NN10262-001

Carrier VoIP Networks

Quick Reference Guide

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NORTEL NETWORKS™

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Carrier VoIP Networks

North America solutions overview
IP solutions

Integrated access cable

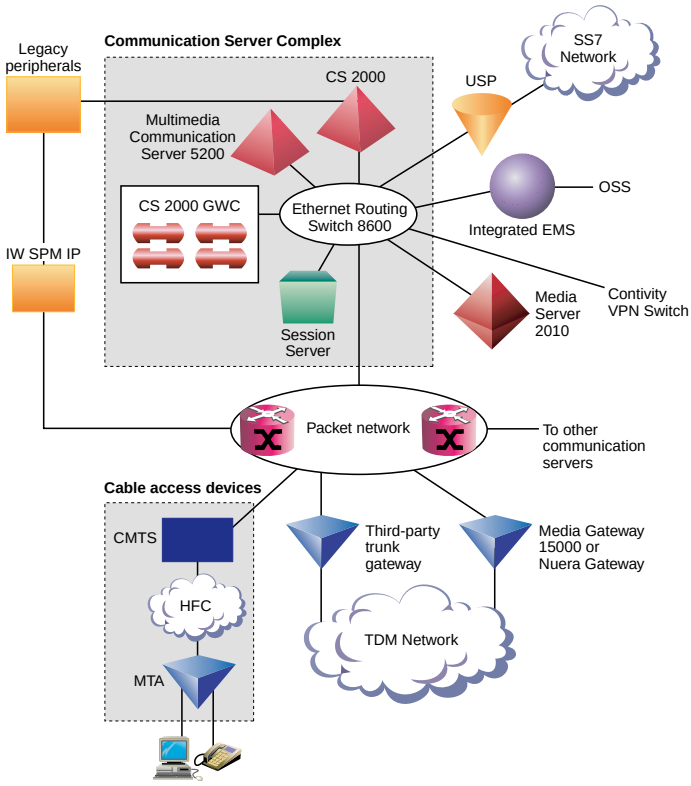
The Integrated Access Cable (IAC) solution delivers full featured IP telephony to residences over the Hybrid Fiber Coax Cable System (HFC) infrastructure.

Cable multiple system operators (MSOs) may choose to offer any combination of:

- regulatory compliant primary voice services
- alternative secondary voice services
- long distance services

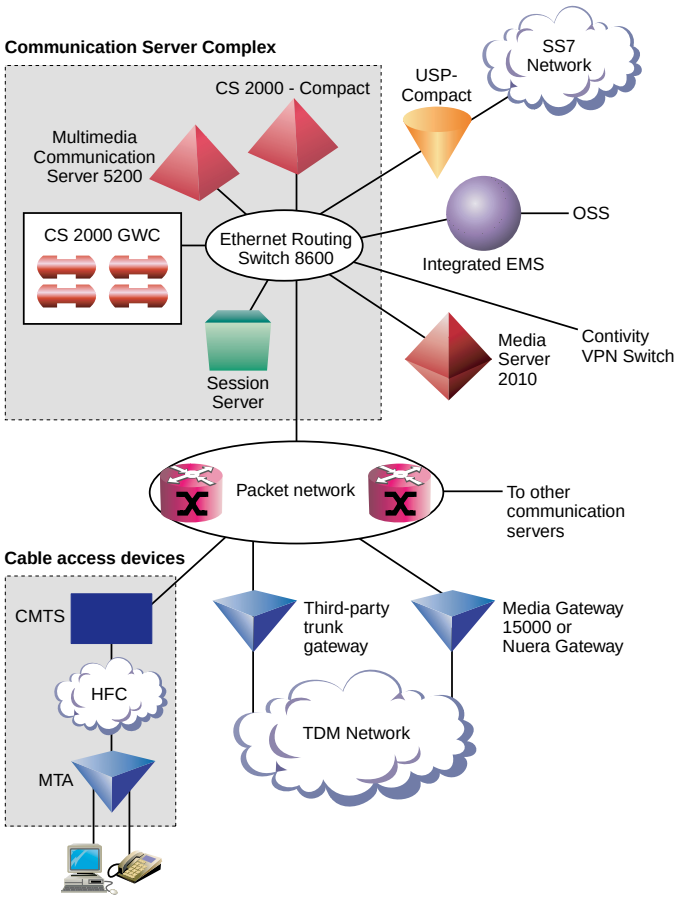
The following figures provide an architectural and call flow view of the IAC network.

IAC solution architecture



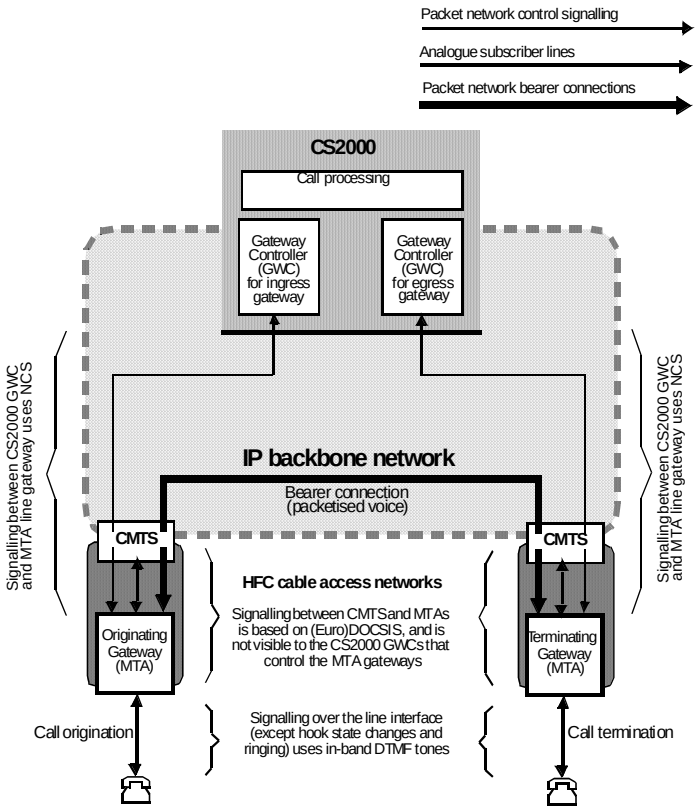
Note: The Nuera BTX-4000 Gateway is not supported in the International IAC solution.

IAC-Compact solution architecture



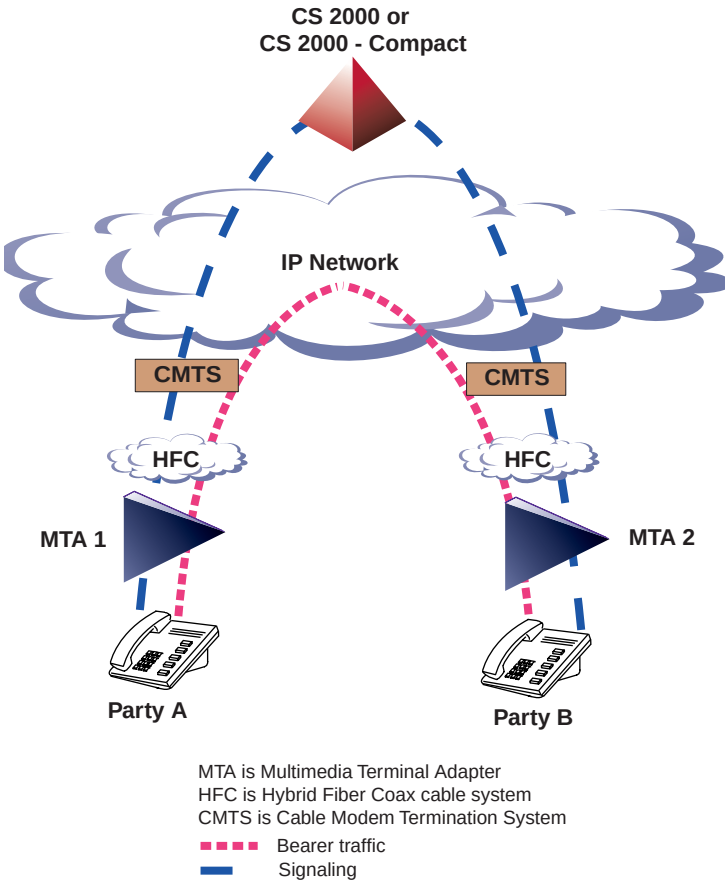
Note: The Nuera BTX-4000 Gateway is not supported in the International IAC solution.

