported In                 | This OM measures the number of Tariff non Transparency ported in number queries received.                                                                                                                   |
| Accumulation OM | NP TnT Totals, TNT Queries Ported Out                | This OM measures the number of Tariff non Transparency ported out number queries received.                                                                                                                  |
| Accumulation OM | NP TnT Totals, TNT Queries Unknown                   | This OM measures the number of Tariff non Transparency queries received for numbers with unknown ported status.                                                                                             |
| Accumulation OM | NP TnT Totals, TNT Query Failures                    | This OM measures the number of Tariff non Transparency query failures during processing.                                                                                                                    |
| Accumulation OM | NP TnT Totals, TNT Total Messages Received           | This OM measures the total number of Tariff non Transparency queries received.                                                                                                                              |
| Accumulation OM | NP TnT Totals, TNT Total Queries Ported              | This OM measures the total number of Tariff non Transparency ported number queries received.                                                                                                                |
| Accumulation OM | NP TnT Totals, TNT Transmission Failures             | This OM measures the number of Tariff non Transparency failures during transmission of Ack.                                                                                                                 |
| Accumulation OM | Route Set Management, RouteSet Congested Count       | This OM measures the number of times, a routeset went into network congestion.                                                                                                                              |
| Accumulation OM | Route Set Management, Routeset Man-busied Count      | This OM measures the number of times a routeset was manually made unavailable.                                                                                                                              |
| Accumulation OM | Route Set Management, Routeset Unavailability Count  | This OM measures the number of times a routeset was unavailable.                                                                                                                                            |
| Accumulation OM | Route Set Management, Routeset Unavailability Dur.   | This OM measures the total time, in seconds, a routeset was unavailable.                                                                                                                                    |
| Accumulation OM | RTC Sanity, RTC12 Passive Audit Count                | This OM hooks into the node maintenance audit, and is pegged on the control shelf CCs, when it does not receive audit request from RTC12 even once. Thus this is a passive audit of RTC                     |
| Accumulation OM | RTC Sanity, RTC15 Passive Audit Count                | This OM hooks into the node maintenance audit, and is pegged on both the control shelf CCs, when it does not receive audit request from RTC15 even once. Thus this is a passive audit of RTC.               |
| Accumulation OM | SAAL Link Management, Cum. Dur. of FE Processor Out. | This OM measures the cumulative duration in seconds during which the use of the link was precluded due to a remote (far-end) processor outage condition, summed across all far-end processor outage events. |

| OM TYPE         | OM TITLE                                              | OM DESCRIPTION                                                                                                                                                                                                                                                       |
|-----------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | SAAL Link Management, Cum. Dur. of Lack-of-Credit     | This OM measures the cumulative duration of time in seconds during which SSCOP had PDUs to send to its peer but could not do so because it was not given credit by the far end, summed over all the Lack-of-Credit events occurring during the measurement interval. |
| Accumulation OM | SAAL Link Management, Duration of Link in Service     | This OM measures the number of seconds the link is regarded in service.                                                                                                                                                                                              |
| Accumulation OM | SAAL Link Management, Invalid SSCOP PDUs Rx           | This OM measures the number of Invalid SSCOP PDUs Received.                                                                                                                                                                                                          |
| Accumulation OM | SAAL Link Management, Lack of Credit Events           | This OM measures the number of Lack-of-Credit Events.                                                                                                                                                                                                                |
| Accumulation OM | SAAL Link Management, PDUs Tx Requiring RTx           | This OM measures the number of SSCOP PDUs transmitted that required retransmission because they were not acknowledged by the far-end's SSCOP peer.                                                                                                                   |
| Accumulation OM | SAAL Link Management, Signaling Link Alig. Failures   | This OM measures the number of Signaling Link Alignment Failures.                                                                                                                                                                                                    |
| Accumulation OM | SAAL Link Management, SSCOP Connection Disconnects    | This OM measures the number of SSCOP Connection Disconnects which are characterized by the expiry of Timer_NO_RESPONSE.                                                                                                                                              |
| Accumulation OM | SAAL Link Management, SSCOP Connection Init. Fails    | This OM measures the number of SSCOP Initiation Failures, i.e. the inability to establish an SSCOP Connection.                                                                                                                                                       |
| Accumulation OM | SAAL Link Management, SSCOP Connection Re-est/Resync  | This OM measures the number of SSCOP Re-establishments/Resynchronizations.                                                                                                                                                                                           |
| Accumulation OM | SAAL Link Management, SSCOP Connection Sum-of-Errors  | This OM measures the total number of SSCOP Connection Disconnects, Connection Initiation Failures and Connection Re-establishment/Resynchronization.                                                                                                                 |
| Accumulation OM | SAAL Link Management, SSCOP PDUs Sum-of-Errors        | This OM measures the total number of Unexpected SSCOP PDUs, Invalid SSCOP PDUs and SSCOP PDUs with Other/List Element Errors.                                                                                                                                        |
| Accumulation OM | SAAL Link Management, SSCOP PDUs with List Elem. Errs | This OM measures the number of SSCOP PDUs Received with List Element Errors.                                                                                                                                                                                         |
| Accumulation OM | SAAL Link Management, Unexpected SSCOP PDUs Rx        | This OM measures the number of Unexpected SSCOP PDUs Received.                                                                                                                                                                                                       |
| Accumulation OM | SAAL Link Traffic, PDU Octets RTx                     | This OM measures the number of octets associated with retransmitted SSCOP Sequenced Data PDUs.                                                                                                                                                                       |
| Accumulation OM | SAAL Link Traffic, PDU Octets Rx                      | This OM measures the number of octets associated with SSCOP Sequenced Data PDUs received.                                                                                                                                                                            |
| Accumulation OM | SAAL Link Traffic, PDU Octets Tx                      | This OM measures the number of octets associated with SSCOP Sequenced Data PDUs transmitted, including retransmissions.                                                                                                                                              |
| Accumulation OM | SAAL Link Traffic, PDUs RTx                           | This OM measures the number of SSCOP Sequenced Data PDUs retransmitted.                                                                                                                                                                                              |
| Accumulation OM | SAAL Link Traffic, PDUs Rx                            | This OM measures the number of SSCOP Sequenced Data PDUs received.                                                                                                                                                                                                   |
| Accumulation OM | SAAL Link Traffic, PDUs Tx                            | This OM measures the number of SSCOP Sequenced Data PDUs transmitted including retransmissions.                                                                                                                                                                      |
| Accumulation OM | SAAL Link Traffic, Total PDU Octets Rx                | This OM measures the number of octets associated with received SSCOP PDUs of all types.                                                                                                                                                                              |



| OM TYPE         | OM TITLE                                            | OM DESCRIPTION                                                                                                                                                               |
|-----------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | SAAL Link Traffic, Total PDU Octets Tx              | This OM measures the number of octets associated with transmitted SSCOP PDUs of all types which may include Sequenced Data PDU retransmissions.                              |
| Accumulation OM | SAAL Link Traffic, Total PDUs Rx                    | This OM measures the number of SSCOP PDUs of all types received.                                                                                                             |
| Accumulation OM | SAAL Link Traffic, Total PDUs Tx                    | This OM measures the number of transmitted SSCOP PDUs of all types including Sequenced Data PDU retransmissions.                                                             |
| Accumulation OM | SCCP GTT, Alt Routing on Cong Count                 | This OM measures the number of times a message is routed to the backup system because the routeset to the primary system is congested.                                       |
| Accumulation OM | SCCP GTT, GTT Performed Count                       | This OM measures the total number of MSUs that successfully completed GTT (that is, a match was found for the global title). The count is kept across all translation types. |
| Accumulation OM | SCCP GTT, Hop Counter Violation Count               | This OM measures the number of times that a SCCP hop counter violation has occurred.                                                                                         |
| Accumulation OM | SCCP GTT, No Translation for Addr Count             | This OM measures the number of times a match could not be found for the GTA in the translation table. The count is kept across all translation types.                        |
| Accumulation OM | SCCP GTT, Trans Type Not Found Count                | This OM measures the number of times the translation type specified in the MSU was not supported by the USP.                                                                 |
| Accumulation OM | SCCP Local Subsystem, # Msgs for Local SS discarded | This OM measures the number of messages destined to local subsystems that were discarded.                                                                                    |
| Accumulation OM | SCCP Local Subsystem, # Msgs for Local SS UDTSeD    | This OM measures the number of messages destined to local subsystems that receive an error response (UDTS).                                                                  |
| Accumulation OM | SCCP Local Subsystem, Subsystem Activated           | This OM measures the number of times a subsystem has been manually activated.                                                                                                |
| Accumulation OM | SCCP Local Subsystem, Subsystem Allowed             | This OM measures the number of times a subsystem has gone in service (allowed).                                                                                              |
| Accumulation OM | SCCP Local Subsystem, Subsystem Allowed Duration    | This OM measures the total duration that the subsystem was in service (allowed).                                                                                             |
| Accumulation OM | SCCP Local Subsystem, Subsystem Deactivated         | This OM measures the number of times a subsystem has been manually deactivated.                                                                                              |
| Accumulation OM | SCCP Local Subsystem, Subsystem Prohibited          | This OM measures the number of times a subsystem has gone out of service (prohibited). Unit of measure is a 10 second period.                                                |
| Accumulation OM | SCCP Local Subsystem, Subsystem Prohibited Duration | This OM measures the total duration that a subsystem was out of service (prohibited). Unit of measure is a 10 second period.                                                 |
| Accumulation OM | SCCP LSS Instance, SSI Activated                    | This OM measures the number of times a subsystem instance has been manually activated.                                                                                       |
| Accumulation OM | SCCP LSS Instance, SSI Allowed                      | This OM measures the number of times a subsystem instance has gone in service (allowed).                                                                                     |
| Accumulation OM | SCCP LSS Instance, SSI Allowed Duration             | This OM measures the duration that the subsystem instance was in service (allowed). Unit of measure is a 10 second period.                                                   |
| Accumulation OM | SCCP LSS Instance, SSI Application Failure          | This OM measures the number of times a subsystem instance has gone out of service (application failure).                                                                     |

| OM TYPE         | OM TITLE                                           | OM DESCRIPTION                                                                                                                         |
|-----------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | SCCP LSS Instance, SSI Congested                   | This OM measures the number of times a subsystem instance has gone into congestion.                                                    |
| Accumulation OM | SCCP LSS Instance, SSI Deactivated                 | This OM measures the number of times a subsystem instance has gone out of service (manually deactivated).                              |
| Accumulation OM | SCCP LSS Instance, SSI Platform Failure            | This OM measures the number of times a subsystem instance has gone out of service (platform failure).                                  |
| Accumulation OM | SCCP LSS Instance, SSI Prohibited Duration         | This OM measures the duration a local subsystem instance has been out of service (prohibited). Unit of measure is a 10 second period.  |
| Accumulation OM | SCCP System Totals, Conn-Orient IP Dist Viol Count | This OM measures the number of IP originated connection-oriented messages that were discarded because they requested SCCP distribution |
| Accumulation OM | SCCP System Totals, Conn-Orient Msg Handled Count  | This OM measures the number of connection- oriented messages that were successfully routed                                             |
| Accumulation OM | SCCP System Totals, Conn-Orient Msg Rtg Fail Count | This OM measures the number of connection- oriented messages that the USP was unable to route                                          |
| Accumulation OM | SCCP System Totals, LUDT Msg Rcvd Count            | This OM measures the number of LUDT messages that the SCCP level received.                                                             |
| Accumulation OM | SCCP System Totals, LUDT Msg Sent Count            | This OM measures the number of LUDT messages that the SCCP level sent.                                                                 |
| Accumulation OM | SCCP System Totals, LUDTS Msg Rcvd Count           | This OM measures the number of LUDTS messages that the SCCP level received.                                                            |
| Accumulation OM | SCCP System Totals, LUDTS Msg Sent Count           | This OM measures the number of LUDTS messages that the SCCP level sent.                                                                |
| Accumulation OM | SCCP System Totals, Msg Incompatibility            | This OM measures the number of times XUDT to UDT conversion fails.                                                                     |
| Accumulation OM | SCCP System Totals, Msg too large for segmentation | This OM measures the number of times segmentation fails due to an over-long message.                                                   |
| Accumulation OM | SCCP System Totals, MSUs Disc-Unrec SCCP Msg Count | This OM measures the number of MSUs discarded because of an unrecognized SCCP message type.                                            |
| Accumulation OM | SCCP System Totals, Out of sequence SCCP msg count | This OM measures the number of times Segments are received out of sequence                                                             |
| Accumulation OM | SCCP System Totals, Reassembly buffer unavailable  | This OM measures the number of times Reassembly resources unavailable occurred                                                         |
| Accumulation OM | SCCP System Totals, Reassembly failed              | This OM measures the number of times Reassembly fails for any non-specified reason.                                                    |
| Accumulation OM | SCCP System Totals, Reassembly Timer Expired       | This OM measures the number of times Reassembly Timer expired                                                                          |
| Accumulation OM | SCCP System Totals, Routing Failure - Unequip.User | This OM measures the number of times SCCP Routing control fails to find a subsystem to route the message.                              |
| Accumulation OM | SCCP System Totals, SCCP Routing Failure Count     | This OM measures the number of messages that SCCP was unable to route.                                                                 |
| Accumulation OM | SCCP System Totals, Segmentation failed            | This OM measures the number of times segmentation fails for any non-specified reason.                                                  |
| Accumulation OM | SCCP System Totals, Segmentation not supported     | This OM measures the number of messages dumped because segmentation is not supported                                                   |

| OM TYPE         | OM TITLE                                                       | OM DESCRIPTION                                                                                                                                                                                                                                                                                                     |
|-----------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | SCCP System Totals, SSA Received Count                         | This OM measures the number of subsystem-allowed (SSA) messages received.                                                                                                                                                                                                                                          |
| Accumulation OM | SCCP System Totals, SSA Transmitted Count                      | This OM measures the number of subsystem-allowed (SSA) messages transmitted.                                                                                                                                                                                                                                       |
| Accumulation OM | SCCP System Totals, SSP Received Count                         | This OM measures the number of subsystem-prohibited (SSP) messages received.                                                                                                                                                                                                                                       |
| Accumulation OM | SCCP System Totals, SSP Transmitted Count                      | This OM measures the number of subsystem-prohibited (SSP) messages transmitted.                                                                                                                                                                                                                                    |
| Accumulation OM | SCCP System Totals, SST Received Count                         | This OM measures the number of subsystem-status-test (SST) messages received.                                                                                                                                                                                                                                      |
| Accumulation OM | SCCP System Totals, SST Transmitted Count                      | This OM measures the number of subsystem-status-test (SST) messages transmitted.                                                                                                                                                                                                                                   |
| Accumulation OM | SCCP System Totals, Total messages handled                     | This OM measures all messages processed by SCCP routing control in both incoming and outgoing directions, whether or not the message is processed or delivered successfully. It includes Class 2 and Class 3 connection oriented messages. It does not include Subsystem Status messages such as SSP, SSA, or SST. |
| Accumulation OM | SCCP System Totals, UDT Msg Rcvd Count                         | This OM measures the number of UDT messages that the SCCP level received.                                                                                                                                                                                                                                          |
| Accumulation OM | SCCP System Totals, UDT Msg Sent Count                         | This OM measures the number of UDT messages sent from the SCCP level.                                                                                                                                                                                                                                              |
| Accumulation OM | SCCP System Totals, UDTS Msg Rcvd Count                        | This OM measures the number of UDTS messages that the SCCP level received.                                                                                                                                                                                                                                         |
| Accumulation OM | SCCP System Totals, UDTS Msg Sent Count                        | This OM measures the number of UDTS messages sent from the SCCP level.                                                                                                                                                                                                                                             |
| Accumulation OM | SCCP System Totals, XUDT Msg Rcvd Count                        | This OM measures the number of XUDT messages that the SCCP level received.                                                                                                                                                                                                                                         |
| Accumulation OM | SCCP System Totals, XUDT Msg Sent Count                        | This OM measures the number of XUDT messages sent from the SCCP level.                                                                                                                                                                                                                                             |
| Accumulation OM | SCCP System Totals, XUDTS Hopcounter violation                 | This OM measures the number of MSUs discarded because of Hopcounter violations.                                                                                                                                                                                                                                    |
| Accumulation OM | SCCP System Totals, XUDTS Msg Rcvd Count                       | This OM measures the number of XUDTS messages that the SCCP level received.                                                                                                                                                                                                                                        |
| Accumulation OM | SCCP System Totals, XUDTS Msg Sent Count                       | This OM measures the number of XUDTS messages sent from the SCCP level.                                                                                                                                                                                                                                            |
| Accumulation OM | SCTP Management/Traffic Counts, Association Aborted Count      | This OM measures the number of associations that are aborted by the application, the peer connection or a failure in the network.                                                                                                                                                                                  |
| Accumulation OM | SCTP Management/Traffic Counts, Association Establish Attempts | This OM measures the number of associations which the user or peer SCTP tried to established.                                                                                                                                                                                                                      |
| Accumulation OM | SCTP Management/Traffic Counts, Association Terminated Count   | This OM measures the number of associations that are terminated by the application or the peer connection.                                                                                                                                                                                                         |
| Accumulation OM | SCTP Management/Traffic Counts, Chunk Retransmitted Count      | This OM measures the number of SCTP chunks retransmitted due to SCTP Packets or SCTP Sacks lost in the network. Note: A SCTP packet may contain more than one chunk.                                                                                                                                               |

| OM TYPE         | OM TITLE                                                      | OM DESCRIPTION                                                                                                                                                                                                                |
|-----------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | SCTP Management/Traffic Counts, Chunks Received Count         | This OM measures the number of SCTP chunks received. Note: A SCTP packet may contain more than one chunk.                                                                                                                     |
| Accumulation OM | SCTP Management/Traffic Counts, Chunks Transmitted Count      | This OM measures the number of SCTP chunks transmitted. Note: A SCTP packet may contain more than one chunk.                                                                                                                  |
| Accumulation OM | SCTP Management/Traffic Counts, Established Association Count | This OM measures the number of associations which are in a established state.                                                                                                                                                 |
| Accumulation OM | SCTP Management/Traffic Counts, Out of Blue SCTP Packet       | This OM measures the number of SCTP packets that are received but are not able to identify the association to which they belong.                                                                                              |
| Accumulation OM | SIP Application Service Totals, SIP Call Timeout              | This OM measures the total number of SIP call timeout. This value will be pegged when the SIP transaction stay alive for too long and get cleaned up by the Transaction audit.                                                |
| Accumulation OM | SIP Application Service Totals, SIP message Received          | This OM measures the total number of SIP message received from the Application Server (including all SIP Response msgs)                                                                                                       |
| Accumulation OM | SIP Application Service Totals, SIP message Transmitted       | This OM measures the total number of SIP message transmitted to the Application Server (including all Invite/Notify msgs)                                                                                                     |
| Accumulation OM | SIP Application Service Totals, SIP TCAP Application Timeout  | This OM measures the total number of SIP TCAP application timeout                                                                                                                                                             |
| Accumulation OM | SIP Application Service Totals, TCAP message received         | This OM measures the total number of TCAP orig Or UNI MSUs received for the SIP application on this IP LINK Node.                                                                                                             |
| Accumulation OM | SIP Application Service Totals, TCAP message transmitted      | This OM measures the total number of TCAP Response MSUs received for the SIP application on this IP LINK Node                                                                                                                 |
| Accumulation OM | SLR Database Totals, Add/Change Updates                       | This OM measures the total number of add/change updates received from the HLR provisioning system.                                                                                                                            |
| Accumulation OM | SLR Database Totals, Delete Updates                           | This OM measures the total number of delete updates received from the HLR provisioning system.                                                                                                                                |
| Accumulation OM | SLR Database Totals, Emergency Updates                        | This OM measures the total number of application database updates received from the USP debug facility and can only be displayed from the debug facility Note: Debug is only accessible by Nortel Networks Support Personnel. |
| Accumulation OM | SLR Database Totals, Operational Time                         | This OM measures the total time within the OM interval that the SLRDB was operational.                                                                                                                                        |
| Accumulation OM | SLR Database Totals, Retransmitted Updates                    | This OM measures the total number of updates retransmitted within the BroadBand STP.                                                                                                                                          |
| Accumulation OM | SLR LSSI Totals, Total Failed Queries                         | This OM measures the total number of SLR queries received by an SLR application database system node that failed for any reason across all services and message types.                                                        |
| Accumulation OM | SLR LSSI Totals, Total Queries Received                       | This OM measures the total number of SLR queries received by an SLR application database system node across all services and message types.                                                                                   |
| Accumulation OM | SLR Message Type Totals, IMSI Failed Queries                  | This OM measures the total number of IMSI queries received by an SLR application database system node that failed for any reason.                                                                                             |
| Accumulation OM | SLR Message Type Totals, IMSI Failed SLRDB Lookup             | This OM measures the total number of IMSI queries received by an SLR application database system node that failed in their SLRDB lookup.                                                                                      |

| OM TYPE         | OM TITLE                                                | OM DESCRIPTION                                                                                                                                                                                                    |
|-----------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | SLR Message Type Totals, IMSI Query Received            | This OM measures the total number of IMSI queries received by an SLR application database system node.                                                                                                            |
| Accumulation OM | SLR Message Type Totals, IMSI Successful SLRDB Lookup   | This OM measures the total number of IMSI queries received by an SLR application database system node that succeeded in their SLRDB lookup.                                                                       |
| Accumulation OM | SLR Message Type Totals, MSISDN Failed Queries          | This OM measures the total number of MSISDN queries received by an SLR application database system node that failed for any reason.                                                                               |
| Accumulation OM | SLR Message Type Totals, MSISDN Failed SLRDB Lookup     | This OM measures the total number of MSISDN queries received by an SLR application database system node that failed in their SLRDB lookup.                                                                        |
| Accumulation OM | SLR Message Type Totals, MSISDN Query Received          | This OM measures the total number of MSISDN queries received by an SLR application database system node.                                                                                                          |
| Accumulation OM | SLR Message Type Totals, MSISDN Successful SLRDB Lookup | This OM measures the total number of MSISDN queries received by an SLR application database system node that succeeded in their SLRDB lookup.                                                                     |
| Accumulation OM | SLR SMI Totals, High Congestion                         | This OM measures the total number of times that the high level congestion state was entered.                                                                                                                      |
| Accumulation OM | SLR SMI Totals, Login Failures                          | This OM measures the total number of failed HLR provisioning system login attempts.                                                                                                                               |
| Accumulation OM | SLR SMI Totals, Low Congestion                          | This OM measures the total number of times that the low level congestion state was entered.                                                                                                                       |
| Accumulation OM | SLR SMI Totals, Medium Congestion                       | This OM measures the total number of times that the medium level congestion state was entered.                                                                                                                    |
| Accumulation OM | SLR SMI Totals, Messages Failed Authentication          | This OM measures the total number of received messages from the HLR provisioning system that failed authentication of the retrieved RN against an associated GTT entry with an RN matching the retrieved value.   |
| Accumulation OM | SLR SMI Totals, Messages Invalid                        | This OM measures the total number of invalid messages received from the HLR provisioning system.                                                                                                                  |
| Accumulation OM | SLR SMI Totals, Messages Passed Authentication          | This OM measures the total number of received messages from the HLR provisioning system that successfully authenticated the retrieved RN against an associated GTT entry with an RN matching the retrieved value. |
| Accumulation OM | SLR SMI Totals, Messages Received                       | This OM measures the total number of messages received from the HLR provisioning system.                                                                                                                          |
| Accumulation OM | SLR SMI Totals, Messages Rejected                       | This OM measures the total number of received messages from the HLR provisioning system that were rejected.                                                                                                       |
| Accumulation OM | Special Study Totals, MSUs Received Count               | This OM measures the number of incoming MSUs acknowledged on the specified linkset with the specified OPC/DPC/SIO combination.                                                                                    |
| Accumulation OM | Special Study Totals, MSUs Transmitted Count            | This OM measures the number of outgoing MSUs successfully transmitted to the far end on the specified linkset with the specified OPC/DPC/SIO combination.                                                         |
| Accumulation OM | Special Study Totals, Octets Received Count             | This OM measures the total number of MSU octets received on a specified linkset with the specified OPC/DPC/SIO combination, including the octets removed in MTP Level 2 processing.                               |