Call flow for IAC solution



Call processing for IAC

On net to On net



Integrated access wireline

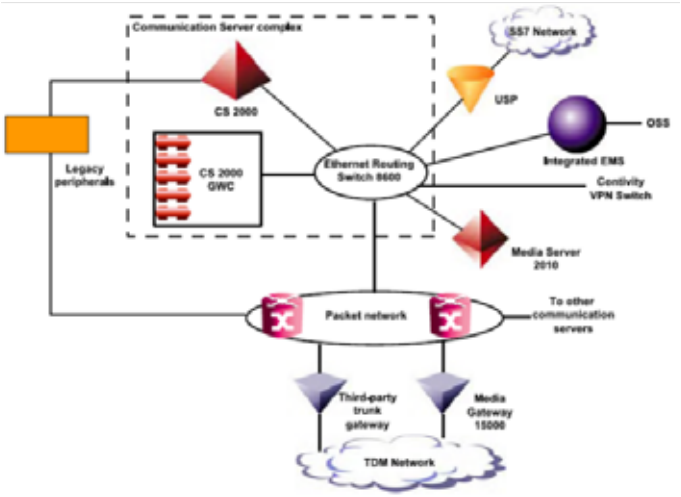
The Integrated Access - Wireline Solution (IAW) provides voice telephony and data services over Internet Protocol (IP) packet networks built around the Communication Server 2000 (CS 2000). It addresses the needs of carrier networks with trunking and lines interfaces.

The IAW solution delivers the traditional voice service suite on a converged packetized IP network, enabling carriers to offer inter-office trunking, long-distance, tandem and gateway functionality, plus emerging IP services.

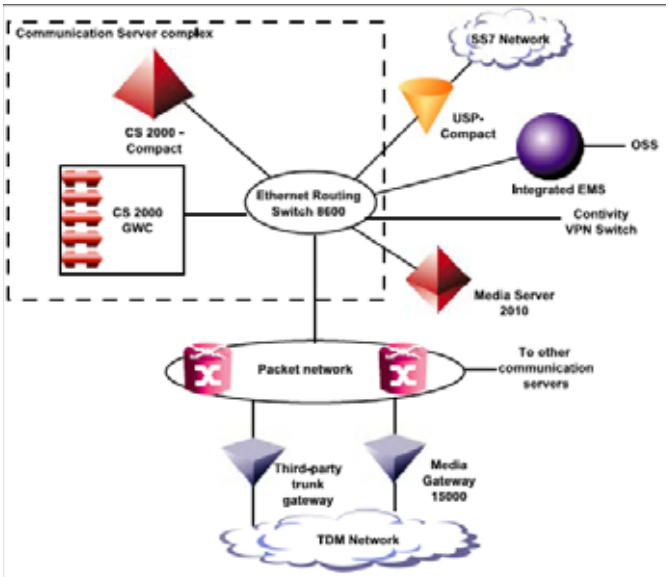
The IAW Solution also provides analogue line access using a variety of line access gateways, and V5.2 line access interfaces with the packet voice gateway (PVG).

The following figures provide an architectural and call flow view of the IAW network.

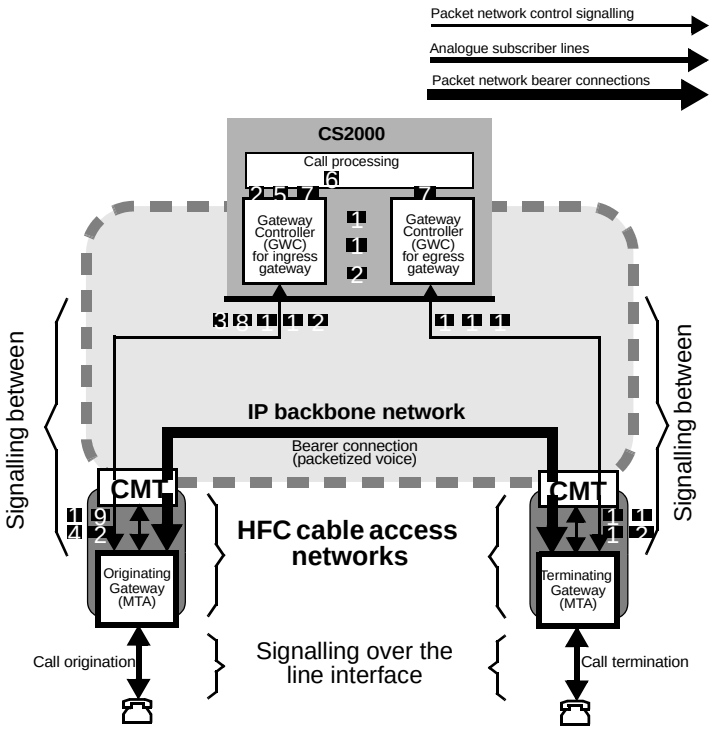
IAW solution architecture



IAW-Compact solution architecture



Call flow for IAW solution



Call Connect Sequence

1 MTA line gateway sends NCS NTFY (offhook) to ingress GWC to report subscriber going off-hook; GWC acknowledges NTFY by sending NCS 200 OK to gateway.

2 Ingress GWC sends an origination message to the CS 2000 Core.

3 Ingress GWC sends RQNT to MTA gateway, instructing it to:

- Provide dial tone
- Collect DTMF digits in accordance with a digit map

4 MTA gateway accumulates dialled digits in accordance with the digit map; when a digit map match occurs, gateway sends NCS NTFY (digits) to GWC to convey the digits collected; GWC acknowledges NTFY by sending NCS 200 OK to gateway. Depending on the dial plan, the GWC may send further digit maps, e.g. to switch to reporting each digit as it is dialled.

5 Ingress GWC passes received digits on to the Core

6 The Core uses received digits to perform translations and routing, resulting in the identification of the egress GWC and MTA gateway serving the destination line

7 (7a and 7b) The Core sends FCM (Fabric Control Message) to the ingress and egress GWCs to initiate establishment of bearer path connection between the MTAs, and to set up communication between the two GWCs.

8 Ingress GWC sends CRCX to originating MTA line gateway, instructing it to set up an initially inactive bearer connection for the line endpoint in question, specifying:

- The callID to be used in all subsequent connection control messages
- Local connection options set to PCM A-law with 10ms packetization

9 MTA gateway acknowledges CRCX and provides the SDP session description to be used for receiving audio data, including information such as:

- IP address at which the gateway is ready to receive audio data
- Transport protocol, i.e. RTP
- Audio profile, i.e. AVP
- RTP port identifier
- Payload type as defined in RFC 1890, i.e. 8 (corresponding to G.711 A-law)
- Packetization period of 10ms

10 Ingress GWC passes originating gateway's SDP session description (including IP address) to egress GWC.

11 Egress GWC sends CRCX to terminating MTA line gateway:

- Instructing the gateway to create an initially inactive bearer connection for the selected line endpoint, with local connection options set to PCM A-law with 10m packetization
- Passing on the SDP session description provided by the originating MTA line gateway

12 Terminating gateway sends NCS 200 OK to egress GWC in response to CRCX; this includes the terminating SDP service description (including IP address), which will be the one used for the call.

13 Egress GWC provides terminating SDP session description to ingress GWC.

14 Ingress GWC sends MDCX with terminating SDP session description to the originating MTA line gateway.

15 Egress GWC sends RQNT to terminating MTA line gateway, instructing the gateway to apply ringing to the terminating subscriber line and to report the called party going off-hook (at which point ringing will stop).

16 Terminating MTA gateway sends NCS 200 OK to indicate that ringing is being applied to the called party line.

17 Ingress GWC sends RQNT to originating MTA line gateway, instructing the gateway to apply ringback tone.

18 Terminating MTA gateway sends NCS NTFY (offhook) to egress GWC to report called party going off-hook; GWC acknowledges NTFY by sending NCS 200 OK to gateway.

19 Egress GWC sends NCS MDCX to terminating MTA line gateway, instructing the gateway to place the bearer connection in send/receive mode, and to report the subscriber going on-hook again; MTA gateway acknowledges RQNT by sending NCS 200 OK to GWC.

20 Egress GWC notifies ingress GWC that call has been answered.

21 Ingress GWC sends MDCX to originating MTA gateway, instructing it to place the bearer connection in full duplex mode (mode = sendrecv), stop applying ringback tone, and provide notification of the subscriber going on-hook again.

22 (22a and 22b) The call is fully established when both the originating and terminating MTA gateways have responded with an NCS 200 OK to the request to provide on-hook notification.

Packet trunking over IP

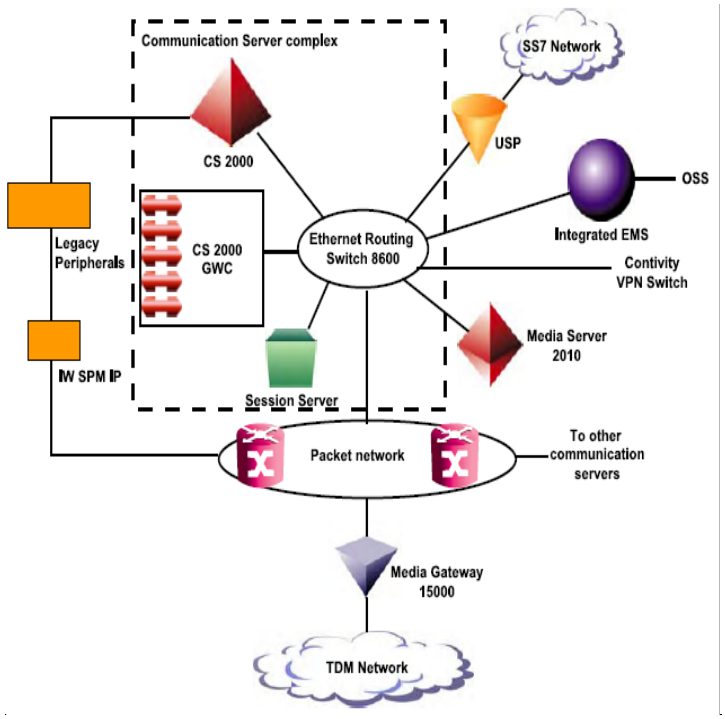
Carrier VoIP Packet Trunking over IP (PT-IP) solution enables ANSI ISUP payloads to be transported over the packet network.

PT-IP allows service providers to deploy trunking over a backbone IP packet network. PT-IP addresses the following Long Distance (LD) and tandem market requirements:

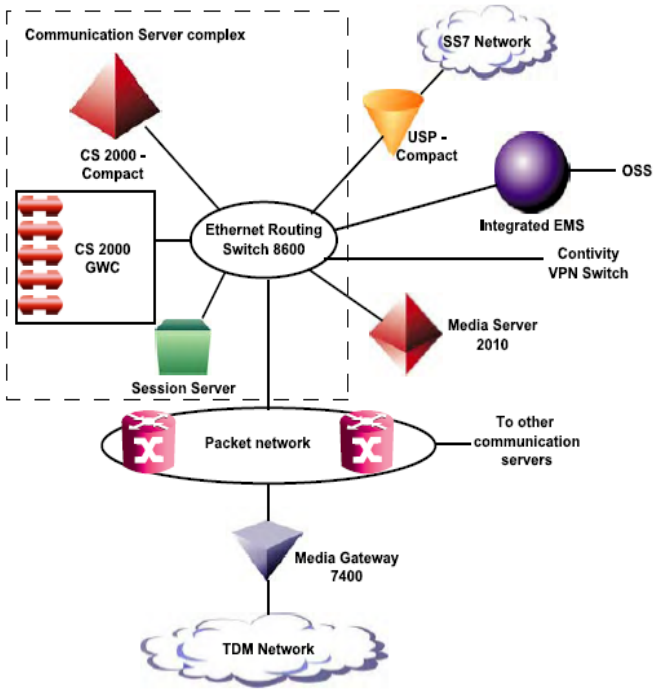
- voice-over-packet network services (voice application over a packet network)
- scalability (incremental port and Busy Hour Call Attempts (BHCA) capacity)
- reliability (99.999% service availability and in-service software upgrades during which no calls are lost)
- minimal footprint (high port density in a small amount of space)
- interoperability (system is standards-based so it is interoperable with other emerging solutions)
- reduced cost of ownership (lower cost of network infrastructure and operations)
- Greenfield and Evergreen solutions for smooth transition and upgrade plan to voice-over-packet unified network infrastructures (reuse of existing XA-Core architecture, support for existing OSS interfaces, preservation of DMS features, and integration of TDM and IP)
- support for DMS 100, 200, 250, and 500 feature sets on a unified software load

The following figures provide an architectural view of the PT-IP network.

PT-IP solution architecture



PT-IP-Compact solution architecture

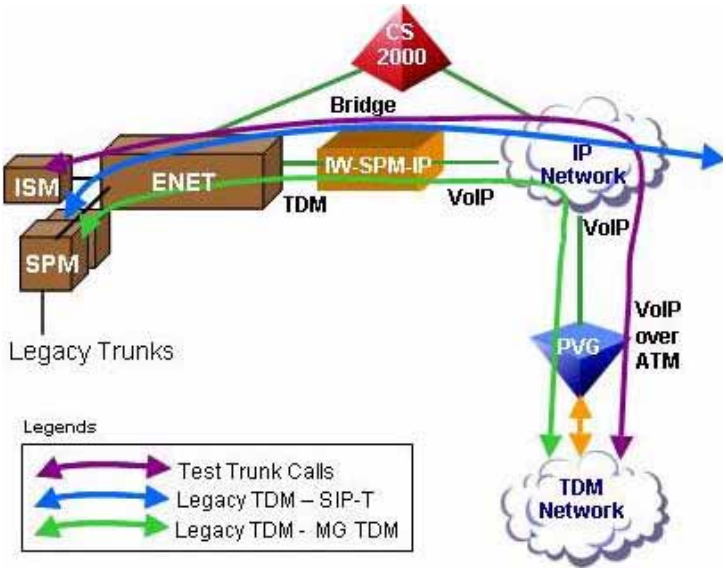


Call processing for PT-IP

IW-SPM-IP supports three types of calls. The following figure illustrates these call types:

- trunk testing calls on the Gateway trunk using legacy MTM test circuit
- legacy TDM trunk and Gateway TDM trunk interworking calls
- legacy TDM trunk and SIP-T DPT trunk interworking calls