| OM TYPE         | OM TITLE                                                   | OM DESCRIPTION                                                                                                                                                                                     |
|-----------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | Special Study Totals, Octets Transmitted Count             | This OM measures the total number of MSU octets transmitted on the specified linkset with the specified OPC/DPC/SIO combination, including those octets that were added in MTP Level 2 processing. |
| Accumulation OM | System Node State, Disabled, Locked Duration               | This OM measures the number of seconds that a specific RTC, CC, or application system node is disabled and locked.                                                                                 |
| Accumulation OM | System Node State, Disabled, Unlocked Duration             | This OM measures the number of seconds that a specific RTC, CC, or application system node is disabled and unlocked.                                                                               |
| Accumulation OM | System Node State, Enabled, Locked Duration                | This OM measures the number of seconds that a specific RTC, CC, or application system node is enabled and locked.                                                                                  |
| Accumulation OM | System Node State, Enabled, Unlocked Duration              | This OM measures the number of seconds that a specific RTC, CC, or application system node is enabled and unlocked.                                                                                |
| Accumulation OM | System Node State, Locked, Off-line Duration               | This OM measures the number of seconds that a specific RTC, CC, or application system node is locked and off-line.                                                                                 |
| Accumulation OM | System Totals, No Route MSU Discard Count                  | This OM measures the number of MSUs discarded due to routing failure of various causes (for example, an inaccessible DPC).                                                                         |
| Accumulation OM | Task Management, Idle Task Duration                        | This OM measures the number of milliseconds spent in idle time.                                                                                                                                    |
| Accumulation OM | TUP Received Message Counts, B/TUP Error No AS for OPC/CIC | This OM measures the number of TUP messages discarded as a result of not being able to find a valid AS for a given OPC/CIC.                                                                        |
| Accumulation OM | TUP Received Message Counts, B/TUP Error No OPC/CIC Data   | This OM measures the number of TUP and BTUP messages discarded as a result of missing database entry for a given OPC or OPC/CIC.                                                                   |
| Accumulation OM | TUP Received Message Counts, B/TUP Error No Path           | This OM measures the number of TUP and BTUP messages discarded as a result of not being able to find an inservice path to a given AS.                                                              |
| Accumulation OM | TUP Received Message Counts, B/TUP Error No Route          | This OM measures the number of TUP messages discarded as a result of not being able to find a route to a given AS.                                                                                 |
| Accumulation OM | TUP Received Message Counts, BTUP Call P Received Count    | This OM measures the number of BTUP call processing messages received from the SS7 Network.                                                                                                        |
| Accumulation OM | TUP Received Message Counts, BTUP Maint Received Count     | This OM measures the number of BTUP maintenance messages received from the SS7 Network.                                                                                                            |
| Accumulation OM | TUP Received Message Counts, TUP Call P Received Count     | This OM measures the number of TUP call processing messages received from the SS7 Network.                                                                                                         |
| Accumulation OM | TUP Received Message Counts, TUP Maint Received Count      | This OM measures the number of TUP maintenance messages received from the SS7 Network.                                                                                                             |
| Accumulation OM | TUP Received Message Counts, Wrong NE Received Count       | This OM measures the number of TUP messages discarded as a result of not receiving the message for a SG Network Element                                                                            |
| Accumulation OM | UDP, Full Socket Count                                     | This OM measures the number of counts that the udpstat full_socket variable has changed in the om period.                                                                                          |
| Maximum OM      | Link Traffic, Link utilization                             | This OM provides percentage of link utilization. For LSL it is calculated in erlangs while for HSL it is calculated as percentage of processor utilization.                                        |

| OM TYPE    | OM TITLE                                        | OM DESCRIPTION                                                                                                                                                                                                                                             |
|------------|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum OM | NP Database Totals, Max Average Update Rate     | This OM measures the highest update rate (in updates per second) averaged over a 60 second period. ie total updates over the 60 second window divided by 60. If the number of updates received in the 60 second window is less than 60 , the OM will be 0. |
| Maximum OM | NP Transaction Mgmt Totals, TxMgr Percent Used  | This OM measures the maximum percentage of used transactions in the Transaction Management application.                                                                                                                                                    |
| Maximum OM | SLR Database Totals, Max. Update Rate           | This OM measures the highest update rate (in updates per second) during any 60 second period                                                                                                                                                               |
| No Action  | System Node State, Percentage Enabled           | This OM measures the percentage of time that a specific RTC, CC, or application system node is enabled, or busy (for the Processor Utilization OM, GR-82-CORE section 6.4.5, item 10). The value for this OM ranges from 0 to 100 percent.                 |
| No Action  | Task Management, Collection Period Duration     | This OM measures the total number of milliseconds for an OM collection period. This OM can be used to calculate the percentage of use for all the other Task Management OMs.                                                                               |
| No action  | Task Management, Level 0 Priority Task Duration | This OM measures the number of milliseconds spent in Level 0 priority task(s).                                                                                                                                                                             |
| No Action  | Task Management, Level 1 Priority Task Duration | This OM measures the number of milliseconds spent in Level 1 priority task(s).                                                                                                                                                                             |
| No Action  | Task Management, Level 2 Priority Task Duration | This OM measures the number of milliseconds spent in Level 2 priority task(s).                                                                                                                                                                             |
| No Action  | Task Management, Level 3 Priority Task Duration | This OM measures the number of milliseconds spent in Level 3 priority task(s).                                                                                                                                                                             |
| No Action  | Task Management, Level 4 Priority Task Duration | This OM measures the number of milliseconds spent in Level 4 priority task(s).                                                                                                                                                                             |
| No Action  | Task Management, Level 5 Priority Task Duration | This OM measures the number of milliseconds spent in Level 5 priority task(s).                                                                                                                                                                             |
| No Action  | Task Management, Level 6 Priority Task Duration | This OM measures the number of milliseconds spent in Level 6 priority task(s).                                                                                                                                                                             |
| No Action  | Task Management, Level 7 Priority Task Duration | This OM measures the number of milliseconds spent in Level 7 priority task(s).                                                                                                                                                                             |
| No Action  | Task Management, Level 8 Priority Task Duration | This OM measures the number of milliseconds spent in Level 8 priority task(s).                                                                                                                                                                             |
| No Action  | Task Management, Level 9 Priority Task Duration | This OM measures the number of milliseconds spent in Level 9 priority task(s).                                                                                                                                                                             |
| No Action  | Task Management, OS System Tasks Duration       | This OM measures the number of milliseconds spent in VxWorks OS tasks.                                                                                                                                                                                     |

# Appendix E: MG9000 Reported Alarms and Logs

| Fault Subsystem (MIB)                     | Alarm Id                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Fault Type            | Severity                      | Description                                                                                                                                                                                                             |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | CES305                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | cesLossOfCell         | Major                         | Loss of Cells                                                                                                                                                                                                           |
| norCarrFault<br>(NORTEL-UEMG-CARRIER-MIB) | MGCA301                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | los                   | DS1 - Minor<br>OC3 - Critical | lossOfSignal                                                                                                                                                                                                            |
|                                           | MGCA302                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ais                   | DS1 - Minor<br>OC3 - Critical | alarm indication signal                                                                                                                                                                                                 |
|                                           | MGCA303                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | lof                   | DS1 - Minor<br>OC3 - Critical | lossOfFrame                                                                                                                                                                                                             |
|                                           | MGCA304                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | rai                   | DS1 - Minor                   | remote alarm indication                                                                                                                                                                                                 |
|                                           | MGCA305                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | bersf                 | OC3 - Critical                | bitErrorRate S F...                                                                                                                                                                                                     |
|                                           | MGCA306                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | bersd                 | OC3 - Major                   | bitErrorRate SigDegrade                                                                                                                                                                                                 |
|                                           | MGCA307                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | rdi                   | OC3 - Minor                   | remote defect indication                                                                                                                                                                                                |
|                                           | MGCA308                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | plm                   | OC3 - Minor                   | path label mismatch                                                                                                                                                                                                     |
|                                           | MGCA309                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | lop                   | OC3 - Minor                   | loss of Pointer                                                                                                                                                                                                         |
|                                           | MGCA310                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | uneq                  | OC3 - Minor                   | unequipped                                                                                                                                                                                                              |
|                                           | MGCA312                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaLinkLif            | Minor                         | IMA link- Loss of IMA Frame                                                                                                                                                                                             |
|                                           | MGCA313                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaLinkLods           | Minor                         | IMA link- Loss of delayed synchronization                                                                                                                                                                               |
|                                           | MGCA314                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaLinkRfi            | Minor                         | IMA link- Remote failure indication                                                                                                                                                                                     |
|                                           | MGCA315                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaLinkTxMisConnect   | Minor                         | IMA link Transmit misconnect                                                                                                                                                                                            |
|                                           | MGCA316                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaLinkRxMisConnect   | Minor                         | IMA link receive misconnect                                                                                                                                                                                             |
|                                           | MGCA317                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaLinkTxFault        | Minor                         | IMA link transmit fault                                                                                                                                                                                                 |
|                                           | MGCA318                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaLinkRxFault        | Minor                         | IMA link receive fault                                                                                                                                                                                                  |
|                                           | MGCA319                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaLinkTxUnusableFe   | Minor                         | IMA link transmit unusable far end                                                                                                                                                                                      |
|                                           | MGCA320                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaLinkRxUnusableFe   | Minor                         | IMA link receive unusable far end                                                                                                                                                                                       |
|                                           | MGCA321                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaGroupStartupFe     | Major                         | IMA group startup far end                                                                                                                                                                                               |
|                                           | MGCA322                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaGroupCfgAbort      | Critical                      | IMA group configuration abort                                                                                                                                                                                           |
|                                           | MGCA323                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaGroupCfgAbortFe    | Major                         | IMA group configuration abort far end                                                                                                                                                                                   |
|                                           | MGCA324                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaGroupInsuffLinks   | Critical                      | IMA group insufficient links                                                                                                                                                                                            |
|                                           | MGCA325                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaGroupInsuffLinksFe | Major                         | IMA group insufficient links far end                                                                                                                                                                                    |
|                                           | MGCA326                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaGroupBlockedFe     | Minor                         | IMA group blocked far end                                                                                                                                                                                               |
|                                           | MGCA327                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imaGroupTimingSynch   | Major                         | IMA group timing synchronization                                                                                                                                                                                        |
|                                           | MGCA328                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | abiLossOfClock        | Critical                      | ABI Loss of Clock on DS512 optical link                                                                                                                                                                                 |
|                                           | MGCA329                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | abiLossOfFrame        | Critical                      | ABI Loss of Frame on DS512 optical link                                                                                                                                                                                 |
|                                           | MGCA330                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | abiLowLightLevel      | Critical                      | ABI Loss of Signal (low light level) on DS512 optical link                                                                                                                                                              |
|                                           | MGCA331                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | abiChannelParityError | Minor                         | ABI Channel parity error on DS512 optical link                                                                                                                                                                          |
|                                           | MGCA332                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | tim                   | Minor                         | SDH Path Trace Identifier Mismatch Alarm (only applies to SDH and not SONET). The Path Trace Identifier being seen by the OC3 card at the carrier Path level does not match what has been provisioned for that carrier. |
|                                           | MGCA333                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ds3Ais                |                               | DS3 - Alarm Indication Signal - Check far-end carrier faults                                                                                                                                                            |
|                                           | MGCA334                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ds3Lof                |                               | DS3 - Loss Of Frame                                                                                                                                                                                                     |
|                                           | MGCA335                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ds3Rai                |                               | DS3 - Remote Indication Signal - Check far-end carrier faults                                                                                                                                                           |
|                                           | <b>SCC2 LOG Output Example</b><br>*C01 MGCA330 0746 TBL MG9K NorCarrFault<br>Location: 1-RM9K-Frame000.Shelf1.Slot06.Port00<br>Notification Id: 824<br>State: not acknowledged<br>Category: Communication Alarm<br>Cause: Loss Of Signal<br>Time: Apr 24 14:01:11 2003<br>Component Id: Port.frame0.shelf1.slot6.ABI.abi<br>Specific Problem: NorCarrFault - ABI loss of signal<br>Description: Loss Of Signal (i.e., Low Light Level) on DS512 Optical Link<br>Site Flr RPos Bay_id<br>FFFF FF FFF FFFF FFF                            |                       |                               |                                                                                                                                                                                                                         |
|                                           | <b>NTSTD LOG Output Example</b><br>MSH10_i06BE *** MGCA330 APR24 14:01:11 0746 TBL MG9K NorCarrFault<br>Location: 1-RM9K-Frame000.Shelf1.Slot06.Port00<br>Notification Id: 824<br>State: not acknowledged<br>Category: Communication Alarm<br>Cause: Loss Of Signal<br>Time: Apr 24 14:01:11 2003<br>Component Id: Port.frame0.shelf1.slot6.ABI.abi<br>Specific Problem: NorCarrFault - ABI loss of signal<br>Description: Loss Of Signal (i.e., Low Light Level) on DS512 Optical Link<br>Site Flr RPos Bay_id<br>FFFF FF FFF FFFF FFF |                       |                               |                                                                                                                                                                                                                         |
|                                           | VC301                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | vclTpAis              | Minor                         | atmVcl Alarm indication signal                                                                                                                                                                                          |



|                                         |         |                         |               |                                                      |
|-----------------------------------------|---------|-------------------------|---------------|------------------------------------------------------|
| nnAtmFaultType<br>(NORTEL-UEMG-ATM-MIB) | VC302   | vclTpRdi                | Minor         | atmVcl Remote Detection Indicator                    |
|                                         | VC303   | vclLoc                  | Minor         | loss of continuity, vcl                              |
|                                         | VC304   | vccTpAis                | Minor         | atmVcc Alarm indication signal                       |
|                                         | VC305   | vccTpRdi                | Minor         | atmVcc Remote Detection Indicator                    |
|                                         | VC306   | vccLoc                  | Minor         | loss of continuity, vcc                              |
| nnShfFault<br>(NORTEL-UEMG-SHF-MIB)     | SHLF301 | shelfTalkBatteryA       | Critical      | SIC Talk Battery A                                   |
|                                         | SHLF302 | shelfTalkBatteryB       | Critical      | SIC Talk Battery B                                   |
|                                         | SHLF303 | shelfSignalBatteryA     | Major         | SIC Signal Battery A                                 |
|                                         | SHLF304 | shelfSignalBatteryB     | Major         | SIC Signal Battery B                                 |
|                                         | SHLF305 | shelfSignalBatteryAfuse | Major         | SIC Signal Battery A Fuse                            |
|                                         | SHLF306 | shelfSignalBatteryBfuse | Major         | SIC Signal Battery B Fuse                            |
|                                         | SHLF307 | shelfFailLED            | Indeterminate | SIC Shelf Fail LED                                   |
|                                         | SHLF308 | bipSignalBatteryA1      | Major         | BIP Signal Battery A1                                |
|                                         | SHLF309 | bipSignalBatteryA2      | Major         | BIP Signal Battery A2                                |
|                                         | SHLF310 | bipSignalBatteryB1      | Major         | BIP Signal Battery B1                                |
|                                         | SHLF311 | bipSignalBatteryB2      | Major         | BIP Signal Battery B2                                |
|                                         | SHLF312 | bipTalkBatteryA         | Minor         | BIP Talk Battery A                                   |
|                                         | SHLF313 | bipTalkBatteryB         | Minor         | BIP Talk Battery B                                   |
|                                         | SHLF314 | bipFilterA              | Minor         | BIP Filter A Fail                                    |
|                                         | SHLF315 | bipFilterB              | Minor         | BIP Filter B Fail                                    |
|                                         | SHLF316 | bipScanPoint1           | Indeterminate | BIP Scan Point 1                                     |
|                                         | SHLF317 | bipScanPoint2           | Indeterminate | BIP Scan Point 2                                     |
|                                         | SHLF318 | bipScanPoint3           | Indeterminate | BIP Scan Point 3                                     |
|                                         | SHLF319 | bipScanPoint4           | Indeterminate | BIP Scan Point 4                                     |
|                                         | SHLF320 | bipScanPoint5           | Indeterminate | BIP Scan Point 5                                     |
|                                         | SHLF321 | bipScanPoint6           | Indeterminate | BIP Scan Point 6                                     |
|                                         | SHLF322 | bipScanPoint7           | Indeterminate | BIP Scan Point 7                                     |
|                                         | SHLF323 | bipScanPoint8           | Indeterminate | BIP Scan Point 8                                     |
|                                         | SHLF324 | bipScanPoint9           | Indeterminate | BIP Scan Point 9                                     |
|                                         | SHLF325 | bipScanPoint10          | Indeterminate | BIP Scan Point 10                                    |
|                                         | SHLF326 | bipScanPoint11          | Indeterminate | BIP Scan Point 11                                    |
|                                         | SHLF327 | bipTalkBatteryA1        | Major         | Talk Battery A1 Power Feed                           |
|                                         | SHLF328 | bipTalkBatteryA2        | Major         | Talk Battery A Power Feed                            |
|                                         | SHLF329 | bipTalkBatteryB1        | Major         | Talk Battery B1 Power Feed                           |
|                                         | SHLF330 | bipTalkBatteryB2        | Major         | Talk Battery B2 Power Feed                           |
|                                         | SHLF332 | bipEcuTemp0             | Minor         | BIP Environmental Control Unit 0 Temperature         |
|                                         | SHLF333 | bipEcuTemp1             | Minor         | BIP Environmental Control Unit 1 Temperature         |
|                                         | SHLF334 | bipEcuFan0              | Minor         | BIP Environmental Control Unit 0 Fan                 |
|                                         | SHLF335 | bipEcuFan1              | Minor         | BIP Environmental Control Unit 1 Fan                 |
|                                         | SHLF336 | bipRemoteAlarmcutoff    | Indeterminate | BIP Remote Alarm Cut Off                             |
|                                         | SHLF337 | bipLocalAlarmcutoff     | Indeterminate | BIP Local Alarm Cut Off                              |
|                                         | SHLF338 | bipAbsFusefail          | Major         | BIP ABS Fuse Fail                                    |
|                                         | SHLF339 | bipAbsPowerSupply       | Critical      | BIP ABS Battery Power Supply                         |
|                                         | SHLF340 | bipShfBreakerTrip       | Major         | BIP Shelf Circuit Breaker Trip                       |
|                                         | SHLF341 | bipCsApresence          | Major         | Presence of BIP's Current-Sense Card A               |
|                                         | SHLF342 | bipCsBpresence          | Major         | Presence of BIP's Current-Sense Card B               |
|                                         | SHLF343 | bipAlmRelay Presence    | Major         | Presence of BIP's Alarm Relay Card                   |
|                                         | SHLF344 | bipCSAshf0HighThres     | Minor         | Current-Sense Card A Shelf 0 High Threshold exceeded |
|                                         | SHLF345 | bipCSAshf1HighThres     | Minor         | Current-Sense Card A Shelf 1 High Threshold exceeded |
|                                         | SHLF346 | bipCSAshf2HighThres     | Minor         | Current-Sense Card A Shelf 2 High Threshold exceeded |
|                                         | SHLF347 | bipCSAshf3HighThres     | Minor         | Current-Sense Card A Shelf 3 High Threshold exceeded |
|                                         | SHLF348 | bipCSBshf0HighThres     | Minor         | Current-Sense Card B Shelf 0 High Threshold exceeded |
|                                         | SHLF349 | bipCSBshf1HighThres     | Minor         | Current-Sense Card B Shelf 1 High Threshold exceeded |
|                                         | SHLF350 | bipCSBshf2HighThres     | Minor         | Current-Sense Card B Shelf 2 High Threshold exceeded |
|                                         | SHLF351 | bipCSBshf3HighThres     | Minor         | Current-Sense Card B Shelf 3 High Threshold exceeded |
|                                         | SHLF352 | bipTempHighThres        | Minor         | Current High Temperature Threshold exceeded          |
|                                         | SHLF353 | bipCSAshf0LowThres      | Minor         | Current-Sense Card A Shelf 0 Low Threshold exceeded  |
|                                         | SHLF354 | bipCSAshf1LowThres      | Minor         | Current-Sense Card A Shelf 1 Low Threshold exceeded  |
|                                         | SHLF355 | bipCSAshf2LowThres      | Minor         | Current-Sense Card A Shelf 2 Low Threshold exceeded  |
|                                         | SHLF356 | bipCSAshf3LowThres      | Minor         | Current-Sense Card A Shelf 3 Low Threshold exceeded  |
|                                         | SHLF357 | bipCSBshf0LowThres      | Minor         | Current-Sense Card B Shelf 0 Low Threshold exceeded  |
|                                         | SHLF358 | bipCSBshf1LowThres      | Minor         | Current-Sense Card B Shelf 1 Low Threshold exceeded  |
|                                         | SHLF359 | bipCSBshf2LowThres      | Minor         | Current-Sense Card B Shelf 2 Low Threshold exceeded  |
|                                         | SHLF360 | bipCSBshf3LowThres      | Minor         | Current-Sense Card B Shelf 3 Low Threshold exceeded  |
|                                         | SHLF361 | bipTempLowThres         | Minor         | Current Low Temperature Threshold exceeded           |
|                                         | SHLF362 | bipSignalBatteryFuse    | Major         | Status of the Signal Battery Fuse                    |
|                                         | SHLF363 | bipTalkBatteryAFuse     | Major         | Status of Talk Battery A Fuse                        |
|                                         | SHLF364 | bipTalkBatteryBFuse     | Major         | Status of Talk Battery B Fuse                        |
|                                         | SHLF365 | bipEcuFuse0             | Minor         | Status of Cooling Unit 0 Fuse                        |
|                                         | SHLF366 | bipEcuFuse1             | Minor         | Status of Cooling Unit 1 Fuse                        |
|                                         | SHLF367 | bipEndAisleFuse         | Minor         | Status of the End-Aisle Fuse                         |
|                                         | SHLF368 | bipSignalDistribution1  | Indeterminate | BIP Signal Distribution Point 1                      |
|                                         | SHLF369 | bipSignalDistribution2  | Indeterminate | BIP Signal Distribution Point 2                      |
|                                         | SHLF370 | bipSignalDistribution3  | Indeterminate | BIP Signal Distribution Point 3                      |
|                                         | SHLF371 | bipSignalDistribution4  | Indeterminate | BIP Signal Distribution Point 4                      |
|                                         | SHLF372 | bipVisualCritical       | Indeterminate | BIP Visual Critical                                  |
|                                         | SHLF373 | bipVisualMajor          | Indeterminate | BIP Visual Major                                     |

|                                             |         |                        |               |                                                                                                                                                                                                                                                               |
|---------------------------------------------|---------|------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | SHLF374 | bipVisualMinor         | Indeterminate | BIP Visual Minor                                                                                                                                                                                                                                              |
|                                             | SHLF375 | bipAudibleCritical     | Indeterminate | BIP Audible Critical                                                                                                                                                                                                                                          |
|                                             | SHLF376 | bipAudibleMajor        | Indeterminate | BIP Audible Major                                                                                                                                                                                                                                             |
|                                             | SHLF377 | bipAudibleMinor        | Indeterminate | BIP Audible Minor                                                                                                                                                                                                                                             |
|                                             | SHLF378 | bipAlarmCutOffLED      | Indeterminate | BIP Alarm CutOff LED                                                                                                                                                                                                                                          |
|                                             | SHLF379 | bipTalkBatteryFailALEd | Indeterminate | BIP Talk Battery A Fail LED                                                                                                                                                                                                                                   |
|                                             | SHLF380 | bipTalkBatteryFailBLEd | Indeterminate | BIP Talk Battery B Fail LED                                                                                                                                                                                                                                   |
|                                             | SHLF381 | bipCriticalLEDbank     | Indeterminate | BIP Critical LED Bank                                                                                                                                                                                                                                         |
|                                             | SHLF382 | bipMajorLEDbank        | Indeterminate | BIP Major LED Bank                                                                                                                                                                                                                                            |
|                                             | SHLF383 | bipMinorLEDbank        | Indeterminate | BIP Minor LED Bank                                                                                                                                                                                                                                            |
|                                             | SHLF384 | bipEcu1LED             | Indeterminate | BIP Environmental Control Unit 0 LED                                                                                                                                                                                                                          |
|                                             | SHLF385 | bipEcu2LED             | Indeterminate | BIP Environmental Control Unit 1 LED                                                                                                                                                                                                                          |
|                                             | SHLF386 | bipAlarmFailLED        | Indeterminate | BIP Alarm Processor Card Fail LED                                                                                                                                                                                                                             |
|                                             | SHLF387 | bipAisleAlarm          | Indeterminate | BIP Aisle Alarm                                                                                                                                                                                                                                               |
|                                             | SHLF388 | bipFrameFail           | Indeterminate | BIP Frame Fail                                                                                                                                                                                                                                                |
|                                             | SHLF389 | bipAlmRelayLed         | Indeterminate | Presence of BIP's Alarm Relay Card LED                                                                                                                                                                                                                        |
|                                             | SHLF390 | bipCsAled              | Indeterminate | Status of Current-Sense Card A LED                                                                                                                                                                                                                            |
|                                             | SHLF391 | bipCsBled              | Indeterminate | Status of Current-Sense Card B LED                                                                                                                                                                                                                            |
|                                             | SHLF392 | shelfCompatibility     |               | This log is generated when a shelfCompatibility fault is received                                                                                                                                                                                             |
|                                             | SHLF393 | cardDiscovery          |               | This log is generated when a cardDiscovery fault is received                                                                                                                                                                                                  |
|                                             |         | cardDiscPowlo          |               | This log is generated when a cardDiscPowlo fault is received                                                                                                                                                                                                  |
|                                             |         | cardDiscPowSic         |               | This log is generated when a cardDiscPowSic fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot02         |               | This log is generated when a cardDiscSlot2 fault is received                                                                                                                                                                                                  |
|                                             |         | cardDiscSlot03         |               | This log is generated when a cardDiscSlot3 fault is received                                                                                                                                                                                                  |
|                                             |         | cardDiscSlot04         |               | This log is generated when a cardDiscSlot4 fault is received                                                                                                                                                                                                  |
|                                             |         | cardDiscSlot05         |               | This log is generated when a cardDiscSlot5 fault is received                                                                                                                                                                                                  |
|                                             |         | cardDiscSlot06         |               | This log is generated when a cardDiscSlot6 fault is received                                                                                                                                                                                                  |
|                                             |         | cardDiscSlot07         |               | This log is generated when a cardDiscSlot7 fault is received                                                                                                                                                                                                  |
|                                             |         | cardDiscSlot08         |               | This log is generated when a cardDiscSlot8 fault is received                                                                                                                                                                                                  |
|                                             |         | cardDiscSlot09         |               | This log is generated when a cardDiscSlot9 fault is received                                                                                                                                                                                                  |
|                                             |         | cardDiscSlot10         |               | This log is generated when a cardDiscSlot10 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot11         |               | This log is generated when a cardDiscSlot11 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot12         |               | This log is generated when a cardDiscSlot12 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot13         |               | This log is generated when a cardDiscSlot13 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot14         |               | This log is generated when a cardDiscSlot14 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot15         |               | This log is generated when a cardDiscSlot15 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot16         |               | This log is generated when a cardDiscSlot16 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot17         |               | This log is generated when a cardDiscSlot17 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot18         |               | This log is generated when a cardDiscSlot18 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot19         |               | This log is generated when a cardDiscSlot19 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot20         |               | This log is generated when a cardDiscSlot20 fault is received                                                                                                                                                                                                 |
|                                             |         | cardDiscSlot21         |               | This log is generated when a cardDiscSlot21 fault is received                                                                                                                                                                                                 |
| (NORTEL-UEMG-LINE-MIB)                      | SWLN301 | lineFault              | Minor         | Line in Fault                                                                                                                                                                                                                                                 |
|                                             | SWLN302 | lineProtectionFault    | Minor         | Hazardous Voltage                                                                                                                                                                                                                                             |
|                                             | SWLN303 | lineBabbleState        | Minor         | Line in Babbling state                                                                                                                                                                                                                                        |
| nnDslFault<br>(NORTEL-UEMG-DSL-MIB)         | XDSL301 | losATUC                | Minor         | Loss of signal - Local modem                                                                                                                                                                                                                                  |
|                                             | XDSL302 | lofATUC                | Minor         | Loss of frame - Local modem                                                                                                                                                                                                                                   |
|                                             | XDSL303 | lprATUC                | Critical      | Loss of Power - Local modem                                                                                                                                                                                                                                   |
|                                             | XDSL304 | lolATUC                | Minor         | Loss of link - Local modem                                                                                                                                                                                                                                    |
|                                             | XDSL305 | losATUR                | Minor         | Loss of signal - Remote modem                                                                                                                                                                                                                                 |
|                                             | XDSL306 | lofATUR                | Minor         | Loss of frame - Remote modem                                                                                                                                                                                                                                  |
|                                             | XDSL307 | lprATUR                | Minor         | Loss of power - Remote modem                                                                                                                                                                                                                                  |
|                                             | XDSL308 | lolATUR                | Minor         | Loss of link - Remote modem                                                                                                                                                                                                                                   |
|                                             | XDSL309 | aturNotPresent         | Minor         | No remote modem present                                                                                                                                                                                                                                       |
|                                             | XDSL310 | noClock                | Critical      | Local modem clock failure                                                                                                                                                                                                                                     |
|                                             | XDSL311 | handshakeFail          | Critical      | Protocol error                                                                                                                                                                                                                                                |
|                                             | XDSL312 | linkMismatch           | Critical      | Configuration error                                                                                                                                                                                                                                           |
|                                             | XDSL313 | vpiNonzero             | Critical      | ATM traffic dropped at WAC - upstream                                                                                                                                                                                                                         |
|                                             | XDSL314 | lcdlATUC               | Critical      | Loss of sync of ATM cells - upstream                                                                                                                                                                                                                          |
|                                             | XDSL315 | lcdlATUR               | Critical      | Loss of sync of ATM cells - downstream                                                                                                                                                                                                                        |
|                                             | XDSL316 | failATUC               | Critical      | Local modem critical failure - not responding, in Kernel mode, download failure or message corrupted                                                                                                                                                          |
|                                             | XDSL317 | circuitHardwareFault   | Critical      | General H/W fault indication - circuit                                                                                                                                                                                                                        |
| BWShelfFault<br>(NORTEL-UEMG-BANDWIDTH-MIB) | BW300   | bwResBandwShelfFault   | Warning       | Reserved bandwidth used on the indicated shelf has exceeded the Bandwidth Congestion Threshold                                                                                                                                                                |
|                                             | BW301   | bwResBandwTotalFault   | Warning       | This alarm is generated when reserved bandwidth use on the network interface has exceeded the Bandwidth Congestion Threshold. The alarm is cleared when reserved bandwidth on the network interface is 10% less than the threshold.                           |
|                                             | BW302   | bwResBandwSloaFault    | Warning       | This alarm is generated when reserved bandwidth dedicated to switched lines connections on the network interface has exceeded the Bandwidth Congestion Threshold with respect to the amount of bandwidth configured the network interface for switched lines. |

|                                                       |               |                            |          |                                                                                                                                                                                                                                                          |
|-------------------------------------------------------|---------------|----------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BandwidthFault<br/>(NORTEL-UEMG-BANDWIDTH-MIB)</b> | <b>BW304</b>  | bwSwitchFabricTotalFault   | Warning  | Overall Cell Queue Congestion Alarm. Overall atm cell queue is at least 90% full.                                                                                                                                                                        |
|                                                       | <b>BW305</b>  | bwSwitchFabricCbrFault     | Warning  | CBR Cell Queue Congestion Alarm. Atm cell queue for this service type is at least 90% full.                                                                                                                                                              |
|                                                       | <b>BW306</b>  | bwSwitchFabricRtVbrFault   | Warning  | RT-VBR Cell Queue Congestion Alarm. Atm cell queue for this service type is at least 90% full.                                                                                                                                                           |
|                                                       | <b>BW307</b>  | bwSwitchFabricNrtVbrFault  | Warning  | NRT-VBR Cell Queue Congestion Alarm. Atm cell queue for this service type is at least 90% full.                                                                                                                                                          |
|                                                       | <b>BW308</b>  | bwSwitchFabricUbrFault     | Warning  | UBR Cell Queue Congestion Alarm. Atm cell queue for this service type is at least 90% full.                                                                                                                                                              |
|                                                       | <b>BW309</b>  | bwSwitchFabricUbrPlusFault | Warning  | UBR-PLUS Cell Queue Congestion Alarm. Atm cell queue for this service type is at least 90% full.                                                                                                                                                         |
|                                                       | <b>BW310</b>  | bwSwitchFabricControlFault | Warning  | CONTROL Channel Cell Queue Congestion Alarm. Atm cell queue for this service type is at least 90% full.                                                                                                                                                  |
|                                                       | <b>BW311</b>  | bwResBandwAbiFault         | Warning  | This alarm is generated when reserved bandwidth dedicated to ABI lines connections on the network interface has exceeded the Bandwidth Congestion Threshold with respect to the amount of bandwidth configured the network interface for switched lines. |
| <b>nnClkSyncFault<br/>(NORTEL-UEMG-CLOCKSYNC-MIB)</b> | <b>CLK301</b> | lossOfPhaseLock            | Minor    | Phase PLD [altera 7064b] detected a minimum phase difference greater than eight nano seconds. (FRAME PULSES BETWEEN ITPs DO NOT MATCH)                                                                                                                   |
|                                                       | <b>CLK302</b> | lossOfFramePulseLock       | Major    | Frame pulse alignment did not get established with the active card -- it should occur in the inactive card only.(FRAME PULSES BETWEEN ITP DO NOT MATCH)                                                                                                  |
|                                                       | <b>CLK303</b> | lossOfMyClock              | Major    | The high and low levels of the SYNC PLL clock are not toggling. (OUTPUT OF FREQUENCY PLL HAS BEEN LOST)                                                                                                                                                  |
|                                                       | <b>CLK304</b> | lossOfMateClock            | Minor    | The high and Low levels of the mate clock are not toggling                                                                                                                                                                                               |
|                                                       | <b>CLK305</b> | lossOfClockOutput          | Major    | Phase PLD reference clock oscillator not toggling. (OUTPUT OF PHASE PLL HAS BEEN LOST)                                                                                                                                                                   |
|                                                       | <b>CLK306</b> | singleReferenceFailure     | Minor    | Single monitored reference source has been lost                                                                                                                                                                                                          |
|                                                       | <b>CLK307</b> | allReferenceFailure        | Major    | Absolute and Delta reference source signals have been lost                                                                                                                                                                                               |
|                                                       | <b>CLK308</b> | singleSyncUnitFailure      | Major    | Stratum 3 unit on ITP failed                                                                                                                                                                                                                             |
|                                                       | <b>CLK312</b> | signalLos                  | Minor    | Single/All source reference occurred due to loss of signal                                                                                                                                                                                               |
|                                                       | <b>CLK313</b> | signalLof                  | Minor    | Single/All source(s) reference occurred due to out of frame                                                                                                                                                                                              |
|                                                       | <b>NE301</b>  | FlashRsrc                  | Major    | Flash Memory                                                                                                                                                                                                                                             |
|                                                       |               | ProcessorRsrc              | Major    | Processor                                                                                                                                                                                                                                                |
|                                                       |               | idpromRsrc                 | Major    | idprom                                                                                                                                                                                                                                                   |
|                                                       |               | Atm50PortRsrc              | Minor    | ATM200 Port [0-19]: Not at 200 speed, or Init failed                                                                                                                                                                                                     |
|                                                       |               | RamRsrc                    | Major    | RAM                                                                                                                                                                                                                                                      |
|                                                       |               | CardTypeMismatchRsrc       | Critical | Incorrect Card In Slot                                                                                                                                                                                                                                   |
|                                                       |               | RedundancyLostRsrc         | Warning  | Simplex Mode - No Redundancy                                                                                                                                                                                                                             |
|                                                       |               | CardPairOOSRsrc            | Warning  | Active/Master Card Out Of Service                                                                                                                                                                                                                        |
|                                                       |               | CardRsrc                   | Major    | DS1 Card                                                                                                                                                                                                                                                 |
|                                                       |               | DS1Aal1SarRsrc             | Major    | AAL1 SAR - DS1 Card TDM to ATM converter                                                                                                                                                                                                                 |
|                                                       |               | DS1LinkRsrc                | Minor    | DS1 Link [0 to 15]                                                                                                                                                                                                                                       |
|                                                       |               | DS1FramerRsrc              | Major    | DS1 Framer for DS1 links [0-7, or 8-15]                                                                                                                                                                                                                  |
|                                                       |               | DS1LIURsrc                 | Major    | DS1 Line IF Unit for DS1 links [0-7, or 8-15]                                                                                                                                                                                                            |
|                                                       |               | CardRsrc                   | Major    | ITP card                                                                                                                                                                                                                                                 |
|                                                       |               | ITPTimeswitchRsrc          | Major    | Timeswitch - call processing enging                                                                                                                                                                                                                      |
|                                                       |               | ITPDspServiceCircuitsRsrc  | Major    | DSP [0-3]                                                                                                                                                                                                                                                |
|                                                       |               | ITPEchoCancellationRsrc    | Minor    | ECAN                                                                                                                                                                                                                                                     |
|                                                       |               | ITPAal1SarRsrc             | Major    | AAL1 SAR - Call Traffic TDM to ATM converter                                                                                                                                                                                                             |
|                                                       |               | ITPAtmBusControllerRsrc    | Major    | Serial Link Control - controls communication with ITX cards                                                                                                                                                                                              |
|                                                       |               | ITPDdcIdpromRsrc           | Minor    | DDC Idprom - DSP Daughter Card Idprom                                                                                                                                                                                                                    |
|                                                       |               | ITPDdcCalistoRsrc          | Major    | DDC Calisto - DSP Daughter Card Calisto                                                                                                                                                                                                                  |
|                                                       |               | ITPVoicePathRsrc           | Critical | Voice Path                                                                                                                                                                                                                                               |
|                                                       |               | CardRsrc                   | Major    | ITX Card                                                                                                                                                                                                                                                 |
|                                                       |               | CardRsrc                   | Major    | SCO/SCI card                                                                                                                                                                                                                                             |
|                                                       |               | SCTerminalIfRsrc           | Warning  | RS-232 Port                                                                                                                                                                                                                                              |
|                                                       |               | SCBootFlashMemRsrc         | Warning  | Flash Memory containing software load                                                                                                                                                                                                                    |
|                                                       |               | SCLocalBusRamRsrc          | Major    | Local Memory                                                                                                                                                                                                                                             |
|                                                       |               | SCEthernetIfRsrc           | Warning  | Ethernet port                                                                                                                                                                                                                                            |
|                                                       |               | SCSWRsrc                   | Minor    | ATM Switch - MMC Chipset                                                                                                                                                                                                                                 |
|                                                       |               | SCNetworkIfRsrc            | Major    | Network Interface (SCO) [0-7] (SCI)                                                                                                                                                                                                                      |
|                                                       |               | SCAtmFwdRsrc               | Critical | ATM Cell Forwarder                                                                                                                                                                                                                                       |
|                                                       |               | CardRsrc                   | Major    | ABI card                                                                                                                                                                                                                                                 |
|                                                       |               | ABITimeswitchNetSideRsrc   | Major    | Timeswitch - call p engine (network side)                                                                                                                                                                                                                |
|                                                       |               | ABITimeswitchLineSideRsrc  | Major    | Timeswitch - call p engine (Line side)                                                                                                                                                                                                                   |
|                                                       |               | ABITimeswitchRsrc          | Major    | Timeswitch - call processing engine                                                                                                                                                                                                                      |
|                                                       |               | ABIEchoCancellationRsrc    | minor    | ECAN - unit 0<br>ECAN - unit 1                                                                                                                                                                                                                           |
|                                                       |               | ABIAal1SarRsrc             | Major    | AAL1 SAR - Call Traffic TDM to ATM converter                                                                                                                                                                                                             |
|                                                       |               | ABIAal1NetSideRsrc         | Major    | Aal1 Network side - unit 0<br>Aal1 Network side - unit 1                                                                                                                                                                                                 |
|                                                       |               | ABIAal1LineSideRsrc        | Major    | Aal1 Line side - unit 0<br>Aal1 Line side - unit 1                                                                                                                                                                                                       |
|                                                       |               | ABIAtmBusControllerRsrc    | Major    | Serial Link Control - controls communication with ITX cards                                                                                                                                                                                              |
|                                                       |               | ABIVoicePathRsrc           | Critical | Voice Path                                                                                                                                                                                                                                               |
|                                                       |               | CardRsrc                   | Major    | 8X8 ADSL Card                                                                                                                                                                                                                                            |
|                                                       |               | AtmDataSyncRsrc            | Critical | ATM Data Sync                                                                                                                                                                                                                                            |
|                                                       |               | BalDataSyncRsrc            | Critical | BAL Data Sync                                                                                                                                                                                                                                            |
|                                                       |               | MegacoDataSyncRsrc         | Critical | Megaco Data Sync                                                                                                                                                                                                                                         |
|                                                       |               | BaseSubsystemRsrc          | Critical | Startup failure: Base Platform                                                                                                                                                                                                                           |