IW-SPM-IP call support for PT-IP hybrid solution



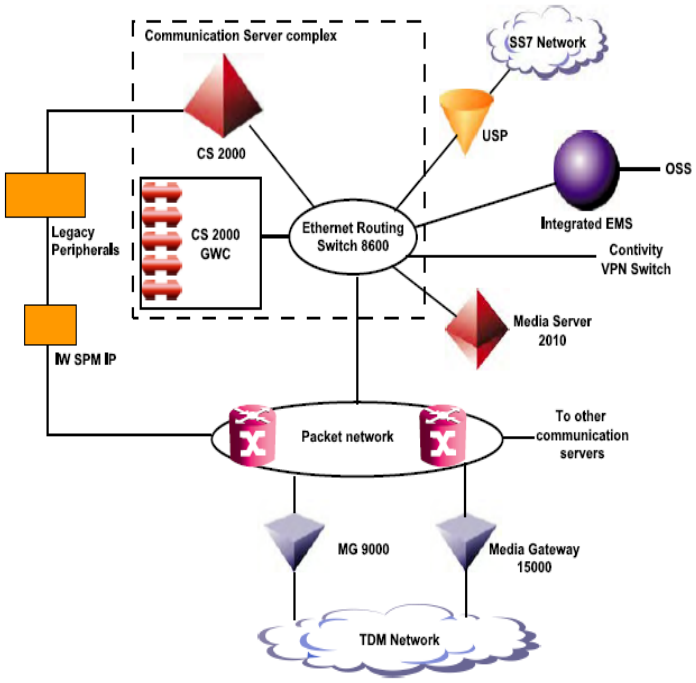
Universal access IP

The Universal Access IP (UA-IP) solution delivers end-office line and trunk services over an IP packet network.

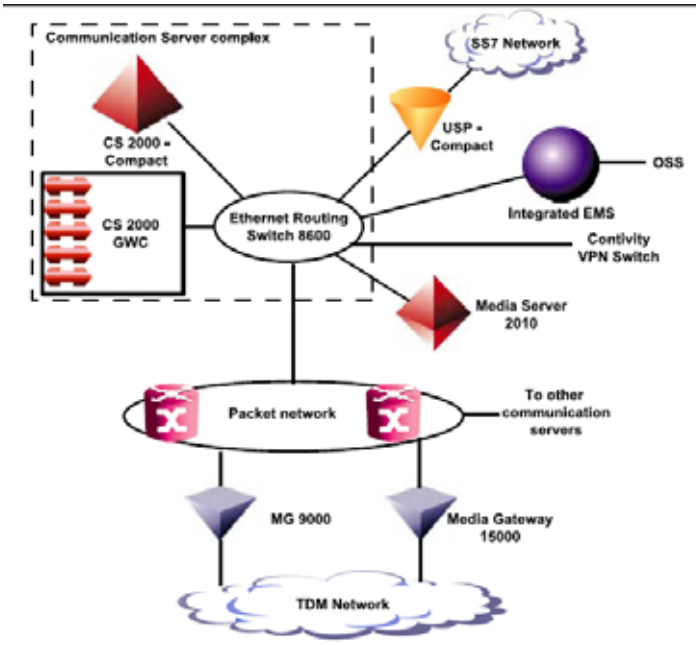
It delivers the traditional voice service suite on a converged packetized IP network, enabling carriers to offer inter-office trunking, long-distance, tandem and gateway functionality, plus emerging IP services. In addition, this solution also provides analog lines access in a CVoIP networking using the MG 9000 Lines Gateway.

The following figures provide an architectural and call flow view of the UA-IP network.

UA-IP solution architecture



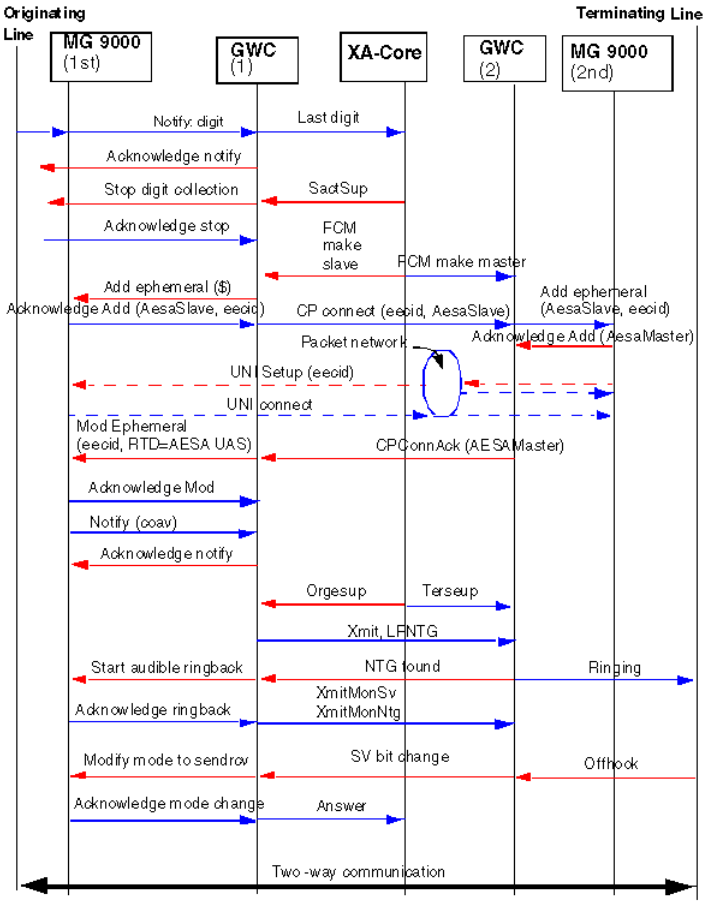
UA-IP-Compact solution architecture



Call processing for UA-IP

The figure “MG 9000 to MG 9000 call setup” shows a call walk through for a call that originates on one MG 9000 and terminates on another MG 9000.

MG 9000 to MG 9000 call setup



ATM solutions

Packet trunking ATM

Carrier VoIP Packet Trunking ATM (PTA) provides packet based trunk support for ILEC end offices.

PT-AAL1

Currently, there are three distinct architectures supported within the PT-AAL1 solution.

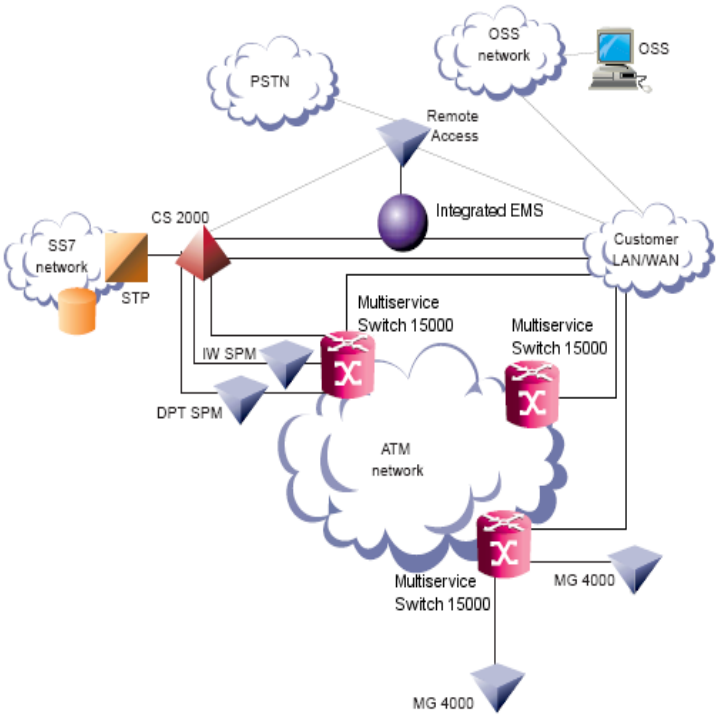
- Packet Trunking-AAL1 (PT-AAL1)
- Packet Trunking on XA-Core (PT-XA Core)
- Packet Trunking on SN70EM (PT-SN70)

This section provides overview information relating to the PT-AAL1 architecture. For overview information relating to the PT-XA Core, and PT-SN70 architectures, see PT-XA-Core and PT-SN70.