|                                     |       |                         |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------|-------|-------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| norNodeFault (NORTEL-UEMG-NODE-MIB) | NE302 | CarmSubsystemRsrc       | Critical       | Startup failure: Carrier Maintenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                     |       | NodeSubsystemRsrc       | Critical       | Startup failure: Node Maintenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                     |       | MegacoSubsystemRsrc     | Critical       | Startup failure: Megaco                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                     |       | DLMSubsystemRsrc        | Critical       | Startup failure: Data Line Maintenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                     |       | TestSubsystemRsrc       | Critical       | Startup failure: Test Mib                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                     |       | MTASubsystemRsrc        | Critical       | Startup failure: MTA Mib                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                     |       | ShfSubsystemRsrc        | Critical       | Startup failure: Shelf Maintenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                     |       | LineSubsystemRsrc       | Critical       | Startup failure: Line Maintenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                     |       | ClkSyncSubsystemRsrc    | Critical       | Startup failure: Clock Sync Mib                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                     |       | PatchSubsystemRsrc      | Critical       | Startup failure: Patching                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                     |       | DTASubsystemRsrc        | Critical       | Startup failure: DTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                     |       | MegOMsSubsystemRsrc     | Critical       | Startup failure: Megaco OMs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                     |       | UpgSubsystemRsrc        | Critical       | Startup failure: Software Upgrade                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                     |       | SnmpMASubsystemRsrc     | Critical       | Startup failure: SNMP Master Agent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                     |       | TimeSubsystemRsrc       | Critical       | Startup failure: Time of Day                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                     |       | ESASubsystemRsrc        | Critical       | Startup failure: ESA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                     |       | LKMSubsystemRsrc        | Critical       | Startup failure: Link Maintenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                     |       | MarketFitSubsystemRsrc  | Critical       | Startup failure: Market Fit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                     |       | TestRsrc                | variable       | Test Resource                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                     |       | HeapRsrc                | Critical/Major | Low Memory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                     |       | MateCommunicationRsrc   | Critical       | Mate Card Communication Failure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                     |       | SCAtmCPCSUniRsrc        | Major          | CPCS UNI Signalling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                     |       | ITPWBCallConnRsrc       | Major          | Call Control Connection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                     |       | NEDataSyncRsrc          | Critical       | NE Data Sync                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                     |       | ABIWBCallConnRsrc       | Major          | Call Control Connection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                     | NE303 |                         | Crit/Maj/Minor | Card Restored (SWACT and now inactive)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                     | NE304 | DS1NetworkLinkRsrc      | Minor          | Link to DCC Card in slot [10 or 11] - Isolation In Progress                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                     |       | ITPLineSideExternalRsrc | Minor          | Line Card 0, or link to Line Card                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                     |       | ITPNetworkLinkRsrc      | Minor          | Link to ITX, port [0 to 1] - Isolation in progress<br>Link to Mate ITP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                     |       | ITXLinkRsrc             | Minor          | Link to DCC in slot [10 or 11] - Isolation in progress<br>Link 4 to ITP card - Isolation in progress<br>Link 5 to ITP card - Isolation in progress<br>Link 6 to ITP card - Isolation in progress<br>Link 7 to ITP card - Isolation in progress<br>Link 8 to ITP card - Isolation in progress<br>Link 9 to ITP card - Isolation in progress<br>Link 10 to ITP card - Isolation in progress<br>Link 11 to ITP card - Isolation in progress<br>Link 12 to ITP card - Isolation in progress<br>Link 13 to ITP card - Isolation in progress<br>Link 14 to ITP card - Isolation in progress<br>Link 15 to ITP card - Isolation in progress<br>Link 16 to ITP card - Isolation in progress<br>Link 17 to ITP card - Isolation in progress<br>Link 18 to ITP card - Isolation in progress<br>Link 19 to ITP card - Isolation in progress                                                                                                                                                           |
|                                     |       | SCLineLinkRsrc          | Minor          | Link to Master Shf ITP 13 - Isolation in progress<br>Link to Master Shf ITP 12 - Isolation in progress<br>Link to Mate DCC - Isolation in progress<br>Link to card in slot 2 - Isolation in progress<br>Link to card in slot 6 - Isolation in progress<br>Link to card in slot 14 - Isolation in progress<br>Link to card in slot 18 - Isolation in progress<br>Link to card in slot 3 - Isolation in progress<br>Link to card in slot 7 - Isolation in progress<br>Link to card in slot 15 - Isolation in progress<br>Link to card in slot 19 - Isolation in progress<br>Link to card in slot 4 - Isolation in progress<br>Link to card in slot 8 - Isolation in progress<br>Link to card in slot 16 - Isolation in progress<br>Link to card in slot 20 - Isolation in progress<br>Link to card in slot 5 - Isolation in progress<br>Link to card in slot 9 - Isolation in progress<br>Link to card in slot 17 - Isolation in progress<br>Link to card in slot 21 - Isolation in progress |
|                                     |       | ABINetworkLinkRsrc      | minor          | Link to DCC Card in slot 10 - Isolation in progress<br>Link to DCC Card in slot 11 - Isolation in progress                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                     |       | Aal5SarRsrc             | Major          | AAL5-SAR, Messaging                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                     |       | DS1NetworkExternalRsrc  | minor          | EXTERNAL: DCC Slot 10<br>EXTERNAL: DCC Slot 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                     |       | DS1NetworkPortRsrc      | Minor          | Serial Device 0 - to DCC Card in slot 10<br>Serial Device 1 - to DCC Card in slot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                     |       | DS1UtopiaBridgeRsrc     | Major          | Utopia Bus Master - AAL1, AAL5 to ATM PHYs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                     |       | ITPNetworkExternalRsrc  | Minor          | EXTERNAL: Mate ITP<br>EXTERNAL: ITX attached to port [0,1]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                     |       | ITPNetworkPortRsrc      | Minor          | Serial Device [0 to 1] - to ITX cards<br>HDLC Device - Connects to mate ITP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                     |       | ITPLineSidelfRsrc       | Major          | Serial device 0 - to Line Card                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                     |       | ITPDDCAAL5SARRsrc       | Major          | DDC AAL5 SAR - Call Traffic TDM to IP converter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|  |       |                          |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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|  | NE305 | ITXExternalRsrc          | Minor    | EXTERNAL: DCC Slot 10 serial device<br>EXTERNAL: DCC Slot 11 serial device<br>EXTERNAL: ITP attached to port [0-7]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|  |       | ITXPortRsrc              | Minor    | Serial Device 0 - to DCC card in slot 10<br>Serial Device 1 - to DCC card in slot 11<br>Serial Device 4 - to ITP card<br>Serial Device 5 - to ITP card<br>Serial Device 6 - to ITP card<br>Serial Device 7 - to ITP card<br>Serial Device 8 - to ITP card<br>Serial Device 9 - to ITP card<br>Serial Device 10 - to ITP card<br>Serial Device 11 - to ITP card<br>Serial Device 12 - to ITP card<br>Serial Device 13 - to ITP card<br>Serial Device 14 - to ITP card<br>Serial Device 15 - to ITP card<br>Serial Device 16 - to ITP card<br>Serial Device 17 - to ITP card<br>Serial Device 18 - to ITP card<br>Serial Device 19 - to ITP card                                                                                                                                                              |
|  |       | ITXLineSideGrpRsrc       | Major    | Link [0 to 7] to ITP pair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|  |       | ITXNetForwarderRsrc      | Major    | Net side cell forwarder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|  |       | ITXLineForwarderRsrc     | Major    | Line side cell forwarder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|  |       | SCLineExternalRsrs       | Minor    | EXTERNAL: Master Shelf ITP slot 13<br>EXTERNAL: Master Shelf ITP slot 12<br>EXTERNAL: Mate DCC<br>EXTERNAL: Card in slot [2-9, 14-21]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|  |       | SCLinePortRsrc           | Minor    | Serial Device 0 - to Master Shelf ITP Slot 13<br>Serial Device 1 - to Master Shelf ITP Slot 12<br>Serial Device 3 - Link to Mate DCC Card<br>Serial Device 4 - to card in slot 2<br>Serial Device 5 - to card in slot 6<br>Serial Device 6 - to card in slot 14<br>Serial Device 7 - to card in slot 18<br>Serial Device 8 - to card in slot 3<br>Serial Device 9 - to card in slot 7<br>Serial Device 10 - to card in slot 15<br>Serial Device 11 - to card in slot 19<br>Serial Device 12 - to card in slot 4<br>Serial Device 13 - to card in slot 8<br>Serial Device 14 - to card in slot 16<br>Serial Device 15 - to card in slot 20<br>Serial Device 16 - to card in slot 5<br>Serial Device 17 - to card in slot 9<br>Serial Device 18 - to card in slot 17<br>Serial Device 19 - to card in slot 21 |
|  |       | SCQuadSerContGrpRsrc     | Major    | Group of Serial Ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|  |       | ABINetworkExternalRsrc   | Minor    | EXTERNAL: DCC slot [10 or 11]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  |       | ABINetworkPortRsrc       | minor    | Serial Device 0 - to DCC Card in slot 10<br>Serial Device 1 - to DCC Card in slot 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|  |       | ABINetworkSideGrpRsrc    | Critical | Both links to DCC Card                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  | NE306 | GlanRsrc                 | minor    | GLAN Link to hub on Active ITP card                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|  |       | ITPGlanHubRsrc           | Critical | GLAN Hub, communicates with other cards on shelf                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | NE307 | ABILineSideIfRsrc        | Major    | DS512 port                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|  |       | ABILineSideExternalRsrc  | minor    | XPM unit, or DS512 connection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  |       | ABILkmAllChnlsRsrc       | Major    | All DS512 channels closed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|  | NE308 | SCWanBlDrOAMP Rsrc       | Major    | Inband Messaging OAMP Link [0,1]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|  |       | SCWanBlDrCCRsrc          | Major    | Inband Messaging CC Link [0,1]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|  |       | SCWanBlDrHBRsrc          | Major    | Heartbeat to Element Manager                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|  |       | SCWanBlDrDS512Rsrc       | Major    | Inband Messaging DS512 Link [0,1]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|  | NE309 | ITPClockSyncRsrc         | Critical | Clock Sync                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|  |       | ITPClockPhaseLockRsrc    | Major    | Clock Sync: Loss of Phase Lock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|  |       | ITPClockFramePulseRsrc   | Major    | Clock Sync: Loss of Frame Pulse Lock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|  |       | ITPClockMyClockRsrc      | Major    | Clock Sync: Loss of My Clock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|  |       | ITPClockMateClockRsrc    | Minor    | Clock Sync: Loss of Mate Clock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|  |       | ITPClockOutputRsrc       | Major    | Clock Sync: Loss of Clock Output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|  |       | ITPSyncSingleRefRsrc     | Minor    | Clock Sync: Single Reference Failure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|  |       | ITPSyncAllRefRsrc        | Major    | Clock Sync: All Reference Failure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|  |       | ITPSyncSingleSyncRsrc    | Major    | Clock Sync: Single Sync Unit Failure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|  |       | ITPSyncLOS Rsrc          | Minor    | Clock Sync: Loss of Signal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|  |       | ITPSyncOOFRsrc           | Minor    | Clock Sync: Out of Frame                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|  |       | ITPClockRsrc             | variable | Clock Sync: Clock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|  |       | ITPSyncRsrc              | variable | Clock Sync: Sync                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|  |       | ITPSyncHORsrc            | Minor    | Clock Sync: Holdover Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|  |       | SCBitsFwdRsrc            | Major    | BITS Forwarder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|  |       | SCBitsRefRsrc            | Minor    | BITS clock reference [A or B]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  |       | ITXFramerRsrc            | Major    | Framer - timing synchronization device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  |       | ITXBITSrefRsrc           | Minor    | BITS clock reference A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  |       | ITXBITSrefRsrc           | Minor    | BITS clock reference B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  |       | ITXNetworkSideIfPortRsrc | Minor    | Port 2 on serial device - port only used by Diagnostics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                                           |          |                                 |                |                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------|----------|---------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | NE310    | SCQuadsercontPortRsrc           | Minor          | Serial Port 1 - UNUSED link to ITP slot 12                                                                                                                                                                                                                                                         |
|                                           |          | SCQuadsercontPortRsrc           | Minor          | Serial Port 0 - UNUSED link to ITP slot 13                                                                                                                                                                                                                                                         |
|                                           |          | SCSerLinkRsrc                   | Minor          | Unused [was serial link #]                                                                                                                                                                                                                                                                         |
|                                           |          | SCOctalPhyContRsrc              | Warning        | Octal PHY [Unused] Device for ports [0-5] or [8-13]                                                                                                                                                                                                                                                |
|                                           |          | SCOctalPhyContPortRsrc          | Warning        | Octal PHY [Unused] Port [0-13]                                                                                                                                                                                                                                                                     |
|                                           | NE311    | SCTimeOfDayRsrc                 | minor          | Time of Day: Access to time server [ip] failed                                                                                                                                                                                                                                                     |
|                                           | NE312    | ITPCableRsrc                    | minor          | Cable configuration conflict                                                                                                                                                                                                                                                                       |
|                                           |          | ITXCableRsrc                    | Minor          | Cable configuration conflict, port [0 to 7]                                                                                                                                                                                                                                                        |
|                                           | NE313    | ABIActivityCableRsrc            | minor          | Activity control cable between ABI cards                                                                                                                                                                                                                                                           |
|                                           | NE314    | SCXcRsrc                        | Minor          | Backplane Cross Connect                                                                                                                                                                                                                                                                            |
|                                           | NE315    | SCLinksRsrc                     | Major          | Resource Bandwidth                                                                                                                                                                                                                                                                                 |
|                                           |          | downstreamFIFO                  | Major          | ADSL: Downstream FIFO                                                                                                                                                                                                                                                                              |
|                                           |          | downstreamHEC                   | Major          | ADSL: Downstream HEC error                                                                                                                                                                                                                                                                         |
|                                           |          | atm50Fault                      | Critical       | ADSL: ATM50 fault                                                                                                                                                                                                                                                                                  |
|                                           |          | upstream buffer overflow        | Critical       | ADSL: Upstream buffer overflow                                                                                                                                                                                                                                                                     |
|                                           |          | downstream buffer overflow      | Critical       | ADSL: Downstream buffer overflow                                                                                                                                                                                                                                                                   |
|                                           |          | atm device timeout              | Critical       | ADSL: ATM Device timeout                                                                                                                                                                                                                                                                           |
|                                           |          | clock accuracy                  | Critical       | ADSL: Loss of clock accuracy                                                                                                                                                                                                                                                                       |
|                                           |          | dsp lockup                      | Critical       | ADSL: DSP Lockup                                                                                                                                                                                                                                                                                   |
|                                           | NE317    |                                 | Crit/Maj/Minor | Shelf SIC Card Alarm                                                                                                                                                                                                                                                                               |
|                                           |          |                                 | Crit/Maj/Minor | Shelf PIO Card Alarm                                                                                                                                                                                                                                                                               |
|                                           |          |                                 | Crit/Maj/Minor | Shelf BIP card Alarm                                                                                                                                                                                                                                                                               |
|                                           | NE318    |                                 | Major          | SCI Card NE Proxy                                                                                                                                                                                                                                                                                  |
|                                           | NE320    | AudRecoveryRsrc                 | Major          | Require Audit Recovery Executed                                                                                                                                                                                                                                                                    |
| MG9000 Manager Reported Faults            | MGEM300  | EmDbUnavailable                 | Major          | Generated when MG9000 EM is not able to make connection to the Element Manager Database                                                                                                                                                                                                            |
|                                           | MGEM301  | CommsLostToNE                   | Critical       | Generated when the MG9000 EM loses SNMP communication with MG9000                                                                                                                                                                                                                                  |
|                                           | MGEM302  | invalidEMIPAddress              | Major          | Generated when the MG9000 Manager has added an ne MG9000 and tries to discover the NE. It will check the MG9000 EM IP address provisioned at the MG9000 and if it is incorrect will raise this alarm                                                                                               |
|                                           | MGEM303  | AlarmsBeingThrottled            | Critical       | Generated when the MG9000 sends too many alarms within a 5 second window. When this happens the MG9000 Manager will request this particular MG9000 stop sending Alarms and display this particular alarm. This condition will clear when the number of alarm within 5 sec falls below a set number |
|                                           | MGEM304  | MG9K AlarmAuditFailed           | Critical       | Alarm Audit Failed - The alarm audit on the GW failed                                                                                                                                                                                                                                              |
| (MEDIA_GATEWAY_MIB)                       | MGC300   | medGwylInvalidControllerAddress |                | Indicates that a message was received from a controller that did not match any valid controller IP Address.                                                                                                                                                                                        |
|                                           | MGC301   | medGwylInvalid-TerminationId    |                | Indicates a mismatch of Termination ID                                                                                                                                                                                                                                                             |
|                                           | MGC302   | medGwylInvalidPackageElement    |                | Indicates that a message was received from a controller that contained an event, signal, or descriptor that was not recognized for the package                                                                                                                                                     |
| nMtaFault (NORTEL_MG_MT_A_mib)            | TEST302  | sicSysHardwareFault             |                |                                                                                                                                                                                                                                                                                                    |
|                                           | TEST303  | mtaSysHardwareFault             |                |                                                                                                                                                                                                                                                                                                    |
|                                           | TEST 304 | sysConfigAmbiguity              |                |                                                                                                                                                                                                                                                                                                    |
| nnEsaFault (NORTEL-UEMG-ESA-MIB)          | ESA300   | esaStatusChange                 | Critical       | Communication between GWC and GW is lost. Entered ESA mode                                                                                                                                                                                                                                         |
|                                           | ESA301   | esaDataFileFailure              | Critical       | Data download of ESA data from the CS2K Core has failed                                                                                                                                                                                                                                            |
|                                           | ESA303   | esaEnterFailure                 | Critical       | Failed to enter ESA                                                                                                                                                                                                                                                                                |
| nnEsaColFault (NORTEL-UEMG-ESA-MIB)       | ESA304   | esaCommOfInterest               | Major          | This log is generated by the EM in response to a trap from the MG9000 (nnEsaColFault). The MG9000 sends this trap when it detects communication problems to other nodes in the same community of interest.                                                                                         |
| MG9000 Manager Reported Faults            | ESA302   |                                 | Critical       | Failed to set up FTP connection: login failure - EM failed to push ESA to VMG                                                                                                                                                                                                                      |
|                                           | ESA312   |                                 | Major          | This log is generated by the EM when a failure occurs whilst trying to provision internodal community of interest data for a given NE.                                                                                                                                                             |
| nnMegacoFault (NORTEL-UEMG-MEGACO-MIB)    | VMG300   | VMG OOS                         | Critical       | Generated when Root Termination goes out of service (Communication between Gateway and GWC is lost and ESA is not enabled)                                                                                                                                                                         |
| nnMegacoQoSFault (NORTEL-UEMG-MEGACO-MIB) | VMG301   | BadCalls                        | Minor          | QoS Alarm that is generated when the number of bad call reaches a certain threshold                                                                                                                                                                                                                |
|                                           | VMG302   | PacketLoss                      | Minor          | QoS Alarm that is generated when the number of Packet Loss reaches a certain threshold                                                                                                                                                                                                             |
|                                           | VMG303   | Jitter                          | Minor          | QoS Alarm that is generated when IP message Jitter reaches a certain threshold                                                                                                                                                                                                                     |
|                                           | VMG304   | Latency                         | Minor          | QoS Alarm that is generated when IP message Latency reaches a certain threshold                                                                                                                                                                                                                    |
|                                           | VMG311   |                                 | Major          | Application layer framing (ALF) alarm occurs when the MG 9000 is experiencing Megaco retransmissions greater than 50 % for a period of 5 minutes or more.                                                                                                                                          |
|                                           | VMG312   |                                 | Major          | Megaco task alarm indicates one or more of the Megaco Task's input buffers are over 90 % full for a period of 5 minutes or more.                                                                                                                                                                   |
|                                           | VMG322   | vmgAdminStatusOutOfService      | Critical       | Admin State Out Of Service - Call Processing Out of Service                                                                                                                                                                                                                                        |
|                                           | VMG323   | cardInitializing                | Critical       | VMG Initializing - Call Processing Out of Service                                                                                                                                                                                                                                                  |
|                                           | VMG324   | cardLocked                      | Critical       | Card Locked - Call Processing Out of Service                                                                                                                                                                                                                                                       |
|                                           | VMG325   | cardDisabled                    | Critical       | Card Disabled - Call Processing Out of Service                                                                                                                                                                                                                                                     |
|                                           | VMG328   | lineMtcNotReady                 | Critical       | Line Maintenance Not Ready - Call Processing Out of Service                                                                                                                                                                                                                                        |
|                                           | VMG329   | megacoMtcNotReady               | Critical       | Megaco Maintenance Not Ready - Call Processing Out of Service                                                                                                                                                                                                                                      |
|                                           | VMG373   | gwcUnreachable                  | Critical       | GWC Unreachable - Call Processing Out of Service                                                                                                                                                                                                                                                   |
|                                           | VMG374   | noGwcReply                      | Critical       | GWC Reachable But No Reply To Service Change - Check LGRP/GWC state - Call Processing Out of Service                                                                                                                                                                                               |
|                                           | VMG376   | aallBearerSubsysNotReady        | Critical       | AAL1 Bearer Not Ready - Call Processing Out of Service                                                                                                                                                                                                                                             |
|                                           | VMG377   | ipBearerSubsysNotReady          | Critical       | IP Bearer Not Ready - Call Processing Out of Service                                                                                                                                                                                                                                               |

|                                              |                |                            |             |                                                                                                                                                                                                                                               |
|----------------------------------------------|----------------|----------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Performance (NORTEL-UEMG-PERFMON-MIB)</b> | <b>OVLD304</b> | Performance Degraded       | Minor/Major | Overload Detection Alarm that is generated whenever the MG9000 actually enters an overload condition.                                                                                                                                         |
| <b>SCTP (NORTEL-UEMG-REMSGING-MIB)</b>       | <b>OVLD808</b> | relMsgLinkFail             | Critical    | An external messaging link has closed and cannot send/receive                                                                                                                                                                                 |
|                                              | <b>OVLD809</b> | relMsgLinkSevDegraded      | Major       | Message loss is high enough such that the message link is in a degraded service state. For ABI, this would mean that some calls are failing and perhaps maintenance action are failing (e.g. static data download, etc)                       |
|                                              | <b>OVLD810</b> | relMsgLinkDegraded         | Minor       | Message retransmissions are high enough that system is starting to see performance degradation. Potentially, this could mean increased latency, reduced messaging through the system, buffer overflows and perhaps heading toward congestion. |
| <b>GIGE (NORTEL-UEMG-GIGE-MIB)</b>           | <b>GIGE301</b> | LOS                        | Critical    | Loss of Signal                                                                                                                                                                                                                                |
|                                              | <b>GIGE302</b> | RFI                        | Critical    | Remote Failure Indication                                                                                                                                                                                                                     |
|                                              | <b>GIGE303</b> | TxF                        | Critical    | Transmit Failure                                                                                                                                                                                                                              |
|                                              | <b>GIGE304</b> | TEM                        | Critical    | threshold exceeded                                                                                                                                                                                                                            |
|                                              | <b>GIGE305</b> | POW                        | Critical    | Low Power Indicated                                                                                                                                                                                                                           |
|                                              | <b>GIGE306</b> | RxSD                       | Critical    | Transmit Signal Degraded                                                                                                                                                                                                                      |
|                                              | <b>GIGE307</b> | RxEER                      | Critical    | Transmit Excessive Error Ratio                                                                                                                                                                                                                |
|                                              | <b>GIGE308</b> | TBC                        | Critical    | Transmit Bias Current                                                                                                                                                                                                                         |
|                                              | <b>GIGE309</b> | LINT                       | Critical    | Link Initialization                                                                                                                                                                                                                           |
|                                              | <b>GIGE310</b> | OPT                        | Critical    | Transmit Optical Power                                                                                                                                                                                                                        |
|                                              | <b>GIGE311</b> | OPR                        | Critical    | Receive Optical Power                                                                                                                                                                                                                         |
|                                              | <b>GIGE312</b> | GARP                       | Critical    | GARP failure                                                                                                                                                                                                                                  |
|                                              | <b>GIGE313</b> | LKINT                      | Critical    | Link Integrity Failure                                                                                                                                                                                                                        |
|                                              | <b>GIGE314</b> | Auto negotiation           | Critical    | Auto negotiation Failure                                                                                                                                                                                                                      |
|                                              | <b>GIGE315</b> | non preferred link         | Critical    | Non Preferred Link is active                                                                                                                                                                                                                  |
|                                              | <b>OMC300</b>  |                            | Critical    | Indicates that OM Collector failed to collect OM file from MG9K during a particular collection interval.                                                                                                                                      |
| <b>IPSec (NORTEL-UEMG-IPSEC-MIB)</b>         | <b>IPSC300</b> | ipsecMismatchSharedKey     | Critical    | During negotiation, the key received did not match the one locally set                                                                                                                                                                        |
|                                              | <b>IPSC301</b> | ipsecIkePeerLinkExpired    | Critical    | Phase 1 security association has expired or not present                                                                                                                                                                                       |
|                                              | <b>IPSC302</b> | ipsecSecurePeerLinkExpired | Critical    | Phase 2 security association has expired or not present                                                                                                                                                                                       |
|                                              | <b>IPSC303</b> | ipsecDoSCallp              | Critical    | Packets are being replayed to the call processing interface. Possible Denial of Service attack                                                                                                                                                |
|                                              | <b>IPSC304</b> | ipsecDoSMgmt               | Critical    | Packets are being replayed to the call processing interface. Possible Denial of Service attack                                                                                                                                                |
|                                              | <b>IPSC305</b> | ipsecMaxDiscardedPktRate   | Minor       | An inordinate percentage of the received/transmitted packets are being discarded as a result of current security policies. Indicates possible mis-configuration, or denial of service attack                                                  |
|                                              | <b>IPSC306</b> | ipsecRadiusTimeout         | Major       | MG9K's requests sent to RADIUS server has timed out                                                                                                                                                                                           |



## Appendix F: Ethernet Routing Switch 8600 Trap List and Trap Raise/Clear Mapping

### Trap List

```
<?xml version="1.0" encoding="ISO88591" ?>
<!--
severity = 6|5|4|3|2|1
 Critical = 1
 Major = 2
 Minor = 3
 Warning = 4
 Clear = 5
 Info = 6

-->
<TRAPS>
 <TRAP oid=".1.3.6.1.2.1.16.0.1" name="risingAlarm">
 <PROPERTIES>
 <eventprop name="severity" value="3" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="310" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="qualityOfService" />
 <eventprop name="entity" value="$ip_alarmStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; alarmIndex=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Threshold crossed." />
 <eventprop name="description" value="Threshold Crossed: alarmIndex= $1(
 Threshold= $2 alarmValue= $3)" />
 <eventprop name="specificProblem" value="Rising threshold crossed" />
 </PROPERTIES>
 <VARBINDS>
 <varbind name=".1.3.6.1.2.1.16.3.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.2.1.16.3.1.1.7" property="$2" />
 <varbind name=".1.3.6.1.2.1.16.3.1.1.5" property="$3" />
 </VARBINDS>
 </TRAP>
```



```

 <TRAP oid=".1.3.6.1.2.1.16.0.2" name="fallingAlarm">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="311" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_alarmStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; alarmIndex=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Threshold crossed" />
 <eventprop name="description" value="Threshold Crossed: alarmIndex = $1(Threshold = $2
alarmValue = $3)" />
 <eventprop name="specificProblem" value="Falling threshold crossed" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.2.1.16.3.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.2.1.16.3.1.1.8" property="$2" />
 <varbind name=".1.3.6.1.2.1.16.3.1.1.5" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.6.3.1.1.5.1.0" name="coldStart">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="313" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="operator" />
 <eventprop name="entity" value="$ip_coldStart" />
 <eventprop name="componentID" value="PP8600 = $ip" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Agent reinitialized itself with default settings" />
 <eventprop name="description" value="A coldStart trap signifies that the snmp agent is
reinitializing itself with default settings." />
 <eventprop name="specificProblem" value="Agent reinitialized itself with default settings" />
</PROPERTIES>
</TRAP>
<TRAP oid=".1.3.6.1.6.3.1.1.5.2.0" name="warmStart">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="315" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="operator" />
 <eventprop name="entity" value="$ip_warmstart" />
 <eventprop name="componentID" value="PP8600 = $ip" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Agent reinitialized itself with its configuration
unaltered." />
 <eventprop name="description" value="A warmStart trap signifies that the SNMPv2 agent is
reinitializing itself such that its configuration is unaltered." />
 <eventprop name="specificProblem" value="Agent reinitialized itself with its configuration
unaltered." />
</PROPERTIES>
</TRAP>

```

```
<TRAP oid=".1.3.6.1.6.3.1.1.5.3.0" name="linkDown">
<PROPERTIES>
 <eventprop name="severity" value="2" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="317" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="communications" />
 <eventprop name="entity" value="$ip_linkDown_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; ifIndex=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="loss of communication" />
 <eventprop name="description" value="Link Down: ifIndex = $1(AdminStatus = $2
OperationStatus = $3)" />
 <eventprop name="specificProblem" value="Generic Link Status" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.2.1.2.2.1.1" property="$1" />
 <varbind name=".1.3.6.1.2.1.2.2.1.7" property="$2" />
 <varbind name=".1.3.6.1.2.1.2.2.1.8" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.6.3.1.1.5.4.0" name="linkUp">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="318" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="communications" />
 <eventprop name="entity" value="$ip_linkUp_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; ifIndex=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="communication regained" />
 <eventprop name="description" value="Link Up: ifIndex = $1(AdminStatus = $2
OperationStatus = $3)" />
 <eventprop name="specificProblem" value="Generic Link Status" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.2.1.2.2.1.1" property="$1" />
 <varbind name=".1.3.6.1.2.1.2.2.1.7" property="$2" />
 <varbind name=".1.3.6.1.2.1.2.2.1.8" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.6.3.1.1.5.5.0" name="authenticationFailure">
<PROPERTIES>
 <eventprop name="severity" value="4" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="319" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="security" />
 <eventprop name="entity" value="$ip_authenticationFailure" />
 <eventprop name="componentID" value="PP8600 = $ip" />
 <eventprop name="alarmClear" value="6" />
 <eventprop name="probableCause" value="Authentication failure" />
 <eventprop name="description" value="Authentication failure occurred" />
 <eventprop name="specificProblem" value="Authentication failure" />
```

```
</PROPERTIES>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.6" name="rcnChasPowerSupplyDown">
<PROPERTIES>
 <eventprop name="severity" value="1" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="322" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_rcnSupplyStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; SupplyId=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Power Supply down" />
 <eventprop name="description" value="Power Supply Status: SupplyId = $1(OperationStatus =
$2)" />
 <eventprop name="specificProblem" value="Power Supply Status" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.4.8.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.4.8.1.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.6" name="rcChasPowerSupplyDown">
<PROPERTIES>
 <eventprop name="severity" value="1" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="322" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_rcSupplyStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; SupplyId=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Power supply down" />
 <eventprop name="description" value="Power Supply Status: SupplyId = $1(OperationStatus =
$2)" />
 <eventprop name="specificProblem" value="Power Supply Status" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.4.8.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.4.8.1.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.14" name="rcChasPowerSupplyUp">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="323" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_rcSupplyStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; SupplyId=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Power supply up" />
 <eventprop name="description" value="Power Supply Status: SupplyId = $1(OperationStatus =
$2)" />
```

```

<eventprop name="specificProblem" value="Power Supply Status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.8.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.8.1.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.14" name="rcnChasPowerSupplyUp">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="323" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_rcnSupplyStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; SupplyId=$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Power supply up" />
<eventprop name="description" value="Power Supply Status: SupplyId = $1(OperationStatus =
$2)" />
<eventprop name="specificProblem" value="Power Supply Status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.8.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.8.1.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.7" name="rcnChasFanDown">
<PROPERTIES>
<eventprop name="severity" value="1" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="324" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_rcnFanStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; fanId=$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Fan status down" />
<eventprop name="description" value="Fan Down: fanId= $1(OperationStatus = $2)" />
<eventprop name="specificProblem" value="Fan down" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.7.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.7.1.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.7" name="rcChasFanDown">
<PROPERTIES>
<eventprop name="severity" value="1" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="324" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_rcFanStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; fanId=$1" />

```

```
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Fan Status Down" />
<eventprop name="description" value="Fan Down: fanId= $1(OperationStatus = $2)" />
<eventprop name="specificProblem" value="Fan down" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.7.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.7.1.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.21" name="rcnChasFanUp">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="325" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_rcnFanStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; fanId=$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Fan Status Up" />
<eventprop name="description" value="Fan Up: fanId= $1(OperationStatus = $2)" />
<eventprop name="specificProblem" value="Fan Up" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.7.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.7.1.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.21" name="rcChasFanUp">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="325" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_rcFanStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; fanId=$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Fan Status Up" />
<eventprop name="description" value="Fan Up: fanId= $1(OperationStatus = $2)" />
<eventprop name="specificProblem" value="Fan Up" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.7.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.7.1.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.11" name="rcn2kCardDown">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="326" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
```

```
<eventprop name="entity" value="$ip_rcn2KCardStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; cardIndex=$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Rc 2k Card Down" />
<eventprop name="description" value="Card Down: cardIndex = $1(AdminStatus = $2
OperationStatus = $3)" />
<eventprop name="specificProblem" value="RC 2k Card Status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.5" property="$2" />
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.6" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.11" name="rc2kCardDown">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="326" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_rc2KCardStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; cardIndex=$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Rc 2k Card Down" />
<eventprop name="description" value="Card Down: cardIndex = $1(AdminStatus = $2
OperationStatus = $3)" />
<eventprop name="specificProblem" value="RC 2k Card Status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.5" property="$2" />
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.6" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.12" name="rcn2kCardUp">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="327" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_rcn2KCardStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; cardIndex=$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Card status Up" />
<eventprop name="description" value="Card Up: cardIndex = $1(AdminStatus = $2
OperationStatus = $3)" />
<eventprop name="specificProblem" value="RC 2k Card Status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.5" property="$2" />
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.6" property="$3" />
</VARBINDS>
</TRAP>
```



```

<TRAP oid=".1.3.6.1.4.1.2272.1.21.12" name="rc2kCardUp">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="327" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_rc2KCardStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; cardIndex=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Card Up" />
 <eventprop name="description" value="Card Up: cardIndex = $1(AdminStatus = $2
OperationStatus = $3)" />
 <eventprop name="specificProblem" value="RC 2K Card Status" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.5" property="$2" />
 <varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.6" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.13" name="rcn2kTemperature">
<PROPERTIES>
 <eventprop name="severity" value="1" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="328" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_rcn2kTemperature" />
 <eventprop name="componentID" value="PP8600 = $ip" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Overheating of the chassis detected" />
 <eventprop name="description" value="Chassis overheating: rc2kChassisTemperature = $1" />
 <eventprop name="specificProblem" value="RC 2K Chassis Temperature" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.100.1.2" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.3" name="rcnErrorNotification">
<PROPERTIES>
 <eventprop name="severity" value="$1" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="329" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="unknown" />
 <eventprop name="entity" value="$ip_ErrorNotification" />
 <eventprop name="componentID" value="PP8600 = $ip" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Error condition occurred" />
 <eventprop name="description" value="Error occurred: Error Level = $1(Error Code = $2 Error
Text = $3)" />
 <eventprop name="specificProblem" value="RC 2K Error" />
</PROPERTIES>
<VARBINDS>

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```
<varbind name=".1.3.6.1.4.1.2272.1.20.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.20.2" property="$2" />
<varbind name=".1.3.6.1.4.1.2272.1.20.3" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.8" name="rcnLinkOscillation">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="330" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_linkOscillation_$1" />
<eventprop name="componentID" value="PP8600 = $ip; portIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Link Oscillation detected" />
<eventprop name="description" value="LinkOscillation: portIndex = $1" />
<eventprop name="specificProblem" value="RC Link Oscillation" />
</PROPERTIES>
</VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.10.1.1.1" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.9" name="rcnMacViolation">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="331" />
<eventprop name="eventType" value="Info" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_MacViolation_$1" />
<eventprop name="componentID" value="PP8600 = $ip; portIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="RC Mac Violation" />
<eventprop name="description" value="RC Mac Violation: portIndex= $1(rcErrorText = $2)" />
<eventprop name="specificProblem" value="RC Mac violation" />
</PROPERTIES>
</VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.10.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.20.3" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.10" name="rcnSonetTrap">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="332" />
<eventprop name="eventType" value="Info" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_SonetTrap_$1" />
<eventprop name="componentID" value="PP8600 = $ip; portIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Sonet port status change" />
<eventprop name="description" value="Sonet Trap: portIndex = $1(TrapType = $2
TrapIndication = $3)" />
```



```
<eventprop name="specificProblem" value="Sonet port status change" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.10.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.26.5.1" property="$2" />
<varbind name=".1.3.6.1.4.1.2272.1.26.5.2" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.4" name="rcnStpNewRoot">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="333" />
<eventprop name="eventType" value="Info" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_StpNewRoot_$1" />
<eventprop name="componentID" value="PP8600 = $ip; stgId=$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Stp New Root" />
<eventprop name="description" value="Stp New Root: stgId = $1" />
<eventprop name="specificProblem" value="Stp New Root" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.13.4.1.1" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.5" name="rcnStpTopologyChange">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="334" />
<eventprop name="eventType" value="Info" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_StpTopoChange_$1" />
<eventprop name="componentID" value="PP8600 = $ip; stgId=$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Stp Topology change" />
<eventprop name="description" value="Stp Topology change: stgId= $1(portIndex = $2)" />
<eventprop name="specificProblem" value="Stp Topology change" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.13.4.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.10.1.1.1" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.16" name="rcnStpTCN">
<PROPERTIES>
<eventprop name="severity" value="3" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="335" />
<eventprop name="eventType" value="Info" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_StpTCN_$1" />
<eventprop name="componentID" value="PP8600 = $ip; portIndex =$1" />
<eventprop name="alarmClear" value="3" />
```

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 <eventprop name="probableCause" value="Stp TCN" />
 <eventprop name="description" value="Stp TCN: portIndex= $1(stgId= $2 BridgeAddress= $3)"
/>
 <eventprop name="specificProblem" value="Stp TCN" />
 </PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.4.10.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.13.4.1.1" property="$2" />
 <varbind name=".1.3.6.1.4.1.2272.1.13.4.1.4" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.15" name="rcn2kAtmPvcLinkStateChange">
<PROPERTIES>
 <eventprop name="severity" value="$4" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="336" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="environmental" />
 <eventprop name="entity" value="$ip_LinkState_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; rc2kAtmPvcIfIndex=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="PVC link status change" />
 <eventprop name="description" value="Atm Pvc Link State Change: AtmPvcIfIndex = $1(
AtmPvcVpi = $2 AtmPvcVci = $3 AtmPvcOamVcStatus = $4)" />
 <eventprop name="specificProblem" value="PVC link status change" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.100.9.3.1.1" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.100.9.3.1.2" property="$2" />
 <varbind name=".1.3.6.1.4.1.2272.1.100.9.3.1.3" property="$3" />
 <varbind name=".1.3.6.1.4.1.2272.1.100.9.3.1.18" property="$4" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.17" name="rcnSmlt1stLinkUp">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="337" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="unknown" />
 <eventprop name="entity" value="$ip_SplitLinkStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="" />
 <eventprop name="description" value="Split MLT link status up" />
 <eventprop name="specificProblem" value="Split MLT link status up" />
</PROPERTIES>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.18" name="rcnSmlt1stLinkDown">
<PROPERTIES>
 <eventprop name="severity" value="2" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="338" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="unknown" />

```

```
<eventprop name="entity" value="$ip_SplitLinkStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Split MLT Link Status Down" />
<eventprop name="description" value="Split MLT Link Status Down" />
<eventprop name="specificProblem" value="Split MLT Link Status Down" />
</PROPERTIES>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.19" name="rcnSmltLinkUp">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="339" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_rcnSmltLinkStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rcMltSmltId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Split SMLT link up" />
<eventprop name="description" value="Split SMLT link up: rcMltSmltId = $1" />
<eventprop name="specificProblem" value="Split SMLT Link status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.17.10.1.13" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.19" name="rcSmltLinkUp">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="339" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_rcSmltLinkStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rcMltSmltId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Split SMLT link up" />
<eventprop name="description" value="Split SMLT link up: rcMltSmltId = $1" />
<eventprop name="specificProblem" value="Split SMLT Link status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.17.10.1.13" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.20" name="rcnSmltLinkDown">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="340" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_rcnSmltLinkStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rcMltSmltId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Split SMLT Link down" />
```

```

<eventprop name="description" value="Split SMLT link down: rcMltSmltId = $1" />
<eventprop name="specificProblem" value="Split SMLT link status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.17.10.1.13" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.20" name="rcSmltLinkDown">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="340" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_rcSmltLinkStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rcMltSmltId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Split SMLT link down" />
<eventprop name="description" value="Split SMLT link down: rcMltSmltId = $1" />
<eventprop name="specificProblem" value="Split SMLT Link status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.17.10.1.13" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.22" name="rcnPasswordChange">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="341" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="security" />
<eventprop name="entity" value="$ip_CLIPasswordChanged" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="CLI password changed" />
<eventprop name="description" value="CLI password changed (PasswordChange = $1
PassChangeResult = $2)" />
<eventprop name="specificProblem" value="CLI password has been changed" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.19.17" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.19.18" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.25" name="rcnPcmciaCardRemoved">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="342" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_PCMCIARemoved" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />

```

```
<eventprop name="probableCause" value="PCMCIA card is being removed." />
<eventprop name="description" value="PCMCIA card is being removed." />
<eventprop name="specificProblem" value="PCMCIA card removed." />
</PROPERTIES>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.26" name="rcnSmartCpldTimerFired">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="343" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_cpldTimerFired_$1" />
<eventprop name="componentID" value="PP8600 = $ip; CardIndex=$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="cpld timer fired" />
<eventprop name="description" value="cpld timer fired: CardIndex = $1" />
<eventprop name="specificProblem" value="cpld timer fired" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.100.6.1.1" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.27" name="rcnCardCpldNotUpDate">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="344" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_alarmStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; CardIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="cpld is not up to date" />
<eventprop name="description" value="cpld is not up to date: CardIndex = $1" />
<eventprop name="specificProblem" value="cpld not up to date" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.100.6.1.1" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.28" name="rcnlgapLogFileFull">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="345" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="processing" />
<eventprop name="entity" value="$ip_lgapLogFileFull" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="lgap Log file full" />
<eventprop name="description" value="lgap accounting timeout Log File reach the maximum." />
<eventprop name="specificProblem" value="lgap Log file full" />
```

```
</PROPERTIES>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.29" name="rcnCpLimitShutDown">
<PROPERTIES>
 <eventprop name="severity" value="2" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="346" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_CPLimitShutDown_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; PortIndex=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="cp limit for the port is shutting down" />
 <eventprop name="description" value="Cp limit for port is shutting down: PortIndex= $1(
AdminStatus = $2 OperStatus = $3 CpLimitShutDown = $4)" />
 <eventprop name="specificProblem" value="cp limit for the port is shutting down" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.4.10.1.1" property="$1" />
 <varbind name=".1.3.6.1.2.1.2.2.1.7" property="$2" />
 <varbind name=".1.3.6.1.2.1.2.2.1.8" property="$3" />
 <varbind name=".1.3.6.1.4.1.2272.1.4.10.1.1.50" property="$4" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.30" name="rcnSshServerEnabled">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="347" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="communications" />
 <eventprop name="entity" value="$ip_SshServerStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; SshGlobalPort=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="SSH server is enabled" />
 <eventprop name="description" value="SSH server is enabled: SshGlobalPort = $1" />
 <eventprop name="specificProblem" value="SSH server enabled" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.34.1.2" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.31" name="rcnSshServerDisabled">
<PROPERTIES>
 <eventprop name="severity" value="2" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="348" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="communications" />
 <eventprop name="entity" value="$ip_SshServerStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; SshGlobalPort=$1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="SSH server is disabled" />
 <eventprop name="description" value="SSH server is disabled: SshGlobalPort = $1" />
 <eventprop name="specificProblem" value="SSH server disabled" />
</PROPERTIES>
```



```
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.34.1.2" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.32" name="rcnSshSessionLogin">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="349" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_SshSessionStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; SshGlobalHostIpAddr =$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="SSH Session login" />
<eventprop name="description" value="SSH session login occurred: SshGlobalHostIpAddr = $1"
/>
<eventprop name="specificProblem" value="SSH Session login" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.34.1.12" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.33" name="rcnSshSessionLogout">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="350" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_SshSessionStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; SshGlobalHostIpAddr =$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="SSH session logout" />
<eventprop name="description" value="SSH session logout occurred: SshGlobalHostIpAddr =
$1" />
<eventprop name="specificProblem" value="SSH session logout" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.34.1.12" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.34" name="rcnSshUnauthorizedAccess">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="351" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="security" />
<eventprop name="entity" value="$ip_SshUnauthorizedAccess_$1" />
<eventprop name="componentID" value="PP8600 = $ip; SshGlobalHostIpAddr =$1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Unauthorized access" />
```

```

<eventprop name="description" value="Unauthorized access occurred: SshGlobalHostIpAddr =
$1" />
<eventprop name="specificProblem" value="Unauthorized access" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.34.1.12" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.35" name="rcnHaCpuState">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="352" />
<eventprop name="eventType" value="Info" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_HaCpuState_$1" />
<eventprop name="componentID" value="PP8600 = $ip; CardIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="State of the HACPU" />
<eventprop name="description" value="State of the HACPU: CardIndex = $1 (HaCpuState =
$2)" />
<eventprop name="specificProblem" value="State of the HACPU" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.100.6.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.32.1" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.36" name="rcnInsufficientMemory">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="353" />
<eventprop name="eventType" value="Info" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="environmental" />
<eventprop name="entity" value="$ip_InsufficientMemory_$1" />
<eventprop name="componentID" value="PP8600 = $ip; CardIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Insufficient memory on CPU blade for proper
operation" />
<eventprop name="description" value="Insufficient memory: CardIndex = $1" />
<eventprop name="specificProblem" value="Insufficient memory on CPU" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.100.6.1.1" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.37" name="rcnSaveConfigAction">
<PROPERTIES>
<eventprop name="severity" value="6" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="354" />
<eventprop name="eventType" value="Info" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="processing" />
<eventprop name="entity" value="$ip_SaveConfig" />

```



```

<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Switch run time or boot configuration is saved" />
<eventprop name="description" value="Switch configuration saved: SysAction = $1" />
<eventprop name="specificProblem" value="Switch configuration saved" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.1.8" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.38" name="rcnLoopDetectOnPort">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="355" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_LoopOnPort_$1" />
<eventprop name="componentID" value="PP8600 = $ip; PortIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Loop detected on port. The vlan on that port will be
disabled" />
<eventprop name="description" value="Loop detected on port: PortIndex = $1 (rcVlanId = $2)"
/>
<eventprop name="specificProblem" value="Loop detected on port." />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.10.1.1.1" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.46.1.3.0.3.0" name="vrrpTrapStateTransition">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="356" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_TrpStateTransition_$1" />
<eventprop name="componentID" value="PP8600 = $ip; ifIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="State transition has occurred on vrrp interface" />
<eventprop name="description" value="State Transition: ifIndex = $1 (TransitionType = $2
TransitionCause = $3)" />
<eventprop name="specificProblem" value="Trap state transition" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.2.2.1.1" property="$1" />
<varbind name=".1.3.6.1.2.1.46.1.1.14" property="$2" />
<varbind name=".1.3.6.1.2.1.46.1.1.15" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.23" name="rcnEmError">
<PROPERTIES>
<eventprop name="severity" value="4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="357" />

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<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_EmError_$1" />
<eventprop name="componentID" value="PP8600 = $ip; CardIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Em error detected" />
<eventprop name="description" value="Em error: CardIndex = $1 (Em Error = $2)" />
<eventprop name="specificProblem" value="Em error detected" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.100.6.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.23" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.14.16.2.1" name="ospfVirtIfStateChange">
<PROPERTIES>
<eventprop name="severity" value="$4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="358" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="environmental" />
<eventprop name="entity" value="$ip_IfStateChange_$1" />
<eventprop name="componentID" value="PP8600 = $ip; ospfRouterId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="OSPF virtual interface state change" />
<eventprop name="description" value="OSPF virtual interface state change: ospfRouterId = $1
(Areald = $2 Neighbor = $3 State = $4)" />
<eventprop name="specificProblem" value="OSPF virtual interface state change" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.14.1.1" property="$1" />
<varbind name=".1.3.6.1.2.1.14.9.1.1" property="$2" />
<varbind name=".1.3.6.1.2.1.14.9.1.2" property="$3" />
<varbind name=".1.3.6.1.2.1.14.9.1.10" property="$4" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.14.16.2.2" name="ospfNbrStateChange">
<PROPERTIES>
<eventprop name="severity" value="$5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="359" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_NbrStateChange_$1_$4" />
<eventprop name="componentID" value="PP8600 = $ip; ospfRouterId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Nonvirtual OSPF neighbor state change" />
<eventprop name="description" value="Nonvirtual OSPF neighbor state change: ospfRouterId
= $1 (NbrIpAddr = $2)" />
<eventprop name="specificProblem" value="Nonvirtual OSPF neighbor state change" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.14.1.1" property="$1" />
<varbind name=".1.3.6.1.2.1.14.10.1.1" property="$2" />
</VARBINDS>

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</TRAP>
<TRAP oid=".1.3.6.1.2.1.14.16.2.3" name="ospfVirtNbrStateChange">
<PROPERTIES>
 <eventprop name="severity" value="$4" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="360" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="environmental" />
 <eventprop name="entity" value="$ip_VirtNbrStateChange_$1_$3" />
 <eventprop name="componentID" value="PP8600 = $ip; ospfRouterId = $1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Virtual OSPF neighbor state change" />
 <eventprop name="description" value="Virtual OSPF neighbor state change: ospfRouterId = $1
(VirtNbrArea = $2 VirtNbrState = $3)" />
 <eventprop name="specificProblem" value="Virtual OSPF neighbor state change" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.2.1.14.1.1" property="$1" />
 <varbind name=".1.3.6.1.2.1.14.11.1.1" property="$2" />
 <varbind name=".1.3.6.1.2.1.14.11.1.5" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.14.16.2.4" name="ospfIfConfigError">
<PROPERTIES>
 <eventprop name="severity" value="2" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="361" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_IfConfigError" />
 <eventprop name="componentID" value="PP8600 = $ip; ospfRouterId = $1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Configuration error" />
 <eventprop name="description" value="IfConfig Error: ospfRouterId = $1 (IpAddress = $2)" />
 <eventprop name="specificProblem" value="configuration error" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.2.1.14.1.1" property="$1" />
 <varbind name=".1.3.6.1.2.1.14.7.1.1" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.14.16.2.5" name="ospfVirtIfConfigError">
<PROPERTIES>
 <eventprop name="severity" value="2" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="362" />
 <eventprop name="eventType" value="TBL" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_VirtIfConfigError_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; ospfRouterId = $1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="" />
 <eventprop name="description" value="ospfVirtIfConfigError: ospfRouterId = $1 (AreaId = $2
Neighbor = $3 ErrorType = $4)" />
 <eventprop name="specificProblem" value="" />

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</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.14.1.1" property="$1" />
<varbind name=".1.3.6.1.2.1.14.9.1.1" property="$2" />
<varbind name=".1.3.6.1.2.1.14.9.1.2" property="$3" />
<varbind name=".1.3.6.1.2.1.14.16.1.2" property="$4" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.14.16.2.6" name="ospfIfAuthFailure">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="363" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="security" />
<eventprop name="entity" value="$ip_IfAuthFailure_$1" />
<eventprop name="componentID" value="PP8600 = $ip; ospfRouterId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="ospf If authentication failure" />
<eventprop name="description" value="ospf If authentication failure: ospfRouterId = $1
(ConfigErrorType = $2)" />
<eventprop name="specificProblem" value="ospf If authentication failure" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.14.1.1" property="$1" />
<varbind name=".1.3.6.1.2.1.14.16.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.14.16.2.7" name="ospfVirtIfAuthFailure">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="364" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="security" />
<eventprop name="entity" value="$ip_VirtIfAuthFailure_$1" />
<eventprop name="componentID" value="PP8600 = $ip; ospfRouterId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="ospf virtual interface authentication failure" />
<eventprop name="description" value="ospfVirtIfAuthFailure: ospfRouterId = $1 (ArealId = $2
Neighbor = $3 ErrorType = $4)" />
<eventprop name="specificProblem" value="" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.14.1.1" property="$1" />
<varbind name=".1.3.6.1.2.1.14.9.1.1" property="$2" />
<varbind name=".1.3.6.1.2.1.14.9.1.2" property="$3" />
<varbind name=".1.3.6.1.2.1.14.16.1.2" property="$4" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.14.16.2.16" name="ospfIfStateChange">
<PROPERTIES>
<eventprop name="severity" value="$4" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="365" />
<eventprop name="eventType" value="TBL" />

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<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_ifStateChange_$1_$2" />
<eventprop name="componentID" value="PP8600 = $ip; ospfRouterId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Nonvirtual OSPF interface state change" />
<eventprop name="description" value="Nonvirtual OSPF interface state change: ospfRouterId
= $1 (IpAddress = $2 State = $3)" />
<eventprop name="specificProblem" value="Nonvirtual OSPF interface state change" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.14.1.1" property="$1" />
<varbind name=".1.3.6.1.2.1.14.7.1.1" property="$2" />
<varbind name=".1.3.6.1.2.1.14.7.1.12" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.1" name="rcnCardDown">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="366" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_rcnCardStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rcCardIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="RC Card status down" />
<eventprop name="description" value="RC card status down: CardIndex = $1 (AdminStatus =
$2 OperStatus = $3)" />
<eventprop name="specificProblem" value="RC Card status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.5" property="$2" />
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.6" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.1" name="rcCardDown">
<PROPERTIES>
<eventprop name="severity" value="2" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="366" />
<eventprop name="eventType" value="TBL" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="equipment" />
<eventprop name="entity" value="$ip_rcCardStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rcCardIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="RC Card Status down." />
<eventprop name="description" value="RC card status down: CardIndex = $1 (AdminStatus =
$2 OperStatus = $3)" />
<eventprop name="specificProblem" value="RC Card Status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.1" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.5" property="$2" />
<varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.6" property="$3" />

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</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.2" name="rcnCardUp">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="367" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_rcnCardStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; rcCardIndex = $1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="RC card status up" />
 <eventprop name="description" value="RC card status up: CardIndex = $1 (AdminStatus = $2
OperStatus = $3)" />
 <eventprop name="specificProblem" value="RC Card Status" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.5" property="$2" />
 <varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.6" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.2" name="rcCardUp">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="367" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="equipment" />
 <eventprop name="entity" value="$ip_rcCardStatus_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; rcCardIndex = $1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="RC card status up" />
 <eventprop name="description" value="RC card status up: CardIndex = $1 (AdminStatus = $2
OperStatus = $3)" />
 <eventprop name="specificProblem" value="RC Card Status" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.5" property="$2" />
 <varbind name=".1.3.6.1.4.1.2272.1.4.9.1.1.6" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.39" name="rcnbgpEstablished">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="368" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="communications" />
 <eventprop name="entity" value="$ip_bgpEstablished" />
 <eventprop name="componentID" value="PP8600 = $ip" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="BGP FSM entered the ESTABLISHED state" />
```



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<eventprop name="description" value="BGP FSM entered the ESTABLISHED state
(PeerLastError = $1 PeerState = $2)" />
<eventprop name="specificProblem" value="BGP FSM entered the ESTABLISHED state" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.15.3.1.14" property="$1" />
<varbind name=".1.3.6.1.2.1.15.3.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.40" name="rcnbgpBackwardTransition">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="369" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_bgpBackwardTransition_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rcIpBgpPeerIpAddress = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="BGP FSM backward transition" />
<eventprop name="description" value="BGP FSM backward transition: PeerIpAddress = $1
(PeerLastError = $2 PeerState = $3)" />
<eventprop name="specificProblem" value="BGP FSM backward transition" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.8.101.9.1.2" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.8.101.9.1.26" property="$2" />
<varbind name=".1.3.6.1.4.1.2272.1.8.101.9.1.25" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.41" name="rcnAggLinkUp">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="370" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_AggLinkStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rcMltId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Aggregator up" />
<eventprop name="description" value="Aggregator up: rcMltId = $1" />
<eventprop name="specificProblem" value="Aggregator status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.17.10.1.1" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.42" name="rcnAggLinkDown">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="371" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
```

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<eventprop name="entity" value="$ip_AggLinkStatus_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rcMltId = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Aggregator Down" />
<eventprop name="description" value="Aggregator Down: rcMltId = $1" />
<eventprop name="specificProblem" value="Aggregator status" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.17.10.1.1" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.43" name="rcnlgmpNewGroupMember">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="372" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_GroupMember_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rclgmpGroupIfIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="New Group member in interface" />
<eventprop name="description" value="New Group member in interface: rclgmpGroupIfIndex =
$1 (GroupIpAddress = $2 Port = $3 Members $4)" />
<eventprop name="specificProblem" value="New Group member in interface" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.8.6.1.5" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.8.6.1.1" property="$2" />
<varbind name=".1.3.6.1.4.1.2272.1.8.6.1.3" property="$3" />
<varbind name=".1.3.6.1.4.1.2272.1.8.6.1.2" property="$4" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.44" name="rcnlgmpLossGroupMember">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="373" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_GroupMember_$1" />
<eventprop name="componentID" value="PP8600 = $ip; rclgmpGroupIfIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Group member lost on interface" />
<eventprop name="description" value="Group member lost on interface: rclgmpGroupIfIndex =
$1 (GroupIpAddress = $2 Port = $3 Members $4)" />
<eventprop name="specificProblem" value="Group member lost on interface" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.8.6.1.5" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.8.6.1.1" property="$2" />
<varbind name=".1.3.6.1.4.1.2272.1.8.6.1.3" property="$3" />
<varbind name=".1.3.6.1.4.1.2272.1.8.6.1.2" property="$4" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.45" name="rcnlgmpNewQuerier">
```