The main function of the Packet Trunking-AAL1 (PT-AAL1) ILEC solution is to provide transmission of voice trunking over asynchronous transfer mode (ATM). The term ILEC means incumbent local exchange carrier. Nortel Networks is offering this solution to expand the functionality of, and maximize investment in existing DMS-100, 200, 100/200 and TOPS offices.

The figure below illustrates the PT-AAL1 solution.

PT-AAL1 solution architecture



PT-XA and PT-SN70

This section provides overview information relating to both the PT-XA Core, and PT-SN70 architectures. For overview information relating to the PT-AAL1 architecture, see PT-AAL1.

A partial implementation of the PT-XA-Core or PT-SN70 solution is supported for legacy peripherals in existing DMS 100, 100/200, 200, or 500 end offices. This is achieved by installing DPT SPM hardware and CVoATM software in an existing XA Core or SuperNode 70 EM (SN70EM) based end office switch.

The main function of the PT-XA Core, or PT-SN70 switch is to provide transmission of voice trunking over asynchronous transfer mode (ATM). The term ILEC means incumbent local exchange carrier. Nortel Networks is offering the PT-XA Core, (or PT-SN70) architectures to expand the functionality of, and maximize investment in existing DMS-100, 200, 100/200 and TOPS offices.

PT-AAL2

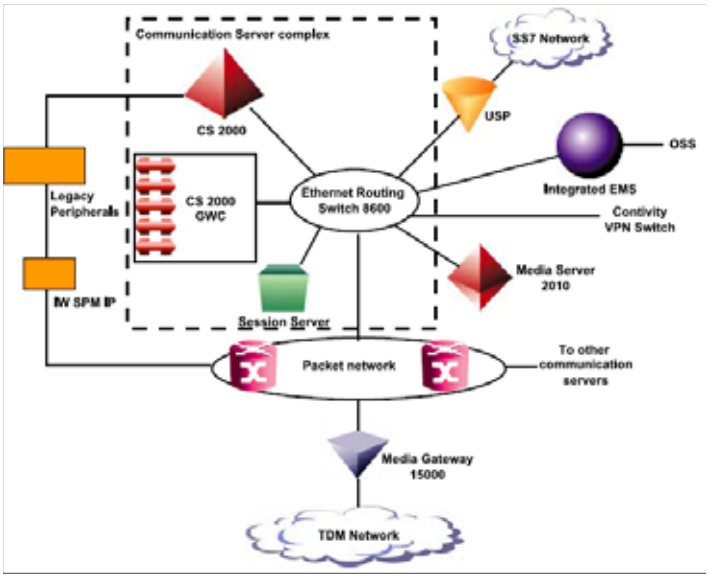
PT-AAL2 allows service providers to deploy trunking over a backbone ATM packet network.

PT_AAL2 addresses the following Long Distance (LD) and tandem market requirements:

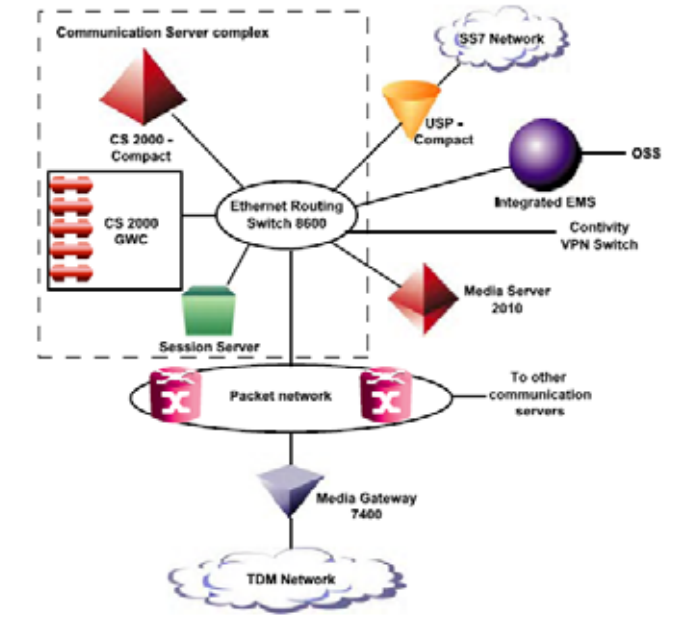
- voice-over-packet network services (voice application over a packet network)
- scalability (incremental port and Busy Hour Call Attempts (BHCA) capacity)
- reliability (99.999% service availability and in-service software upgrades during which no calls are lost)
- minimal footprint (high port density in a small amount of space)
- interoperability (system is standards-based so it is interoperable with other emerging solutions)
- reduced cost of ownership (lower cost of network infrastructure and operations)
- Greenfield and Evergreen solutions for smooth transition and upgrade plan to voice-over-packet unified network infrastructures (reuse of existing XA-Core architecture, support for existing OSS interfaces, preservation of DMS features, and integration of TDM and IP)
- support for DMS 100, 200, 250, and 500 feature sets on a unified software load

The following figures provide an architectural view of the PT-AAL2 network.

PT-AAL2 solution architecture



PT-AAL2-Compact solution architecture



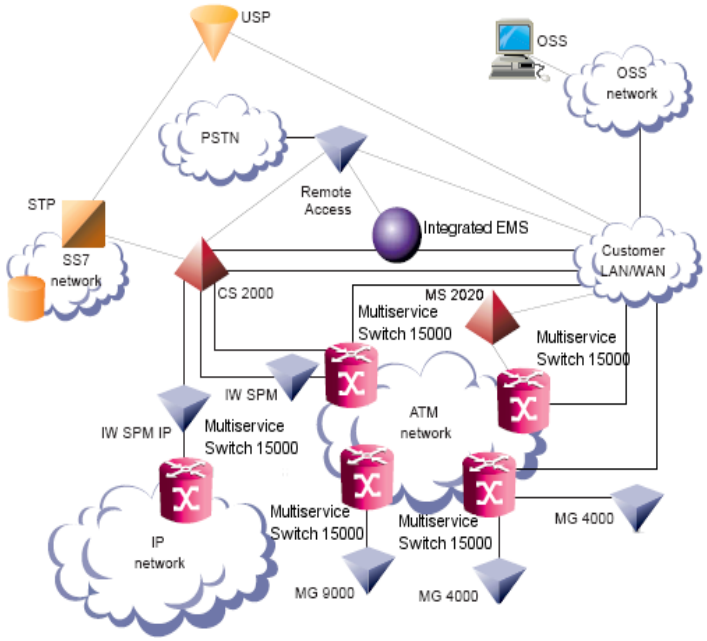
Universal access ATM

The Wireline Universal Packet Access-AAL1 (UA-AAL1) solution provides packet-based line and trunk support for LEC (local exchange carrier) end offices.

The UA-AAL1 solution converges voice and data on to a packet network for Local Exchange Carrier service providers. This solution provides the infrastructure and opportunity for reduced network costs while protecting current revenue streams and network investments. Using this solution to expand the footprint of available services in existing territory or to expand the existing service territory provides an opportunity for revenue growth.

The following figures provide an architectural and call flow view of the UA-AAL1 network.