```

<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="374" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="communications" />
 <eventprop name="entity" value="$ip_Querier_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; igmpInterfaceIndex = $1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="New Querier in interface" />
 <eventprop name="description" value="New Querier in interface: igmpInterfaceIndex = $1
(igmpInterfaceQuerier = $2)" />
 <eventprop name="specificProblem" value="New Querier in interface" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.3.59.1.1.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.3.59.1.1.1.1.5" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.46" name="rcnIgmpQuerierChange">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="375" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="communications" />
 <eventprop name="entity" value="$ip_QuerierChange_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; igmpInterfaceIndex = $1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Querier changed" />
 <eventprop name="description" value="Querier changed: igmpInterfaceIndex = $1 (
NewQuerier = $2 igmpInterfaceQuerier = $3)" />
 <eventprop name="specificProblem" value="Querier changed" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.3.59.1.1.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.30.1.1.25" property="$2" />
 <varbind name=".1.3.6.1.3.59.1.1.1.1.5" property="$3" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.47" name="rcnDvmrplfStateChange">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="376" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="communications" />
 <eventprop name="entity" value="$ip_DvmrpStateChange_$1" />
 <eventprop name="componentID" value="PP8600 = $ip; dvmrpInterfaceIndex = $1" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="DVMRP interface state change" />
 <eventprop name="description" value="DVMRP interface state change: dvmrpInterfaceIndex
= $1 (OperState = $2)" />
 <eventprop name="specificProblem" value="DVMRP interface state change" />
</PROPERTIES>

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<VARBINDS>
<varbind name=".1.3.6.1.3.62.1.1.3.1.1" property="$1" />
<varbind name=".1.3.6.1.3.62.1.1.3.1.3" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.48" name="rcnDvmrpNewNbrChange">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="377" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_NbrChange_$1" />
<eventprop name="componentID" value="PP8600 = $ip; dvmrpNeighborIfIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="New neighbor is up on DVMRP interface" />
<eventprop name="description" value="New neighbor is up on DVMRP interface:
dvmrpNeighborIfIndex = $1 (NeighborAddress = $2)" />
<eventprop name="specificProblem" value="New neighbor is up on DVMRP interface" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.3.62.1.1.4.1.1" property="$1" />
<varbind name=".1.3.6.1.3.62.1.1.4.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.49" name="rcnDvmrpNbrLossChange">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="378" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_NbrChange_$1" />
<eventprop name="componentID" value="PP8600 = $ip; dvmrpNeighborIfIndex = $1" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Neighbor gone down on DVMRP interface" />
<eventprop name="description" value="Neighbor gone down on DVMRP interface:
dvmrpNeighborIfIndex = $1 (NeighborAddress = $2)" />
<eventprop name="specificProblem" value="Neighbor gone down on DVMRP interface" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.3.62.1.1.4.1.1" property="$1" />
<varbind name=".1.3.6.1.3.62.1.1.4.1.2" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.59" name="rcnFdbProtectViolation">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="379" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_FdbProtect_$1_$2" />
<eventprop name="componentID" value="PP8600 = $ip; PortIndex = $1" />
<eventprop name="alarmClear" value="3" />
```

```

 <eventprop name="probableCause" value="fdbentries limit violation" />
 <eventprop name="description" value="fdbentries limit violation: PortIndex = $1 (VlanId = $2)"
/>
 <eventprop name="specificProblem" value="fdbentries limit violation" />
 </PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.4.10.1.1.1" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.3.2.1.1" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.60" name="rcnLogMsgControl">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="380" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="communications" />
 <eventprop name="entity" value="$ip_Log" />
 <eventprop name="componentID" value="PP8600 = $ip" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Log Message control trap" />
 <eventprop name="description" value="rcnLogMsgControl: SysMsgLogFrequency = $1
(SysMsgLogText = $2)" />
 <eventprop name="specificProblem" value="Log Message control trap" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.1.66" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.1.67" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.61" name="rcnSaveConfigFile">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="381" />
 <eventprop name="eventType" value="Clear" />
 <eventprop name="eventLabel" value="PP Fault" />
 <eventprop name="category" value="communications" />
 <eventprop name="entity" value="$ip_SaveConfig" />
 <eventprop name="componentID" value="PP8600 = $ip" />
 <eventprop name="alarmClear" value="3" />
 <eventprop name="probableCause" value="Run time / boot config saved on switch" />
 <eventprop name="description" value="Config saved on switch: SysAction = $1
(SysConfigFileName = $2)" />
 <eventprop name="specificProblem" value="Run time / boot config saved on switch" />
</PROPERTIES>
<VARBINDS>
 <varbind name=".1.3.6.1.4.1.2272.1.1.8" property="$1" />
 <varbind name=".1.3.6.1.4.1.2272.1.1.34" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.2272.1.21.0.62" name="rcnDNSRequestResponse">
<PROPERTIES>
 <eventprop name="severity" value="5" />
 <eventprop name="logName" value="PP" />
 <eventprop name="logNumber" value="382" />
 <eventprop name="eventType" value="Clear" />

```

```

<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_DNSResponse" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Request/Response from DNS server" />
<eventprop name="description" value="Request sent to or response got from DNS server:
DnsServerListIpAddr = $1 (DnsRequestType = $2)" />
<eventprop name="specificProblem" value="Request/Response from DNS server" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.4.1.2272.1.1.71" property="$1" />
<varbind name=".1.3.6.1.4.1.2272.1.1.72" property="$2" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.80.0.1.0" name="pingProbeFailed">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="383" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_ProbeFailed" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Probe failure is detected" />
<eventprop name="description" value="Probe failure is detected: (ping TargetAddress = $1)" />
<eventprop name="specificProblem" value="Probe failure is detected" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.80.1.2.1.4" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.80.0.2.0" name="pingTestFailed">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="384" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_pingTestFail" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Ping test failed" />
<eventprop name="description" value="Ping test failed: (ping TargetAddress = $1)" />
<eventprop name="specificProblem" value="Ping test failed" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.80.1.2.1.4" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.80.0.3.0" name="pingTestCompleted">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="385" />

```

```

<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_pingTestComp" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Ping test completed" />
<eventprop name="description" value="Ping test completed: (ping TargetAddress = $1" />
<eventprop name="specificProblem" value="Ping test completed." />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.80.1.2.1.4" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.81.0.1.0" name="traceRoutePathChange">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="386" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_traceRouteChange" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="The path to a target has changed" />
<eventprop name="description" value="The path to a target has changed: (TargetAddress = $1)" />
<eventprop name="specificProblem" value="The path to a target has changed" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.81.1.2.1.4" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.81.0.2.0" name="traceRouteTestFailed">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="387" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_RouteTestFail" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="Could not determine the path to a target" />
<eventprop name="description" value="Could not determine the path to a target: (TargetAddress = $1)" />
<eventprop name="specificProblem" value="Could not determine the path to a target" />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.81.1.2.1.4" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.2.1.81.0.3.0" name="traceRouteTestCompleted">
<PROPERTIES>
<eventprop name="severity" value="5" />
<eventprop name="logName" value="PP" />

```