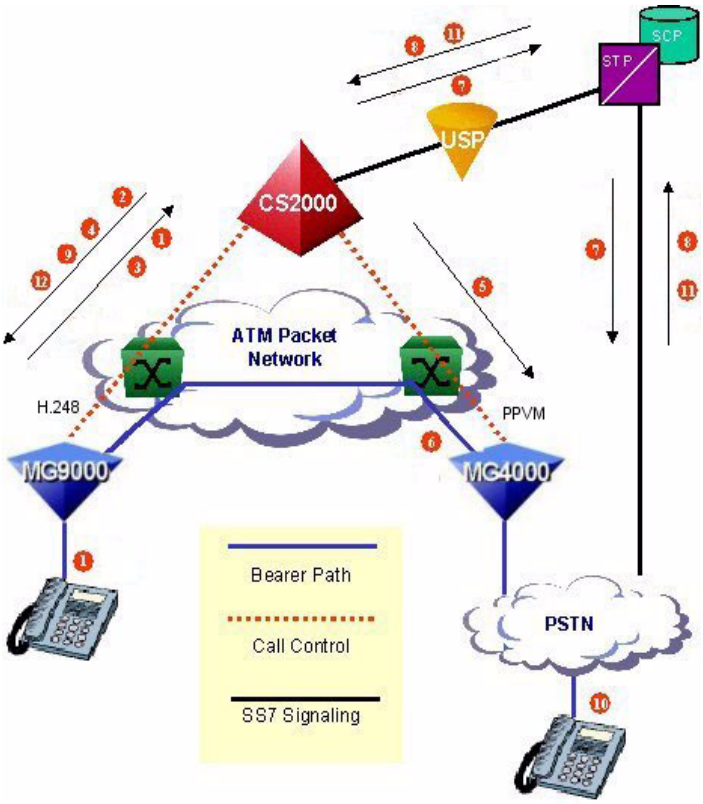
UA-AAL1 solution architecture



Call processing for UA-AAL1

The following section describes a generic line to trunk call in the UA-AAL1 solution.

Overview of Call Connection

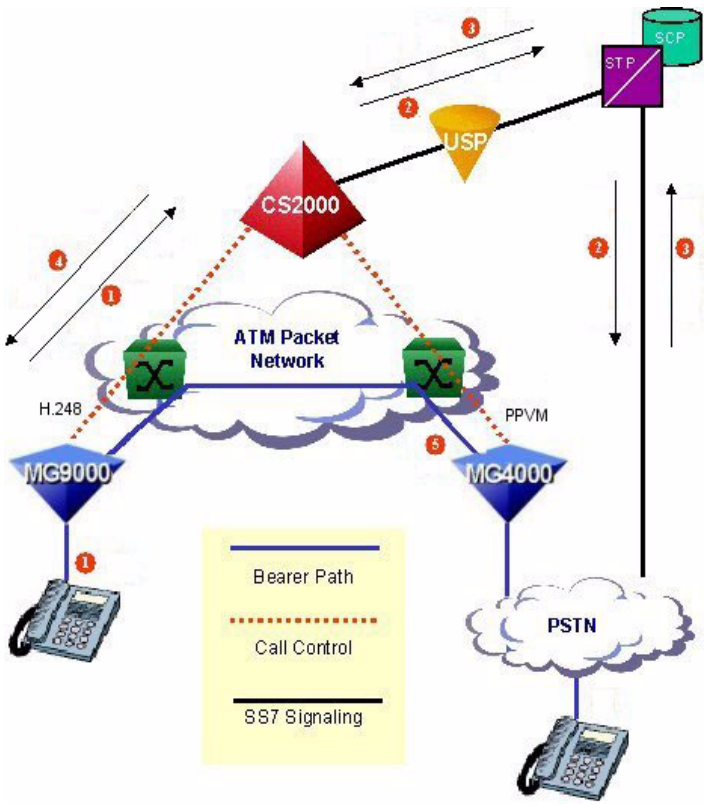


Call Connect Sequence

1	The caller goes off-hook and the MG 9000 notifies the CS 2000 via call control protocol.
2	The CS 2000 directs the MG 9000 to apply dial tone and collect digits.
3	Digits are collected and reported to the CS 2000.
4	The CS 2000 identifies the outgoing ISUP trunk, and directs the MG 9000 to accept an incoming connection from the destination MG 4000.
5	The CS 2000 directs the MG 4000 to create a bearer path connection.
6	The MG 4000 creates a bearer path connection to the originating MG 9000.
7	The CS 2000 sends an IAM to the STP; the STP sends an IAM to the PSTN.
8	The PSTN replies with an ACM to the STP; the STP sends an ACM to the CS 2000.
9	The CS 2000 modifies connection status to “recvonly” (destination end office is providing audible ringback).
10	The terminator answers.
11	The PSTN sends an ANM to the STP; the STP sends an ANM to the CS 2000.

12 The CS 2000 modifies connection status to “sendrecv”, enabling bearer traffic end to end.

Overview of Call Disconnection



Call Disconnect Sequence

1 The caller goes on-hook, and the MG 9000 notifies the CS 2000 of the on-hook occurrence.

2 The CS 2000 processes the on-hook request and sends the PSTN a REL message.

3 The PSTN replies to the CS 2000 with a RLC.

4 The CS 2000 instructs the MG 9000 to clear the originating terminal appearance.

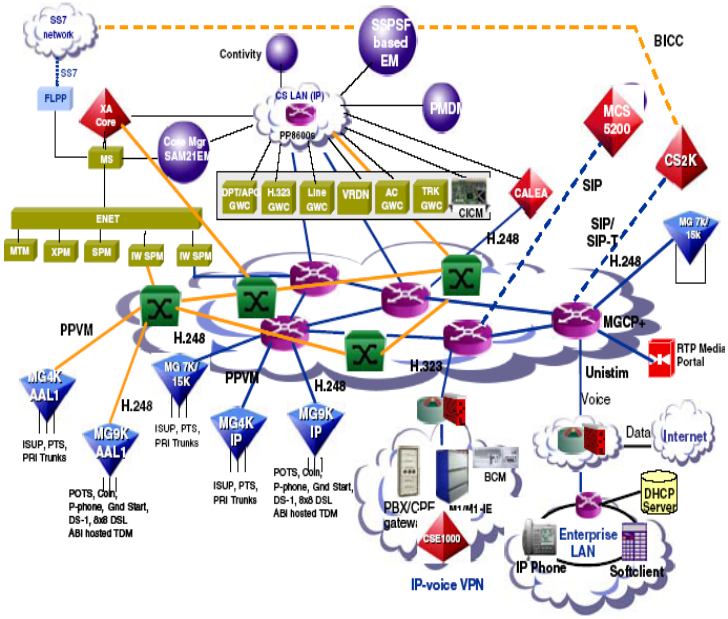
5 The MG 4000 communicates with the MG 9000 to disconnect the bearer path connection previously established.

Trimodal solution

From SN07 release, the CS 2000 can function as a trimodal communication server. A trimodal communication server offers

- a migration path from ATM network to an IP network
- co-existence of ATM and IP packet backbones in the same network
- ENET connections for ATM-IP network interworking calls

Trimodal architecture



International solutions overview

Integrated access cable

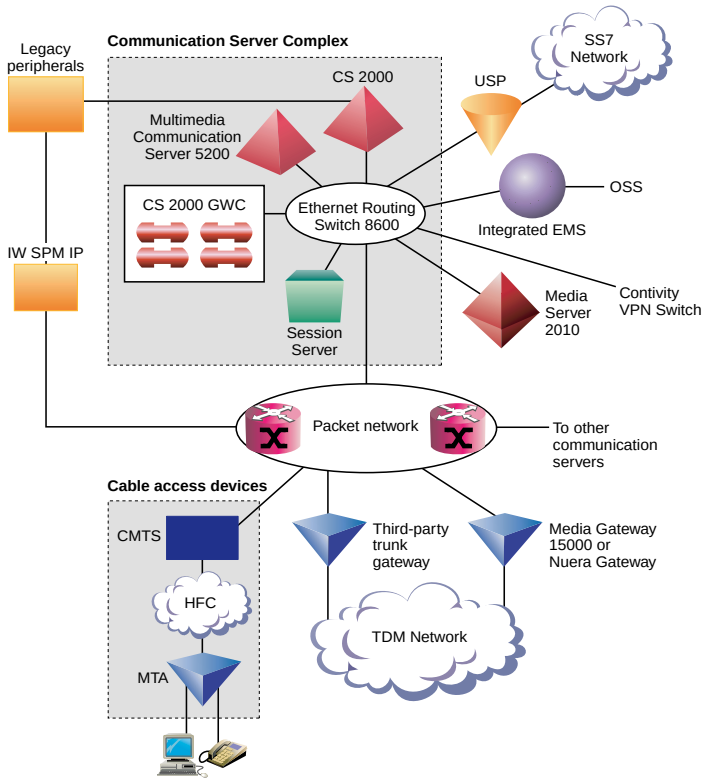
The Integrated Access Cable (IAC) solution delivers full featured IP telephony to residences over the Hybrid Fiber Coax Cable System (HFC) infrastructure.

Cable multiple system operators (MSOs) may choose to offer any combination of:

- regulatory compliant primary voice services
- alternative secondary voice services
- long distance services

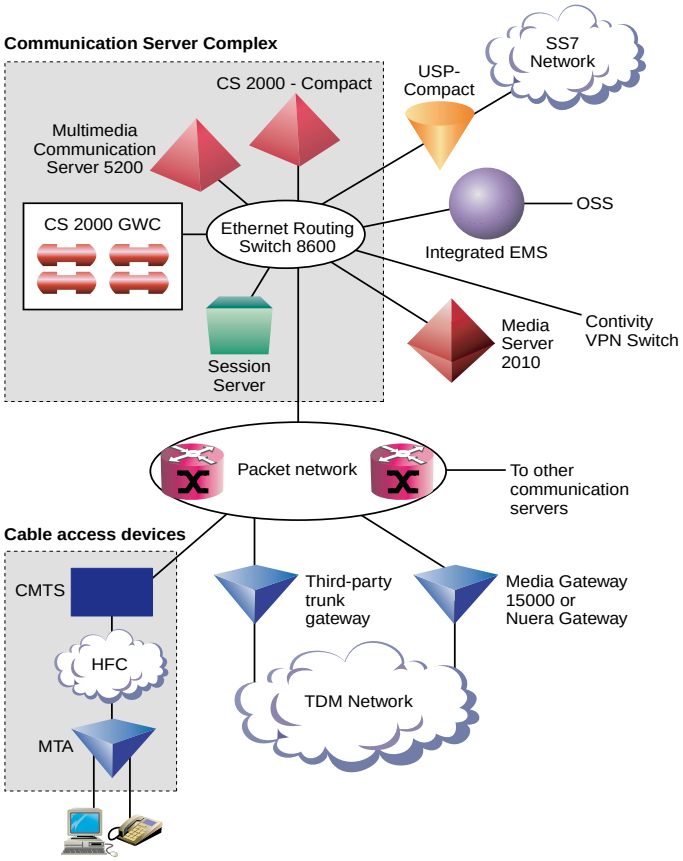
The following figures provide an architectural and call flow view of the IAC network.

IAC solution architecture



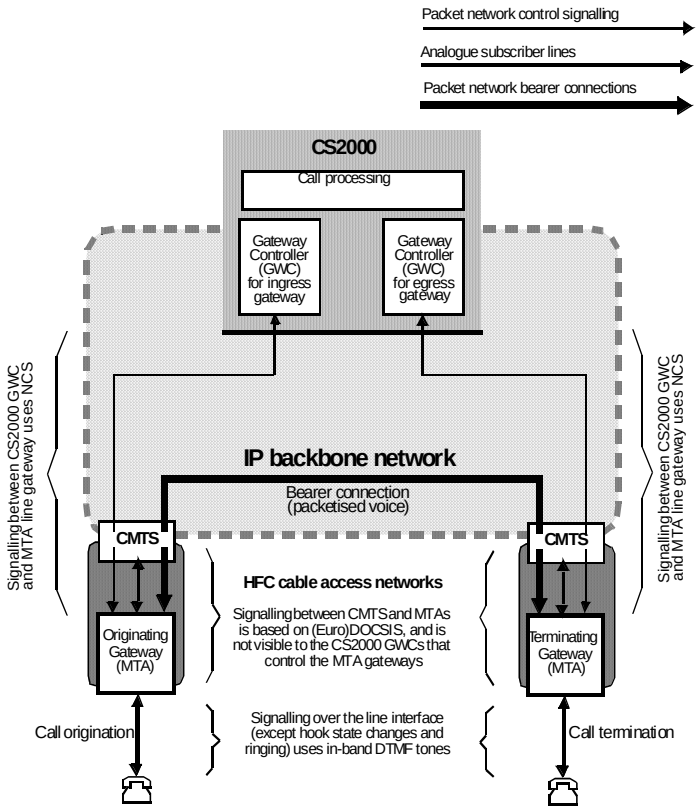
Note: The Nuera BTX-4000 Gateway is now supported in the International IAC solution.

IAC-Compact solution architecture



Note: The Nuera BTX-4000 Gateway is not supported in the International IAC solution.

Call flow for IAC solution



Integrated access wireline

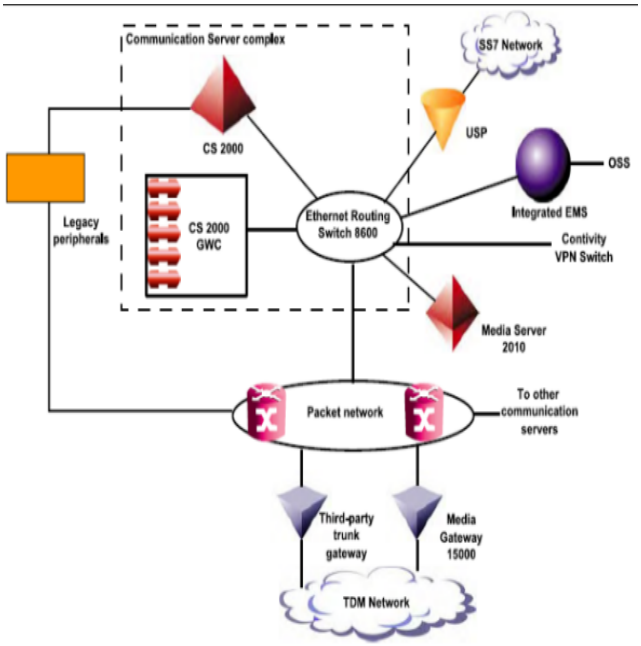
The Integrated Access - Wireline Solution (IAW) provides voice telephony and data services over Internet Protocol (IP) packet networks built around the Communication Server 2000 (CS 2000). It addresses the needs of carrier networks with trunking and lines interfaces.

The IAW solution delivers the traditional voice service suite on a converged packetized IP network, enabling carriers to offer inter-office trunking, long-distance, tandem and gateway functionality, plus emerging IP services.