```

<eventprop name="logNumber" value="388" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="communications" />
<eventprop name="entity" value="$ip_RouteTestComplete" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="The path to a target has just been determined." />
<eventprop name="description" value="The path to a target has just been determined:
(TargetAddress = $1)" />
<eventprop name="specificProblem" value="The path to a target has just been determined." />
</PROPERTIES>
<VARBINDS>
<varbind name=".1.3.6.1.2.1.81.1.2.1.4" property="$1" />
</VARBINDS>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.562.42.5.1.3.2.2" name="UDPEapSessionEndTrap">
<PROPERTIES>
<eventprop name="severity" value="6" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="389" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_UDPEapSessionEnd" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="" />
<eventprop name="description" value="UDPEapSession end trap" />
<eventprop name="specificProblem" value="" />
</PROPERTIES>
</TRAP>
<TRAP oid=".1.3.6.1.4.1.562.42.5.1.3.2.1" name="UDPEapSessionStartTrap">
<PROPERTIES>
<eventprop name="severity" value="6" />
<eventprop name="logName" value="PP" />
<eventprop name="logNumber" value="390" />
<eventprop name="eventType" value="Clear" />
<eventprop name="eventLabel" value="PP Fault" />
<eventprop name="category" value="unknown" />
<eventprop name="entity" value="$ip_UDPEapSessionSart" />
<eventprop name="componentID" value="PP8600 = $ip" />
<eventprop name="alarmClear" value="3" />
<eventprop name="probableCause" value="" />
<eventprop name="description" value="UDPEapSession start trap" />
<eventprop name="specificProblem" value="" />
</PROPERTIES>
</TRAP>
</TRAPS>

```

## Ethernet Routing Switch 8600 Trap Raise-Clear Mapping

|    | <b>Raise Alarm</b>                                        | <b>Clear Alarm</b>                                    |
|----|-----------------------------------------------------------|-------------------------------------------------------|
| 1  | RisingAlarm(PP310)                                        | FallingAlarm(PP311)                                   |
| 2  | LinkDown (PP317)                                          | LinkUp(PP318)                                         |
| 3  | RcnChasPowerSupplyDown /<br>RcChasPowerSupplyDown (PP322) | RcnChasPowerSupplyUp /<br>RcChasPowerSupplyUp (PP323) |
| 4  | RcnChasFanDown / RcChasFanDown<br>(PP324)                 | RncChasFanUp / RnChasFanUp<br>(PP325)                 |
| 5  | Rcn2kCardDown / Rc2kCardDown<br>(PP326)                   | Rcn2kCardUp / Rc2kCardUp<br>(PP327)                   |
| 6  | RcnSmltIstLinkDown(PP338)                                 | RcnSmltIstLinkUp(PP337)                               |
| 7  | RcnSmltLinkDown /<br>RcSmltLinkDown (PP340)               | RcnSmltLinkUp / RcSmltLinkUp<br>(PP339)               |
| 8  | RcnSshServerDisabled(PP348)                               | RcnSshServerEnabled(PP347)                            |
| 9  | RcnSshSessionLogout(PP350)                                | RcnSshSessionLogin(PP349)                             |
| 10 | RcnCardDown / RcCardDown (PP366)                          | RcnCardUp / RcCardUp (PP367)                          |



## Appendix G: SNMP-based PM Poller

### Performance Monitoring Poller data collection output

The SNMP-based PM poller collects performance attributes from several network elements (i.e., UAS, GWC, SSPFS platform). The data collected by the PM device pollers is output in CSV files to the '/ data/oms' file output directory. The oms directory contains seven sub- directories (named 1- 7). Each of these sub-directories contains a day's collection of CSV output files (i.e., one sub-directory each for the seven-day history the poller maintains). The current day's output files are always written to subdirectory '1'. File rotation occurs just prior to midnight every 24-hour period. When file rotation occurs, the files in sub-directory '7' are removed and contents of all subsequent sub-directories are moved up the directory chain (i.e., files in directory 6 are moved to directory 7, 5 to 6, etc.).

A separate file is created for each device during each profile polling interval. When creating the CSV files the poller adheres to the following naming conventions:

<NodeType>.<NodeName>.OMs.<Report  
Name>.Year.Mon.Date\_HR.MN\_<TZ>.csv

where:

NodeType -> Node type (i.e, GWC, UAS, etc....)

NodeName -> A unique node name.

Report Name -> For the SSPFS poller this will correlate to the associated profile name.

TZ -> timezone (i.e., cst or cdt)

An example file name is provided below:

GWC.GWC-10\_UNIT\_1.OMs.GWC.2002.05.02\_10.52\_EDT.csv

### Viewing CSV files

The CSV files can be viewed locally on the SSPFS platform by using a standard text editor. Alternately the SSPFS platform is configured with a snmp-poller ftp userid. A craftperson can utilize ftp to retrieve the CSV output data files for further analysis. When the snmp-poller ftp userid is used to ftp into the SSPFS server, the home directory for this account is the file oms output directory. For security reasons the snmp-poller ftp user only has access to the output directory and its sub-directories. Sample output files from the MIB-2 profile is provided in the following table:

Note: A device can reside in more than one profile.

Note: Keep in mind, however, that the CSV file format is not intended to be a user-friendly format for viewing the output in a standard text editor. Typically these files would be parsed by an editor that can format CSV files in a legible manner, or they would be parsed by a machine interface.



Note: The 'poller' ftp userid should be used to retrieve the PM poller output files. Contact your network administrator to obtain the associated password.

| Sample CSV output file for profile MIB-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>\$cat GWC.GWC6.OMs.MIB-2.2002.05.24_16.06_EDT //MIB-2 - .iso.org.dod.internet.mgmt.mib-2.host.hrSystem SCALAR_GROUP_BEGIN-hrSystemUptime,hrSystemDate,hrSystemPro- cesses,1:2:18:51.85,"2002-5-24,20:7:42.0,+0:0",155 SCALAR_GROUP_END //MIB-2 - .iso.org.dod.internet.mgmt.mib-2.snmp SCALAR_GROUP_BEGIN-snmpInPkts,snmpOutPkts,snmpInBadVer- sions,snmpInBadCommunityNames,snmpInBadCommunityUses,snmpInA SNParseErrs,snmpInTotalReqVars,snmpInTotalSetVars,snmpOut- Traps,snmpSilentDrops,27608,27614,0,0,0,0,103010,772,7,80 SCALAR_GROUP_END //MIB-2 - .iso.org.dod.internet.mgmt.mib-2.system SCALAR_GROUP_BEGIN-sysDescr,"Nortel GateWay Controller GWC; MCPN750 128MB AA01 AA01 0001af02da30; PGC08AP (VRTXsa 3303, SNMP Research Agent 15.2.1.7)" SCALAR_GROUP_END //MIB-2 - .iso.org.dod.internet.mgmt.mib-2.host.hrDevice.hrProcessorT- able. hrProcessorEntry TABLE_BEGIN-hrProcessorLoad 1 TABLE_END //MIB-2 - .iso.org.dod.internet.mgmt.mib-2.host.hrStorage.hrStorageTable. hrStorageEntry TABLE_BEGIN-hrStorageIndex,hrStorageType,hrStorageAllocation- Units,hrStorageSize,hrStorageUsed,hrStorageAllocationFailures 1,host.hrStorage.hrStorageTypes.hrStorageRam,66 Bytes,1023,13,0 2,host.hrStorage.hrStorageTypes.hrStorageRam,1532 Bytes,400,0,0 3,host.hrStorage.hrStorageTypes.hrStorageRam,1536 Bytes,1024,49,0 4,host.hrStorage.hrStorageTypes.hrStorageRam,52 Bytes,512,321,0 5,host.hrStorage.hrStorageTypes.hrStorageRam,1 Bytes,11912704,184672,0 6,host.hrStorage.hrStorageTypes.hrStorageRam,1 Bytes,2097152,1577296,0 TABLE_END</pre> |

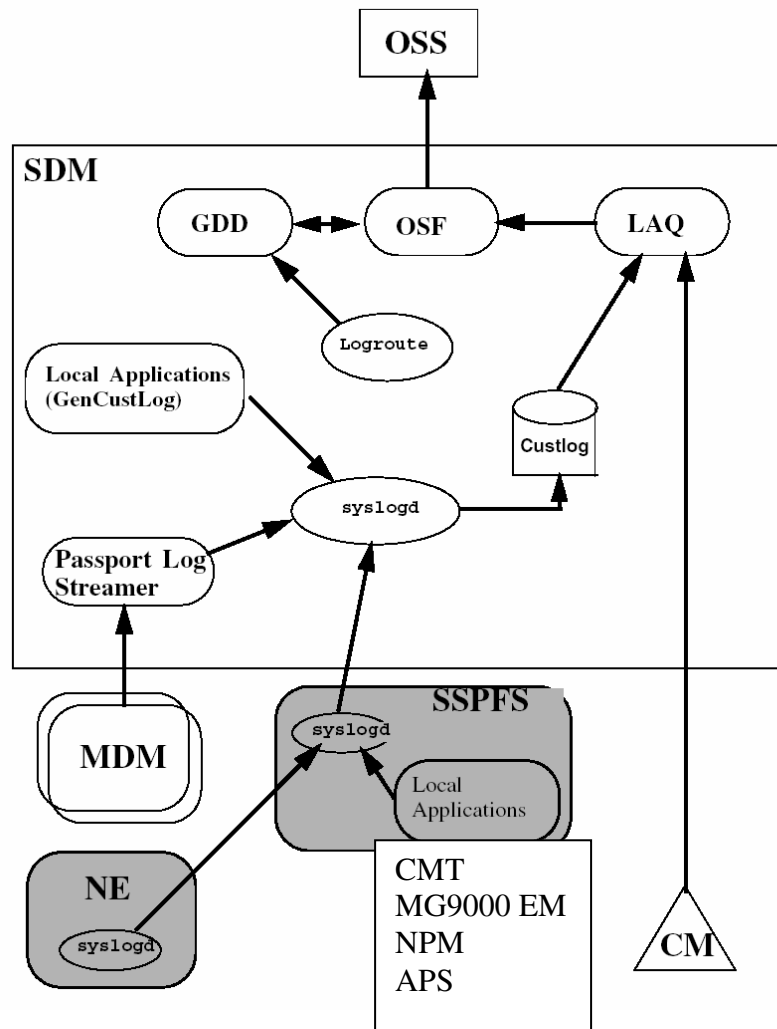
The following table shows sample output files from the GWC profile.

### Sample CSV output file for profile GWC

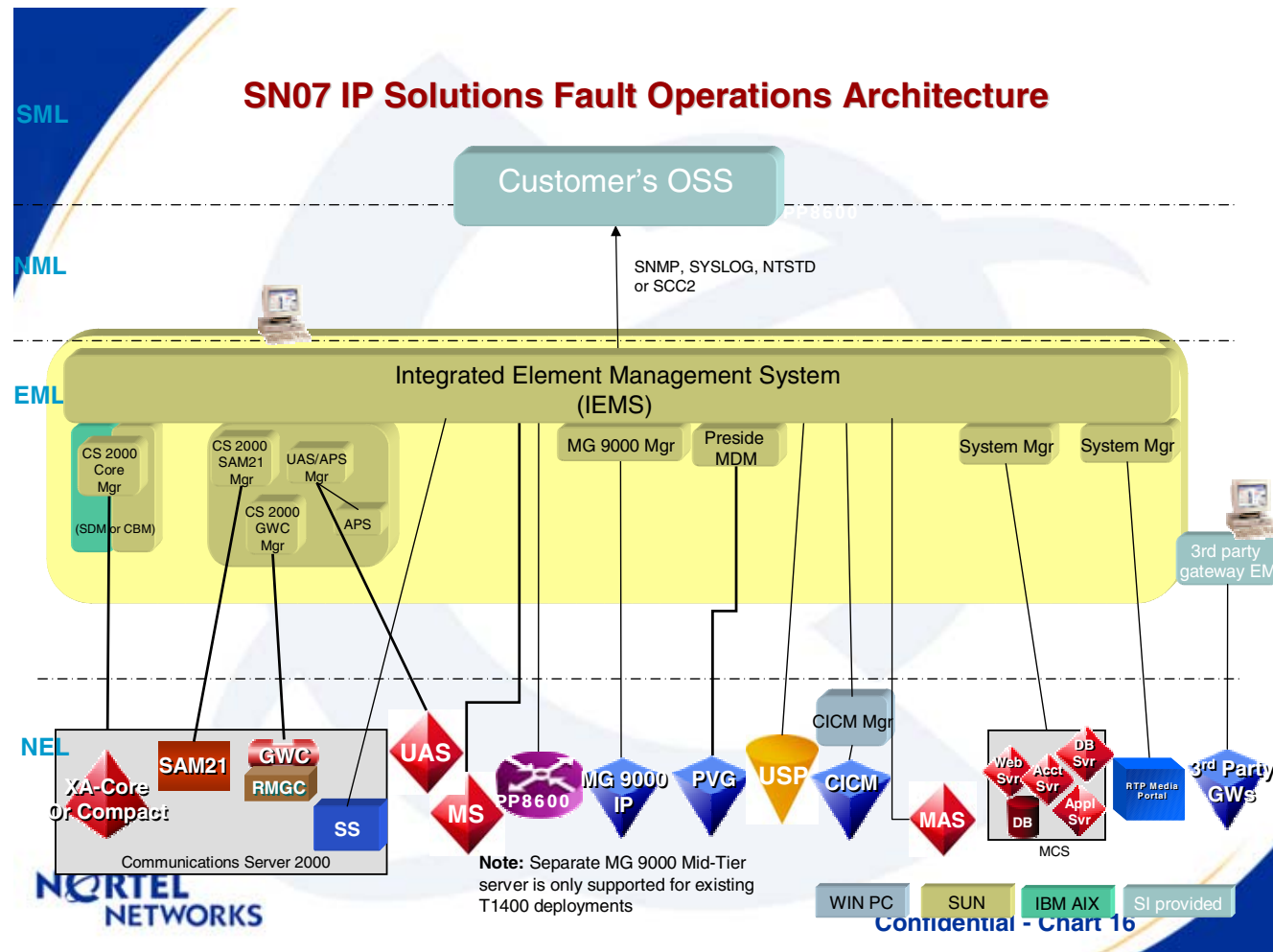
```
//GWC - .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service-
Control.
legacyCallServer.lcsGateWayController.apgMeasurements
SCALAR_GROUP_BEGIN-accState,apgInsertions,maxSimulApg-
Calls,apgCallFailGWException,apgCallFailGWLost,
active,0,0,0,0
SCALAR_GROUP_END
//GWC - .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service-
Control.
legacyCallServer.lcsGateWayController.dptMeasurements
SCALAR_GROUP_BEGIN-dptCallAttempts,dptCallFailResTimeout,dpt-
CallFailResError,dptCallFailAccOOS,
10,0,0,0,0
SCALAR_GROUP_END
//GWC - .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service-
Control.
legacyCallServer.lcsGateWayController.gwcUnitStatusMIB.gwcUnitOb-
jects.gwcUnitStatus
SCALAR_GROUP_BEGIN-norUnitAdminStatus,norUnitOperSta-
tus,norUnitActivity,
unlocked,enabled,active
SCALAR_GROUP_END
//GWC - .iso.org.dod.internet.private.enterprises.nortel.voip.ptn.service-
Control.
legacyCallServer.lcsGateWayController.raMeasurements
SCALAR_GROUP_BEGIN-raState,totalResourceCapacity,resourceRe-
questError,inactive,0,0
SCALAR_GROUP_END
```

## Appendix H: IEMS Fault Transparency with SDM/CBM

Prior to IEMS, which had its first Generally Available release in SN07, Succession supported sending faults and events from network elements via Syslog to the SDM/CBM. This feature, SYSLOG Consolidation for Succession, then allows the SDM/CBM to convert these logs to SCC2 or NTSTD to forward to the OSS. See the Figure below.



The fault feeds, delivered via IEMS supports SCC2 & NTSTD to the OSS, as did SDM/CBM. The implementation with IEMS used a more robust interfaces between the NE/EMS to IEMS and thus on a NE by NE basis there may be changes in the SCC2 log feed versus the SDM/CBM implementation. To understand fault diagram with IEMS see the diagram below.



This document is updated as new or changed information with respect to SDM/CBM and IEMS log transparency is learned. To understand the differences between the IEMS implementation and the SDM implementation see the tables below.

## On NT STD and SCC2 Log Format Delimiters (SDM/CBM or IEMS to Fault OSS)

Table 1- ASCII Character Legend

| ASCII Character Legend |             |         |                   |
|------------------------|-------------|---------|-------------------|
| Character Name         | Hexidecimal | Decimal | Control Character |
| Line Feed:             | 0A          | 10      | ^J                |
| Carriage Return:       | 0D          | 13      | ^M                |
| End of Message:        | 19          | 25      | ^Y                |
| Null:                  | 00          | 00      | ^@                |
| Space:                 | 20          | 32      | space             |

Table 2 - STD and SCC2 Log Delimiter Comparison between SDM/CBM and IEMS

| STD and SCC2 Log Delimiter Comparison Between SDM/CBM and IEMS |                                                                             |               |               |                |
|----------------------------------------------------------------|-----------------------------------------------------------------------------|---------------|---------------|----------------|
| Last Updated:                                                  |                                                                             | May. 23, 2005 |               |                |
| SDM/CBM Load:                                                  | SN07/SN08: final compile & patch current; SN09: pre final compile 22.18.1.0 |               |               |                |
| IEMS Load:                                                     | SN07/SN08: final compile & patch current; SN09: IEMS_090_0519_1             |               |               |                |
| Platform/Product:                                              | SDM/CBM                                                                     | IEMS          | SDM/CBM       | IEMS           |
| Log Format:                                                    | STD/STD_OLD                                                                 | STD           | SCC2/SCC2_OLD | SCC2           |
| Start of Log String:                                           | 0A 0D                                                                       | 0D            | 0A 0D         | 0A 0D          |
| End of Line String:                                            | 0A 0D                                                                       | 0A 0D         | 0A 0D         | 0A 0D          |
| End of Log String:                                             | 20 0A 0D 0A 0D 00                                                           | 0A 0D 00 0A   | 0A 19 0A 0D   | 0A 0D 0A 19 0A |

Comments on Table 2:

- The Log Delimiter String data applies to releases SN07 through to SN09 for the loads indicated as of the Last Updated date.
- **Last known change:** IEMS SCC2 Start of Log String has been changed from just 0D to 0A0D in SN09 and this change was patched back to SN07 and SN08.
- Future changes: There is a strong possibility IEMS STD Start of Log String will be changed to 0A0D as well for consistency in SN09.
- The spaces between the hexadecimal numbers in Table 2 are there just to enhance readability. ie. 0D immediately follows 0A in the Start of Log String for SDM/CBM.
- In the SDM/CBM, the logroute interface allows customers to modify, if desired (but not recommended), the:
  - Start of Log String (default value: 0A 0D in hex)
  - End of Line String (default value: 0A 0D in hex) and the provisionable portions of the:
  - End of Log String (default value: 20 0A 0D 0A 0D 00 where the first 0A 0D is the currently provisioned value in logroute for the End of Line string and the second 0A 0D sequence is the currently provisioned value logroute for the End of Log string.")
- The log delimiters of IEMS are not provisionable in any release as of the Last Updated date.

- IEMS was first generally available to customers (GA) in SN07. There was an SN06.2 beta where the delimiters for IEMS may have been different.
- SDM Log delimiters may have been different in SN06 and previous releases. An OSS should consider the potential requirement of having to support multiple Nortel software releases concurrently. As well as SDM/CBM and IEMS concurrently.

Table 3 - NE/EM Comparision

| NE/EM & SCC2 Transparency                                                                                                                                                                                            | Difference or Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OSS Impacting     |                   |                                                                                                                                                                                                                      |                                                                                                                                                                                                                      |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| CS2000, & Peripherals, IW-SPM, MG4000, SDM, CBM, cCS2000 –<br><br>Transparent with the following Notes                                                                                                               | <p><b>Differences:</b></p> <p><b>a) IEMS mandatory indent rule</b> - IEMS has a mandatory indent rule where if it comes across a log from the CS2K/SDM that is not indented appropriately in its view, it will add 8 spaces to the beginning of the line. Very few logs (such as BOOT201 below) are believed to be affected by this issue. With well written OSS templates and the fix in place, the affected logs should not be adversely affected when it comes to OSS parsing.</p> <table><tr><th>SDM SCC2 Samples:</th><th>IEMS SCC2 Sample:</th></tr><tr><td>* 08 BOOT201 INFO Bootp log report<br/>Mac Address : 0001af0bc772<br/>MAC addr to node_id lookup failure : 11<br/>INM permissioin to boot failure : 0<br/>Core IP address lookup failure : 0<br/>SEND_UDP_MSG failure : 0</td><td>* 08 BOOT201 INFO Bootp log report<br/>Mac Address : 0001af0bc772<br/>MAC addr to node_id lookup failure : 11<br/>INM permissioin to boot failure : 0<br/>Core IP address lookup failure : 0<br/>SEND_UDP_MSG failure : 0</td></tr></table> <p><b>Notes:</b></p> <p><b>a)</b> Certain logs generated by the CS2K such as OMAU, OMGA, and the protologs (SWER, TRAP, INIT and so on) have no log number, just blank spaces. This is how they look on the CS2K and SDM/CBM. In an SN07 office where the SDM is feeding CS2K logs to IEMS, IEMS adds 000 for a log number. Eg. SWER000. In SN08, a resolution was implemented in IEMS whereby the 000 log number was no longer added to these SDM/CBM logs and the 3 spaces are maintained as it is received. <b>Resolved in SN08 via CR Q00980472.</b></p> <p><b>b)</b> When IEMS receives logs from managed components, it implements an 80 character per line rule for log bodies. If 80 characters is exceeded, an End of Line String is inserted at the 80<sup>th</sup> character and the remainder of the line is put onto the next line. In the case of logs from the SDM/CBM, where rows often exceed 80 characters, this wrap rule could result in visual or transparency differences between what the log looks like on SDM/CBM and IEMS. In some cases, trailing whitespace in a row could potentially be wrapped resulting in a blank line being created. In order to maintain transparency and avoid parsing issues with blank lines and so on, the 80 character wrap rule has been removed from the incoming feed to IEMS from SDM/CBM. <b>Resolved in SN07 via patch IEM0507D</b></p> <p><b>c)</b> Certain CS2K logs such as CARR and PM support an optional field called Equipment Identifier that shows up at the end of the log header after the Event Label. The CS2K has a "newline" rule (which the SDM/CBM implements as well) where the Equipment Identifier is removed from the header line in that it has its own line immediately following the header. The SDM/CBM's Log Delivery Service at SN07 final compile in its implementation of the 65 character newline rule incorrectly took into consideration the 9 characters for the optional ECORE_FORMAT field. (Even when ECORE is set to OFF in the</p> | SDM SCC2 Samples: | IEMS SCC2 Sample: | * 08 BOOT201 INFO Bootp log report<br>Mac Address : 0001af0bc772<br>MAC addr to node_id lookup failure : 11<br>INM permissioin to boot failure : 0<br>Core IP address lookup failure : 0<br>SEND_UDP_MSG failure : 0 | * 08 BOOT201 INFO Bootp log report<br>Mac Address : 0001af0bc772<br>MAC addr to node_id lookup failure : 11<br>INM permissioin to boot failure : 0<br>Core IP address lookup failure : 0<br>SEND_UDP_MSG failure : 0 | a) No Impact |
|                                                                                                                                                                                                                      | SDM SCC2 Samples:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | IEMS SCC2 Sample: |                   |                                                                                                                                                                                                                      |                                                                                                                                                                                                                      |              |
| * 08 BOOT201 INFO Bootp log report<br>Mac Address : 0001af0bc772<br>MAC addr to node_id lookup failure : 11<br>INM permissioin to boot failure : 0<br>Core IP address lookup failure : 0<br>SEND_UDP_MSG failure : 0 | * 08 BOOT201 INFO Bootp log report<br>Mac Address : 0001af0bc772<br>MAC addr to node_id lookup failure : 11<br>INM permissioin to boot failure : 0<br>Core IP address lookup failure : 0<br>SEND_UDP_MSG failure : 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                   |                                                                                                                                                                                                                      |                                                                                                                                                                                                                      |              |

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|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
|                                          | <p>SDM/CBM log device in logroute). This results in the Equipment Identifier field being "newlined" when the CS2K normally would not. (A transparency difference between what the log looks like on the CS2K and on the SDM/CBM). The end result of all this is that templates parsing CARR and PM logs (and any other Equipment Identifier-supporting logs) may no longer be able to parse these logs properly prior to implementation of the patch for this CR. <b>Resolved in SN07 via patches SDM_BASE.logs-20.82.7.10.tape, SDM_BASE.gdd-20.82.7.3.tape for SDM and NTLOGS208208-15.patch, NTGDD208208-03.patch for CBM.</b></p> <p><b>d) SDM / CBM transparency issue.</b> In the SN07 CBM product, some applications had started to communicate their failure events via an alarmd process. The resultant log looks different than the original (as seen on SDM). For failure events common to both SDM and CBM platforms, this created 2 versions of the log. 1 for SDM and 1 for CBM. Known logs affected were SDM327/SDM627. This second CBM version was undone in that . <b>Resolved in SN07 CBM patch CR Q01001000-01</b></p> |                                                                                                                                                                                                                                                                                                                                                                |                                                                                                            |
| <b>STORM</b><br>Partially<br>Transparent | <p><b>Differences:</b></p> <p><b>a)</b> Log name/numbers are retained but log formats are different. Believed to affect approx. 8 logs. See example below.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                | <b>a)</b> No Impact if no existing OSS support for STM logs. Otherwise, the template would have to change. |
|                                          | <b>SDM SCC2 Samples:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>IEMS SCC2 Sample:</b>                                                                                                                                                                                                                                                                                                                                       |                                                                                                            |
|                                          | <p>* 59 STM 803 5090 THR Threshold exceeded<br/>Status: Alarm raised. Number of zombie(s) is 1.<br/>Minor alarm threshold value is 1.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>* 40 STM 803 0088 FLT STM Fault<br/>Location: 172.18.17.6<br/>Notification Id: 56<br/>State: Raised<br/>Category: qualityOfService<br/>Cause: thresholdCrossed<br/>Time: Sep 07 09:40:17 2004<br/>Component Id: STORMIA=storm0<br/>Specific Problem:<br/>Description: Status: Alarm raised. Number of zombie(s) is 1. Minor alarm threshold value is 1.</p> |                                                                                                            |

| NE/EM & SCC2 Transparency                  | Difference or Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | OSS Impacting                                                                                                             |                                                                                |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| GWC and GWC EM<br><br>Partial Transparency | <b>Differences:</b><br><b>a)</b> GWC3XX set logs. (Approx. 17 logs). The syntax of the Category and Cause fields in the log body are different (spaces and Upper case characters).<br><b>b)</b> GWC399 (the clear log for the GWC3XX set logs) is not transparent. IEMS version of the log has 2 extra lines. (mainly for human interpretation).<br><br>Note: The Component Id structure difference in the example below is tracked by CR Q00976754 and resolved in SN07 patch ZOD41O7D. It is not an SDM / IEMS transparency issue. | <b>a)</b> No Impact.<br><b>b)</b> No Impact. A single OSS template should be able to handle both versions these GWC logs. |                                                                                |
|                                            | <b>SDM SCC2 Samples:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                           | <b>IEMS SCC2 Sample:</b>                                                       |
|                                            | **16 GWC 301 5129 TBL GWC Fault<br>Location: GWC-1-UNIT-1<br>NotificationID: 1                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                           | **28 GWC 301 0036 TBL GWC Fault<br>Location: GWC-0-UNIT-1<br>NotificationID: 1 |

|                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                     |              |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|                                                            | State: Raise<br>Category: Quality of Service<br>Cause: Underlying resource unavailable<br>Time: Sep 01 13:16:11 2004<br>Component Id: GWC-1-UNIT-1<br>Specific Problem: Unit Out of Service: Unit is system disabled; Service is not available<br>Description: Standby unit disabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | State: Raise<br>Category: qualityOfService<br>Cause: underlyingResourceUnavailable<br>Time: Aug 27 13:28:43 2004<br>Component Id: GWC=GWC-?-UNIT-?;Version=GN070CB;Unit=unit_1;Software=NODE MTC<br>Specific Problem: Unit Out of Service: Unit is system disabled; Service is not available<br>Description: Standby unit disabled. |              |
|                                                            | 16 GWC 399 5155 INFO GWC Fault<br>Location: GWC-1-UNIT-1<br>NotificationID: 1<br>State: Clear<br>Time: Sep 01 13:16:21 2004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 30 GWC 399 0050 INFO GWC Fault<br>Location: GWC-0-UNIT-1<br>NotificationID: 1<br>State: Clear<br>Time: Aug 27 13:30:45 2004<br>Component Id: GWC=GWC-?-UNIT-?;Version=GN070CB;Unit=unit_1;Software=NODE MTC<br>Description: Standby unit disabled.                                                                                  |              |
| <b>MG9K ATM/IP &amp; MG9000 EM</b><br>Partial Transparency | <b>Differences:</b><br>a) For all MG9000 logs having a format which includes the Category and State fields (generally alarm logs - approx. 200 in SN07, and 40 more in SN08), you will find that the syntax of the field value between SDM and IEMS can be slightly different. This is due to the MG9K EM outputting syslog to SDM and Corba to IEMS.<br>Example for SDM:<br>State: cleared<br>Category: Equipment Alarm<br>Example for IEMS:<br>State: Cleared<br>Category: equipment<br><br><b>Notes:</b><br>a) In SN07, the MG9000 Element Manager in an IEMS implementation was duplicating alarm logs sent to IEMS by including them in the syslog feed in addition to the Corba feed to IEMS. Application of the MG9000 EM patch will de-activate sending alarm logs to syslog remove the duplication. <b>Resolved in SN07 via patch IEM0807D for IEMS and 9K EM patch ZOD50</b> |                                                                                                                                                                                                                                                                                                                                     | a) No Impact |
| <b>SAM21</b><br>Transparent                                | <b>Differences:</b><br>a) Some SAM21 logs (worst case 19 SCU logs) indent the event label 1 character (space). When IEMS processes this, the leading space in the Event Label is removed. SDM maintains the leading space.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                     | a) No Impact |

| NE/EM & SCC2 Transparency               | Difference or Notes                                                                                                                                                                                                                                                                                                                                                          | OSS Impacting                                                                                                                                                |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Passport 8600</b><br>Not transparent | <b>Differences: (SN07)</b><br>a) The logs reporting Passport 8600 SNMP trap events are completely different between SDM/CBM and IEMS. In SN07, the SDM uses the PPES300-307 log name/number set and obtains the data for these logs from MDM. IEMS listens to SNMP traps directly from the Passport 8600 and implements the PP398 log for the sets and PP399 for the clears. | <b>SN07:</b><br>a) <b>No impact</b> – OSS coding support challenges may be present with extracting data from the Specific Problem and Description fields and |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>SN07 SDM SCC2 Samples:</b>                                                                                                                                                                                       | <b>SN07 IEMS SCC2 Sample:</b>                                                                                                                                                                                        | <p>being able to correlate the sets with the clears.</p> <p><b>b) Impact Major</b> - A customer is either other going to ignore all IEMS602s or mark all critical – either way, it is going to be problem in SN07.</p> <p><b>c) Impact Major</b> - There is insufficient information (only an IP address) to determine what is causing the fault and what needs to be corrected.</p> <p><b>SN08:</b></p> <p><b>a) No impact</b> – The above SN07 issues are resolved in SN08 and as with any new logs in a release, new templates will have to be written to support them. With the current flexibility of the IEMS aging policy and that of an OSS, a working fault management system should be possible between the two of them.</p> |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | **20 PPES300 1486 TBL<br>time: 2003 11 14 12 17 03<br>event: set<br>compId: PP8600 BATMAN IF 72<br>severity: major<br>faultCode: C0000002<br>alarmType: communications<br>commentData: Link down trap interface: 72 | ** PP398 SEP08 21:37:57 9992 TBL PP Fault<br>Location: 10.102.15.130<br>State: Raise<br>Specific Problem: Generic Link Status<br>Description: Link Down: ifIndex = 167<br>( AdminStatus = up OpeationStatus = down ) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 20 PPES307 1487 TBL<br>time: 2003 11 14 12 17 06<br>event: clear<br>compId: PP8600 BATMAN IF 72<br>severity: cleared<br>faultCode: C0000002<br>alarmType:<br>commentData: Explicated CLEAR Alarm generated by GMDR. | 38 PP399 SEP08 21:38:00 9994 INFO PP Fault<br>Location: 10.102.15.130<br>State: Clear<br>Specific Problem: Generic Link Status<br>Description: Link Up: ifIndex = 167<br>( AdminStatus = up OpeationStatus = up )    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 20 PPES300 1488 TBL<br>time: 2003 11 14 12 17 06<br>event: clear<br>compId: PP8600 BATMAN IF 72<br>severity: cleared<br>faultCode: C0000002<br>alarmType: communications<br>commentData: Link up trap interface: 72 |                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| <p><b>b)</b> IEMS only supported a limited set of Passport 8600 traps in SN07. (The ones listed below). The unsupported Passport 8600 SNMP traps are treated by IEMS as unknown and reported northbound to the OSS as IEMS602 (Unknown Trap from Known Device).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                     |                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| <table><tr><th>Alarm Name</th><th>Trap OID (v2c)</th><th>Log</th></tr><tr><td>coldStart</td><td>1.3.6.1.6.3.1.1.5.1.0</td><td>PP399</td></tr><tr><td>coldStart</td><td>1.3.6.1.4.1.2272.0.99001</td><td>PP398</td></tr><tr><td>warmStart</td><td>1.3.6.1.6.3.1.1.5.2.0</td><td>PP399</td></tr><tr><td>warmStart</td><td>1.3.6.1.4.1.2272.0.99002</td><td>PP398</td></tr><tr><td>linkDown</td><td>1.3.6.1.6.3.1.1.5.3.0</td><td>PP398</td></tr><tr><td>linkUp</td><td>1.3.6.1.6.3.1.1.5.4.0</td><td>PP399</td></tr><tr><td>rcChasPowerSupplyDown</td><td>1.3.6.1.4.1.2272.1.21.6.0</td><td>PP398</td></tr><tr><td>rcChasPowerSupplyUp</td><td>1.3.6.1.4.1.2272.1.21.14.0</td><td>PP399</td></tr><tr><td>rcChasFanDown</td><td>1.3.6.1.4.1.2272.1.21.7.0</td><td>PP398</td></tr><tr><td>rcChasFanUp</td><td>1.3.6.1.4.1.2272.1.21.21.0</td><td>PP399</td></tr></table> |                                                                                                                                                                                                                     |                                                                                                                                                                                                                      | Alarm Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Trap OID (v2c) | Log | coldStart | 1.3.6.1.6.3.1.1.5.1.0 | PP399 | coldStart | 1.3.6.1.4.1.2272.0.99001 | PP398 | warmStart | 1.3.6.1.6.3.1.1.5.2.0 | PP399 | warmStart | 1.3.6.1.4.1.2272.0.99002 | PP398 | linkDown | 1.3.6.1.6.3.1.1.5.3.0 | PP398 | linkUp | 1.3.6.1.6.3.1.1.5.4.0 | PP399 | rcChasPowerSupplyDown | 1.3.6.1.4.1.2272.1.21.6.0 | PP398 | rcChasPowerSupplyUp | 1.3.6.1.4.1.2272.1.21.14.0 | PP399 | rcChasFanDown | 1.3.6.1.4.1.2272.1.21.7.0 | PP398 | rcChasFanUp | 1.3.6.1.4.1.2272.1.21.21.0 | PP399 |
| Alarm Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Trap OID (v2c)                                                                                                                                                                                                      | Log                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| coldStart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1.3.6.1.6.3.1.1.5.1.0                                                                                                                                                                                               | PP399                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| coldStart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1.3.6.1.4.1.2272.0.99001                                                                                                                                                                                            | PP398                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| warmStart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1.3.6.1.6.3.1.1.5.2.0                                                                                                                                                                                               | PP399                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| warmStart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1.3.6.1.4.1.2272.0.99002                                                                                                                                                                                            | PP398                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| linkDown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1.3.6.1.6.3.1.1.5.3.0                                                                                                                                                                                               | PP398                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| linkUp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.3.6.1.6.3.1.1.5.4.0                                                                                                                                                                                               | PP399                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| rcChasPowerSupplyDown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1.3.6.1.4.1.2272.1.21.6.0                                                                                                                                                                                           | PP398                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| rcChasPowerSupplyUp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.3.6.1.4.1.2272.1.21.14.0                                                                                                                                                                                          | PP399                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| rcChasFanDown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.3.6.1.4.1.2272.1.21.7.0                                                                                                                                                                                           | PP398                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |
| rcChasFanUp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1.3.6.1.4.1.2272.1.21.21.0                                                                                                                                                                                          | PP399                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |     |           |                       |       |           |                          |       |           |                       |       |           |                          |       |          |                       |       |        |                       |       |                       |                           |       |                     |                            |       |               |                           |       |             |                            |       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            |                            |       |            |                            |       |              |                            |       |                |                            |       |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|-------|------------|----------------------------|-------|--------------|----------------------------|-------|----------------|----------------------------|-------|--|
| <table><tr><td>rc2kCardDown</td><td>1.3.6.1.4.1.2272.1.21.11.0</td><td>PP398</td></tr><tr><td>rc2kCardUp</td><td>1.3.6.1.4.1.2272.1.21.12.0</td><td>PP399</td></tr><tr><td>rcSmltLinkUp</td><td>1.3.6.1.4.1.2272.1.21.19.0</td><td>PP399</td></tr><tr><td>rcSmltLinkDown</td><td>1.3.6.1.4.1.2272.1.21.20.0</td><td>PP398</td></tr></table> <p>• Exception: PP368 and PP369 are the SN08 logs which have been patched back to SN07. (Only these 2 logs to date have been patched back).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | rc2kCardDown               | 1.3.6.1.4.1.2272.1.21.11.0 | PP398 | rc2kCardUp | 1.3.6.1.4.1.2272.1.21.12.0 | PP399 | rcSmltLinkUp | 1.3.6.1.4.1.2272.1.21.19.0 | PP399 | rcSmltLinkDown | 1.3.6.1.4.1.2272.1.21.20.0 | PP398 |  |
| rc2kCardDown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.3.6.1.4.1.2272.1.21.11.0 | PP398                      |       |            |                            |       |              |                            |       |                |                            |       |  |
| rc2kCardUp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1.3.6.1.4.1.2272.1.21.12.0 | PP399                      |       |            |                            |       |              |                            |       |                |                            |       |  |
| rcSmltLinkUp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.3.6.1.4.1.2272.1.21.19.0 | PP399                      |       |            |                            |       |              |                            |       |                |                            |       |  |
| rcSmltLinkDown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1.3.6.1.4.1.2272.1.21.20.0 | PP398                      |       |            |                            |       |              |                            |       |                |                            |       |  |
| <div>59 IEMS602 7505 INFO<br/>Location: 10.102.15.131<br/>Event: .1.3.6.1.4.1.2272.1.21.8.0<br/>Varbind0: .1.3.6.1.2.1.1.3.0: 203 days, 23 hours, 11 minutes, 22 seconds<br/>.<br/>Varbind1: .1.3.6.1.6.3.1.1.4.1.0: .1.3.6.1.4.1.2272.1.21.8.0<br/>Varbind2: .1.3.6.1.4.1.2272.1.4.10.1.1.1.0: 267</div> <p>c) IEMS Location Field has only an IP address.</p> <p><b>Notes: (SN08)</b></p> <p>a) SN08 feature A00007343 was created to help address the above issues in 8600 fault management via IEMS. With the feature, a new set of logs (PP310 -&gt; PP392) was created to addresses log format/content issues [a) and c)] and PP398/399 is no longer used. Full SNMP trap support as of SN08 was implemented as well [b)] and hence no IEMS602 logs would be seen for unsupported 8600 SNMP traps. This feature does not result in transparency between SDM and IEMS but it does clean up the IEMS log situation. See the SN08 IEMS log samples below for Passport 8600. PP317 is cleared by PP318 when the Component ID matches. At the time of writing, two SN08 IEMS logs for Passport 8600 (PP368 and PP369) have been patched back to SN07.</p> |                            |                            |       |            |                            |       |              |                            |       |                |                            |       |  |
| <div><b>IEMS PP317 SN08 SCC2 Sample:</b><br/>**01 PP 317 0119 TBL PP Fault<br/>Location: PP8600A;10.102.15.130<br/>State: Raised<br/>Category: communications<br/>Cause: loss of communication<br/>Time: Feb 10 16:01:46 2005<br/>Component ID: PP8600=10.102.15.130; ifIndex=72<br/>Specific Problem: Generic Link Status<br/>Description: Link Down: ifIndex = 72( AdminStatus = up OperationStatus = down)<br/>.1.3.6.1.6.3.1.1.4.1.0: .1.3.6.1.6.3.1.1.5.3.0<br/>.1.3.6.1.2.1.1.3.0: 73 days, 5 hours, 35 minutes, 4 seconds.</div> <div><b>IEMS PP318 SN08 SCC2 Sample:</b><br/>01 PP 318 0120 INFO PP Fault<br/>Location: PP8600A;10.102.15.130</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                            |       |            |                            |       |              |                            |       |                |                            |       |  |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | <p>           State: Cleared<br/>           Category: communications<br/>           Cause: communication regained<br/>           Time: Feb 10 16:01:48 2005<br/>           Component ID: PP8600=10.102.15.130; ifIndex=72<br/>           Specific Problem: Generic Link Status<br/>           Description: Link Up: ifIndex = 72( AdminStatus = up OperationStatus = up)<br/>           .1.3.6.1.6.3.1.1.4.1.0: .1.3.6.1.6.3.1.1.5.4.0<br/>           .1.3.6.1.2.1.1.3.0: 73 days, 5 hours, 35 minutes, 6 seconds.         </p> <p><b>Differences: (SN08)</b></p> <p>a) One noted difference between SN08 IEMS 8600 trap/log fault management and that of SDM/CBM via MDM is that MDM has implemented a per alarm aging mechanism where a trap is not part of a set/clear pair. (There are a lot of 8600 SNMP traps like this.) After a certain period of time, one of these autonomous logs (that has severity) will be cleared automatically. IEMS as of SN08 does not have a per alarm aging mechanism. In order to prevent a situation in IEMS where these autonomous logs are being raised but never cleared, an 8600 device alarm clearing policy has been implemented by default in the SN08 load. If any 8600 alarm has been present in IEMS for 7 days, it will automatically be cleared by this policy. The clear notification will be an IEMS608 log which will contain information required in order to clear the previous set log for the alarm. While clearing 8600 alarms related to hardware such as fan or link down after 7 days is undesirable it was felt better than having no clear for the multitude of 8600 autonomous traps. Note: An OSS does not have to take action on aging clears if it does not want to. Or it can take action on only a subset of them. The 8600 aging policy in IEMS can also be disabled or modified to be something other than 7 days.</p> |  |
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| NE/EM & SCC2 Transparency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Difference or Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | OSS Impacting                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                 |
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| MSS15000, MG15000, MDM Partial Transparency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Notes:</b><br>Between IEMS and SDM/CBM, MSS15000/MG15000/MDM log names are the same and appears to use the same mapping scheme. (Where the log prefix is determined by what the first 4 digits of the fault code is). Names are PPEM, MDM and CA. Log Body tags all the same.                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Differences: (SN07 and SN08)</b><br><b>a)</b> Log numbers are maintained except that it would appear IEMS doesn't use PPEM/CA/MDM307 for explicit clears and instead uses a 000 number. OSS templates for PPEM000/CA000/MDM000 should be identical to PPEM307/CA307/MDM307 (explicit clear varieties). Inappropriate use of the 000 log number for explicit clears from MDM was discontinued in SN08. <b>Resolved in SN08 via CR Q00980484.</b>                                                                                                                                                                                   |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <table><tr><th>SN07 SDM/CBM Explicit Clear Sample:</th><th>SN07 IEMS Explicitly Clear Sample:</th></tr><tr><td>08 <b>PPEM307</b> 9380 TBL<br/>time: 2004 09 09 12 09 11<br/>event: clear<br/>compId: EM P15KE LP 12 SONET 1 STS 0<br/>severity: cleared<br/>faultCode: 70115261<br/>alarmType:<br/>commentData: Explicated CLEAR Alarm generated by GMDR.</td><td>46 <b>PPEM000</b> 8088 TBL<br/>time: 2004 09 09 12 46 42<br/>event: clear<br/>compId: EM P15KE LP 12 SONET 1 STS 0<br/>severity: cleared<br/>faultcode: 70115261<br/>alarmType: other<br/>commentData: Explicated CLEAR Alarm generated by GMDR.</td></tr></table> | SN07 SDM/CBM Explicit Clear Sample:                                                                                                                                                                                                       | SN07 IEMS Explicitly Clear Sample:                                                                                                                                                                                                                                                                | 08 <b>PPEM307</b> 9380 TBL<br>time: 2004 09 09 12 09 11<br>event: clear<br>compId: EM P15KE LP 12 SONET 1 STS 0<br>severity: cleared<br>faultCode: 70115261<br>alarmType:<br>commentData: Explicated CLEAR Alarm generated by GMDR.                                                              | 46 <b>PPEM000</b> 8088 TBL<br>time: 2004 09 09 12 46 42<br>event: clear<br>compId: EM P15KE LP 12 SONET 1 STS 0<br>severity: cleared<br>faultcode: 70115261<br>alarmType: other<br>commentData: Explicated CLEAR Alarm generated by GMDR. | <b>a) Minor impact</b> - Log numbers of 000 are usually invalid. Customers who have written templates for CA/MDM/PPEM3XX would have to add an additional line for PPEM000. The template logic would read something like; if you get an alarm raised with a PPEM3xx look for a PPEM3xx or PPEM307 or PPEM000 with the same compID and faultCode. |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SN07 SDM/CBM Explicit Clear Sample:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN07 IEMS Explicitly Clear Sample:                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 08 <b>PPEM307</b> 9380 TBL<br>time: 2004 09 09 12 09 11<br>event: clear<br>compId: EM P15KE LP 12 SONET 1 STS 0<br>severity: cleared<br>faultCode: 70115261<br>alarmType:<br>commentData: Explicated CLEAR Alarm generated by GMDR.                                                                                                                                                                                                                                                                                                                                                                                                  | 46 <b>PPEM000</b> 8088 TBL<br>time: 2004 09 09 12 46 42<br>event: clear<br>compId: EM P15KE LP 12 SONET 1 STS 0<br>severity: cleared<br>faultcode: 70115261<br>alarmType: other<br>commentData: Explicated CLEAR Alarm generated by GMDR. |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                 |
| <b>b)</b> IEMS has changed the field values of alarmType in some cases so that it aligns with a standard list of X.733 alarm categories. Where there was no equivalent alarm type in X.733, IEMS uses "other". (See table below). When logs come out of SDM/CBM, the original alarmtype as provided by MDM is maintained.                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>b)</b> No Impact<br><b>c)</b> No Impact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                 |
| <table><tr><th>SN07/08 SDM/CBM alarmtype SCC2 Sample:</th><th>SN07/SN08 IEMS alarmtype SCC2 Sample:</th></tr><tr><td>**13 PPEM305 7877 TBL<br/>time: 2005 03 08 16 13 14<br/>event: message<br/>compId: EM P15KL NMIS \$ FMIP \$<br/>SESSION 9<br/>severity: major<br/>faultCode: 70060006<br/><b>alarmType: security</b><br/>commentData: 9 contiguous FMIP login attempts failed,<br/>last failure from 10.102.4.4 to userid:</td><td>**41 PPEM305 8756 TBL<br/>time: 2005 03 08 14 40 41<br/>event: message<br/>compId: EM P15KL NMIS \$ FMIP \$<br/>SESSION 9<br/>severity: major<br/>faultcode: 70060006<br/><b>alarmType: other</b><br/>commentData: 9 contiguous FMIP login attempts failed,<br/>last failure from 10.102.13.16 to userid:</td></tr></table> | SN07/08 SDM/CBM alarmtype SCC2 Sample:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN07/SN08 IEMS alarmtype SCC2 Sample:                                                                                                                                                                                                     | **13 PPEM305 7877 TBL<br>time: 2005 03 08 16 13 14<br>event: message<br>compId: EM P15KL NMIS \$ FMIP \$<br>SESSION 9<br>severity: major<br>faultCode: 70060006<br><b>alarmType: security</b><br>commentData: 9 contiguous FMIP login attempts failed,<br>last failure from 10.102.4.4 to userid: | **41 PPEM305 8756 TBL<br>time: 2005 03 08 14 40 41<br>event: message<br>compId: EM P15KL NMIS \$ FMIP \$<br>SESSION 9<br>severity: major<br>faultcode: 70060006<br><b>alarmType: other</b><br>commentData: 9 contiguous FMIP login attempts failed,<br>last failure from 10.102.13.16 to userid: |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                 |
| SN07/08 SDM/CBM alarmtype SCC2 Sample:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SN07/SN08 IEMS alarmtype SCC2 Sample:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                 |
| **13 PPEM305 7877 TBL<br>time: 2005 03 08 16 13 14<br>event: message<br>compId: EM P15KL NMIS \$ FMIP \$<br>SESSION 9<br>severity: major<br>faultCode: 70060006<br><b>alarmType: security</b><br>commentData: 9 contiguous FMIP login attempts failed,<br>last failure from 10.102.4.4 to userid:                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | **41 PPEM305 8756 TBL<br>time: 2005 03 08 14 40 41<br>event: message<br>compId: EM P15KL NMIS \$ FMIP \$<br>SESSION 9<br>severity: major<br>faultcode: 70060006<br><b>alarmType: other</b><br>commentData: 9 contiguous FMIP login attempts failed,<br>last failure from 10.102.13.16 to userid:                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                 |

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| DEBUG                                                                                                                                                                                                                                                                                          |                | DEBUG                                                                                                                                                                                                                                          |                                |
| c) In SN07, when the alarmType value is qualityOfService, SDM reports the log number as 301 whereas IEMS reports it as 307. (Log format of 300-307 are all the same). In SN08, this is no longer the case. <b>Resolved in SN08 via unknown CR.</b>                                             |                |                                                                                                                                                                                                                                                |                                |
| <b>SN07 SDM/CBM SCC2 Sample:</b>                                                                                                                                                                                                                                                               |                | <b>SN07 IEMS SCC2 Sample:</b>                                                                                                                                                                                                                  |                                |
| 04 <b>PPEM301</b> 5272 TBL<br>time: 2004 08 23 11 04 25<br>event: clear<br>compId: EM P15KL COL DEBUG AG 1<br>severity: cleared<br>faultCode: 70030001<br>alarmType: qualityOfService<br>commentData: currentQueueSize fell back to 500f maximum.<br>48 records discarded since the Set alarm. |                | **36 <b>PPEM307</b> 3736 TBL<br>time: 2004 09 23 10 36 17<br>event: set<br>compId: EM P15KH COL DEBUG AG 0<br>severity: major<br>faultcode: 70030001<br>alarmType: qualityOfService<br>commentData: currentQueueSize exceeded 75% of maximum.  |                                |
| <b>SN08 SDM/CBM SCC2 Sample:</b>                                                                                                                                                                                                                                                               |                | <b>SN08 IEMS SCC2 Sample:</b>                                                                                                                                                                                                                  |                                |
| **12 <b>PPEM301</b> 8786 TBL<br>time: 2005 02 23 14 47 02<br>event: set<br>compId: EM P15KE LP 2 ENG \$ AALIST \$<br>severity: major<br>faultCode: 70030007<br>alarmType: qualityOfService<br>commentData: current list size exceeded 750f maximum                                             |                | **49 <b>PPEM301</b> 5863 TBL<br>time: 2005 02 11 13 49 03<br>event: set<br>compId: EM P15KL COL DEBUG AG 15<br>severity: major<br>faultcode: 70030001<br>alarmType: qualityOfService<br>commentData: currentQueueSize exceeded 75% of maximum. |                                |
| <b>Summary of Transparency Differences Between SDM &amp; IEMS (bold text):</b>                                                                                                                                                                                                                 |                |                                                                                                                                                                                                                                                |                                |
| SDM alarmType                                                                                                                                                                                                                                                                                  | SDM log number | IEMS alarmType                                                                                                                                                                                                                                 | IEMS log number                |
| communications                                                                                                                                                                                                                                                                                 | 300            | communications                                                                                                                                                                                                                                 | 300                            |
| qualityOfService                                                                                                                                                                                                                                                                               | 301            | qualityOfService                                                                                                                                                                                                                               | <b>307 (SN07)</b> / 301 (SN08) |
| processing                                                                                                                                                                                                                                                                                     | 302            | <b>other (SN07/08)</b>                                                                                                                                                                                                                         | 302                            |
| equipment                                                                                                                                                                                                                                                                                      | 303            | equipment                                                                                                                                                                                                                                      | 303                            |
| environmental                                                                                                                                                                                                                                                                                  | 304            | environmental                                                                                                                                                                                                                                  | 304                            |
| security                                                                                                                                                                                                                                                                                       | 305            | <b>other (SN07/08)</b>                                                                                                                                                                                                                         | 305                            |
| debug                                                                                                                                                                                                                                                                                          | 600            | (unknown)                                                                                                                                                                                                                                      | (unknown)                      |

|  |          |                      |                        |                                |  |  |
|--|----------|----------------------|------------------------|--------------------------------|--|--|
|  | operator | 306                  | <b>other (SN07/08)</b> | 306                            |  |  |
|  | unknown  | 307 (set log)        | <b>other (SN07/08)</b> | 307                            |  |  |
|  | (blank)  | 307 (explicit clear) | <b>other (SN07/08)</b> | <b>000 (SN07) / 307 (SN08)</b> |  |  |

| NE/EM & SCC2 Transparency                                                                                                                                                                                                                                                                                                                                                                                                  | Difference or Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OSS Impacting       |                   |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                          |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                     |
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| CMT- SESM<br>Partial<br>Transparency                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Differences:</b></p> <p>a) CMT399 is not transparent. IEMS version of this log has 2 extra lines.</p> <p>b) Partial transparency amongst all CMT3XX set logs (approx. 4 logs): Syntax of Category, and Cause fields are different. (See samples below).</p> <p>c) In CMT302 failure scenarios, it appears that IEMS uses an inconsistent Location field value between the set and clear. In SDM, SNMP_NE_Poller is consistently used. Resolution involves making the IEMS clear have SNMP_NE_Poller. <b>Resolved in SN08 via CR Q01078502 and CR Q01078502-02. Plans to patch back to SN07.</b></p> <table><tr><th>SDM SCC2 Samples:</th><th>IEMS SCC2 Sample:</th></tr><tr><td><p>**14 CMT 302 9000 TBL CMT Fault<br/>Location: SNMP_NE_Poller<br/>NotificationID: 1<br/>State: Raise<br/>Category: Communications<br/>Cause: Communications subsystem failure<br/>Time: Aug 31 13:34:14 2004<br/>Component Id: SESM=SNMP Device<br/>Poller;Device=GWC-6-UNIT-1;DeviceID=0x00000063000000a10a660f43<br/>Specific Problem: SNMP Timeout<br/>Description: CMT Unable to communicate with managed device</p></td><td><p>**29 CMT 302 5875 TBL GWC Fault<br/>Location: SNMP_NE_Poller<br/>NotificationID: 4<br/>State: Raise<br/>Category: communications<br/>Cause: communicationsSubsystemFailure<br/>Time: Sep 27 13:29:37 2004<br/>Component Id: SESM=SNMP Device<br/>Poller;Device=GWC-5-UNIT-0;DeviceID=0x00000063000000a10a660f3e<br/>Specific Problem: SNMP Timeout<br/>Description: CMT Unable to communicate with managed device</p></td></tr><tr><td><p>15 CMT 399 9946 INFO CMT Fault<br/>Location: SNMP_NE_Poller<br/>NotificationID: 1<br/>State: Clear<br/>Time: Aug 31 13:28:15 2004</p></td><td><p>38 CMT 399 6002 INFO GWC Fault<br/>Location: GWC-5-UNIT-0<br/>NotificationID: 4<br/>State: Clear<br/>Time: Sep 27 13:38:22 2004<br/>Component Id: SESM=SNMP Device<br/>Poller;Device=GWC-5-UNIT-0;DeviceID=0x00000063000000a10a660f3e<br/>Description: CMT Reestablished communications with managed device</p></td></tr></table> | SDM SCC2 Samples:   | IEMS SCC2 Sample: | <p>**14 CMT 302 9000 TBL CMT Fault<br/>Location: SNMP_NE_Poller<br/>NotificationID: 1<br/>State: Raise<br/>Category: Communications<br/>Cause: Communications subsystem failure<br/>Time: Aug 31 13:34:14 2004<br/>Component Id: SESM=SNMP Device<br/>Poller;Device=GWC-6-UNIT-1;DeviceID=0x00000063000000a10a660f43<br/>Specific Problem: SNMP Timeout<br/>Description: CMT Unable to communicate with managed device</p> | <p>**29 CMT 302 5875 TBL GWC Fault<br/>Location: SNMP_NE_Poller<br/>NotificationID: 4<br/>State: Raise<br/>Category: communications<br/>Cause: communicationsSubsystemFailure<br/>Time: Sep 27 13:29:37 2004<br/>Component Id: SESM=SNMP Device<br/>Poller;Device=GWC-5-UNIT-0;DeviceID=0x00000063000000a10a660f3e<br/>Specific Problem: SNMP Timeout<br/>Description: CMT Unable to communicate with managed device</p> | <p>15 CMT 399 9946 INFO CMT Fault<br/>Location: SNMP_NE_Poller<br/>NotificationID: 1<br/>State: Clear<br/>Time: Aug 31 13:28:15 2004</p> | <p>38 CMT 399 6002 INFO GWC Fault<br/>Location: GWC-5-UNIT-0<br/>NotificationID: 4<br/>State: Clear<br/>Time: Sep 27 13:38:22 2004<br/>Component Id: SESM=SNMP Device<br/>Poller;Device=GWC-5-UNIT-0;DeviceID=0x00000063000000a10a660f3e<br/>Description: CMT Reestablished communications with managed device</p> | <p>a) No Impact.</p> <p>b) No Impact.</p> <p>c) <b>Impact Major</b> – Customer may be unable to clear the alarm until the CR issue is resolved.</p> |
| SDM SCC2 Samples:                                                                                                                                                                                                                                                                                                                                                                                                          | IEMS SCC2 Sample:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                     |                   |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                          |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                     |
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| <p>15 CMT 399 9946 INFO CMT Fault<br/>Location: SNMP_NE_Poller<br/>NotificationID: 1<br/>State: Clear<br/>Time: Aug 31 13:28:15 2004</p>                                                                                                                                                                                                                                                                                   | <p>38 CMT 399 6002 INFO GWC Fault<br/>Location: GWC-5-UNIT-0<br/>NotificationID: 4<br/>State: Clear<br/>Time: Sep 27 13:38:22 2004<br/>Component Id: SESM=SNMP Device<br/>Poller;Device=GWC-5-UNIT-0;DeviceID=0x00000063000000a10a660f3e<br/>Description: CMT Reestablished communications with managed device</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                     |                   |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                          |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                     |
| CMT-QCA<br>Partial<br>Transparency                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>Differences:</b></p> <p>a) IEMS implements an 80 character log body line length for all managed components except the logs from SDM/CBM. Some of the QCA logs as output to /var/log/customerlog on the CMT have a Description field value that exceeds 80 characters. IEMS puts the excess onto a new line whereas SDM/CBM does not when it receives it from syslog.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>a) No Impact</p> |                   |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                          |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                     |

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|                                                                  | <b>Notes:</b><br>SN08 introduced feature A00008338 to address certain general log supportability concerns for the OSS. This corrective content feature will be patched back to SN07.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                          |
| <b>CMT-NPM</b><br>Transparent                                    | <b>Differences:</b><br><b>a)</b> Some NPM logs (11 logs worst case) indent the event label 1 character (space). When IEMS processes this, the leading space in the Event Label is removed. SDM/CBM maintains the leading space.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>a)</b> No Impact                                                                                                                      |
| <b>CMT-IEMS</b><br>(general northbound feed comparison with SDM) | <b>Differences:</b><br><b>a)</b> For NT STD and SCC2 log formats, the characters contained within the “Start of Log” and “End of Log” string delimiters are different. See Table 1 at the beginning of this Appendix.<br><b>b)</b> When IEMS re-syncs its alarm list with devices that support re-sync, IEMS creates clear logs for when discrepancies are found. ie Alarms it thought were there but went away. These clear logs used the original log name/number for the alarm in the database and the content of the “re-sync clear” was not necessarily the same. Resolution of this CR has resulted in the creation of a new IEMS log for re-sync raises/clears. (IEMS607). SDM/CBM has no such re-sync capability.<br><b>Resolved in SN07 via IEM1007D patch</b><br><br><b>Notes:</b><br>SN07 CR Q01001051 tracked the fact that the “end of log string” for SDM differs depending on whether ECORE_FORMAT is on or off in the device. This is not an SDM/IEMS transparency but an SDM/SDM one. (ECORE_FORMAT is not supported in Succession.) This issue has been resolved through the SN07 SDM/CBM patches. The End of Log string is now the same whether ECORE format is ON or OFF. (ECORE format is not supported in Succession and should be turned off for the SDM/CBM log device for IEMS fault communication). | <b>a)</b> No Impact.<br><b>b)</b> No Impact. A new template would have to be created for the IEMS607 log as is the case for any new log. |



| NE/EM & SCC2 Transparency                                                                                                                                                                                                                                                                                                                                                     | Difference or Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | OSS Impacting                                                     |                   |                   |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                      |                                                                                                                                                                         |
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| CMT-UAS<br>Partial<br>Transparency                                                                                                                                                                                                                                                                                                                                            | <b>Differences:</b><br><b>a)</b> Minor difference in the syntax of the Cause field values. Eg. "outOfMemory" in IEMS vs "Out of memory" in SDM as per the example below.<br><b>b)</b> Minor difference in the syntax of the Category field values. Eg. "processingError" in IEMS vs "Processing Error" in SDM as per the example below.<br><b>c)</b> UAS399 not transparent. (Similar in fashion to GWC399 and CMT399). UAS399 is the clear log for all UAS3xx and 8xx raises. The IEMS version has 2 extra rows of information in the clear. See example below.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>a)</b> No Impact<br><b>b)</b> No Impact<br><b>c)</b> No Impact |                   |                   |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                      |                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                               | <table><tr><th>SDM SCC2 Samples:</th><th>IEMS SCC2 Sample:</th></tr><tr><td><b>**19 UAS 353 1227 TBL UAS Fault</b><br/>Location: msh10uas-a<br/>NotificationID: 81924<br/>State: Raise<br/>Category: Processing Error<br/>Cause: Out of memory<br/>Time: May 22 11:19:13 2003<br/>Component Id:<br/>UAS;UASUnit=msh10uas-a;Software=LocalResourceManager_0<br/>Specific Problem: 81924<br/>Description: [mem_usage_high_major] Memory usage high. (803554284552sed)</td><td><b>**10 UAS 353 9836 TBL UAS Fault</b><br/>Location: cablabuas<br/>NotificationID: 81924<br/>State: Raise<br/>Category: processingError<br/>Cause: outOfMemory<br/>Time: Aug 30 15:10:48 2004<br/>Component Id:<br/>UAS;UASUnit=cablabuas;Software=LocalResourceManager_0<br/>Specific Problem: 81924<br/>Description: [mem_usage_high_major] Memory usage high. (91% used)"</td></tr><tr><td><b>19 UAS 399 1228 INFO UAS Fault</b><br/>Location: msh10uas-a<br/>NotificationID: 81924<br/>State: Clear<br/>Time: May 22 11:19:14 2003</td><td><b>53 UAS 399 0642 INFO UAS Fault</b><br/>Location: UAS_RTPU_TST<br/>NotificationID: 49154<br/>State: Clear<br/>Time: May 11 10:53:37 2004<br/>Component Id:<br/>Description:</td></tr></table> |                                                                   | SDM SCC2 Samples: | IEMS SCC2 Sample: | <b>**19 UAS 353 1227 TBL UAS Fault</b><br>Location: msh10uas-a<br>NotificationID: 81924<br>State: Raise<br>Category: Processing Error<br>Cause: Out of memory<br>Time: May 22 11:19:13 2003<br>Component Id:<br>UAS;UASUnit=msh10uas-a;Software=LocalResourceManager_0<br>Specific Problem: 81924<br>Description: [mem_usage_high_major] Memory usage high. (803554284552sed) | <b>**10 UAS 353 9836 TBL UAS Fault</b><br>Location: cablabuas<br>NotificationID: 81924<br>State: Raise<br>Category: processingError<br>Cause: outOfMemory<br>Time: Aug 30 15:10:48 2004<br>Component Id:<br>UAS;UASUnit=cablabuas;Software=LocalResourceManager_0<br>Specific Problem: 81924<br>Description: [mem_usage_high_major] Memory usage high. (91% used)" | <b>19 UAS 399 1228 INFO UAS Fault</b><br>Location: msh10uas-a<br>NotificationID: 81924<br>State: Clear<br>Time: May 22 11:19:14 2003 | <b>53 UAS 399 0642 INFO UAS Fault</b><br>Location: UAS_RTPU_TST<br>NotificationID: 49154<br>State: Clear<br>Time: May 11 10:53:37 2004<br>Component Id:<br>Description: |
|                                                                                                                                                                                                                                                                                                                                                                               | SDM SCC2 Samples:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                   | IEMS SCC2 Sample: |                   |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                      |                                                                                                                                                                         |
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| <b>19 UAS 399 1228 INFO UAS Fault</b><br>Location: msh10uas-a<br>NotificationID: 81924<br>State: Clear<br>Time: May 22 11:19:14 2003                                                                                                                                                                                                                                          | <b>53 UAS 399 0642 INFO UAS Fault</b><br>Location: UAS_RTPU_TST<br>NotificationID: 49154<br>State: Clear<br>Time: May 11 10:53:37 2004<br>Component Id:<br>Description:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                   |                   |                   |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                      |                                                                                                                                                                         |
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| CMT –APS                                                                                                                                                                                                                                                                                                                                                                      | At this time there are no known methods for an APS set log to be transmitted northbound to the OSS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No Impact                                                         |                   |                   |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                      |                                                                                                                                                                         |
| CICM, MCS5200, USP, USPc, RTP Portal, Session Server, MS20x0, SPC<br><br>Not supported via SDM                                                                                                                                                                                                                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No Impact                                                         |                   |                   |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                      |                                                                                                                                                                         |



# SN08 OSS Guide (ATM)

## Advance Feature Guide

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