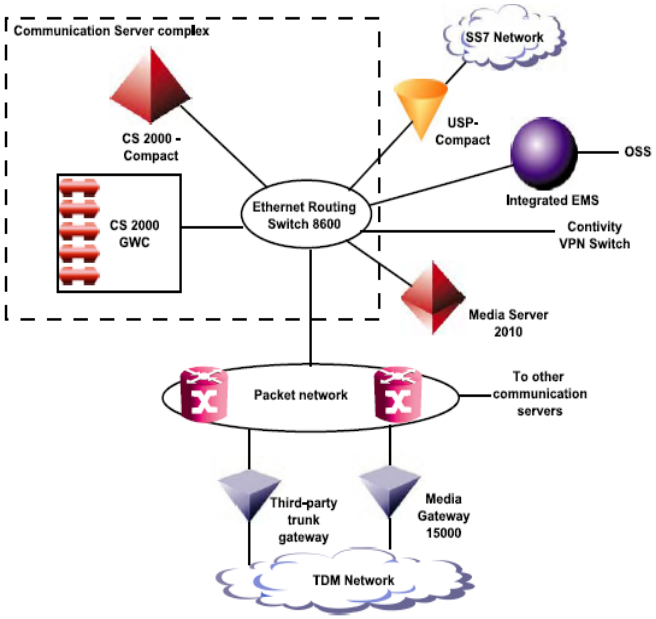
The IAW Solution also provides analogue line access using a variety of line access gateways, and V5.2 line access interfaces with the packet voice gateway (PVG).

The following figures provide an architectural and call flow view of the IAW network.

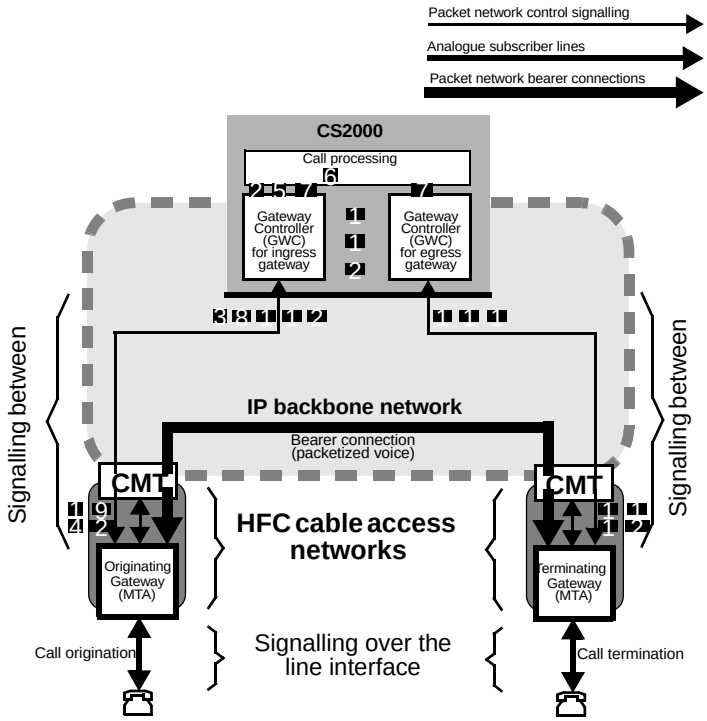
IAW solution architecture



IAW-Compact solution architecture



Call flow for IAW solution



Call Connect Sequence

1 MTA line gateway sends NCS NTFY (offhook) to ingress GWC to report subscriber going off-hook; GWC acknowledges NTFY by sending NCS 200 OK to gateway.

2 Ingress GWC sends an origination message to the CS 2000 Core.

3 Ingress GWC sends RQNT to MTA gateway, instructing it to:

- Provide dial tone
- Collect DTMF digits in accordance with a digit map

4 MTA gateway accumulates dialled digits in accordance with the digit map; when a digit map match occurs, gateway sends NCS NTFY (digits) to GWC to convey the digits collected; GWC acknowledges NTFY by sending NCS 200 OK to gateway. Depending on the dial plan, the GWC may send further digit maps, e.g. to switch to reporting each digit as it is dialled.

5 Ingress GWC passes received digits on to the Core

6 The Core uses received digits to perform translations and routing, resulting in the identification of the egress GWC and MTA gateway serving the destination line

7 (7a and 7b) The Core sends FCM (Fabric Control Message) to the ingress and egress GWCs to initiate establishment of bearer path connection between the MTAs, and to set up communication between the two GWCs.

8 Ingress GWC sends CRCX to originating MTA line gateway, instructing it to set up an initially inactive bearer connection for the line endpoint in question, specifying:

- The callID to be used in all subsequent connection control messages
- Local connection options set to PCM A-law with 10ms packetization

9 MTA gateway acknowledges CRCX and provides the SDP session description to be used for receiving audio data, including information such as:

- IP address at which the gateway is ready to receive audio data
- Transport protocol, i.e. RTP
- Audio profile, i.e. AVP
- RTP port identifier
- Payload type as defined in RFC 1890, i.e. 8 (corresponding to G.711 A-law)
- Packetization period of 10ms

10 Ingress GWC passes originating gateway's SDP session description (including IP address) to egress GWC.

11 Egress GWC sends CRCX to terminating MTA line gateway:

- Instructing the gateway to create an initially inactive bearer connection for the selected line endpoint, with local connection options set to PCM A-law with 10m packetization
- Passing on the SDP session description provided by the originating MTA line gateway

12 Terminating gateway sends NCS 200 OK to egress GWC in response to CRCX; this includes the terminating SDP service description (including IP address), which will be the one used for the call.

13 Egress GWC provides terminating SDP session description to ingress GWC.

14 Ingress GWC sends MDCX with terminating SDP session description to the originating MTA line gateway.

15 Egress GWC sends RQNT to terminating MTA line gateway, instructing the gateway to apply ringing to the terminating subscriber line and to report the called party going off-hook (at which point ringing will stop).

16 Terminating MTA gateway sends NCS 200 OK to indicate that ringing is being applied to the called party line.

17 Ingress GWC sends RQNT to originating MTA line gateway, instructing the gateway to apply ringback tone.

18 Terminating MTA gateway sends NCS NTFY (offhook) to egress GWC to report called party going off-hook; GWC acknowledges NTFY by sending NCS 200 OK to gateway.

19 Egress GWC sends NCS MDCX to terminating MTA line gateway, instructing the gateway to place the bearer connection in send/receive mode, and to report the subscriber going on-hook again; MTA gateway acknowledges RQNT by sending NCS 200 OK to GWC.

20 Egress GWC notifies ingress GWC that call has been answered.

21 Ingress GWC sends MDCX to originating MTA gateway, instructing it to place the bearer connection in full duplex mode (mode = sendrecv), stop applying ringback tone, and provide notification of the subscriber going on-hook again.

22 (22a and 22b) The call is fully established when both the originating and terminating MTA gateways have responded with an NCS 200 OK to the request to provide on-hook notification.

Packet transit IP

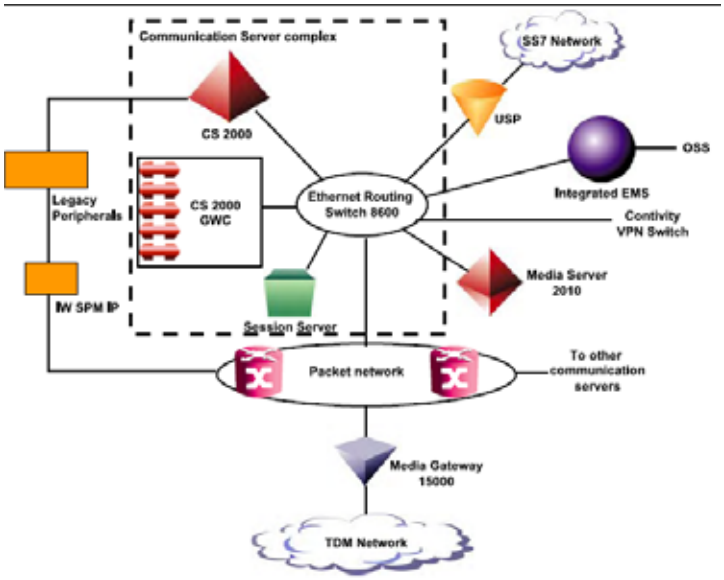
Carrier VoIP Packet Trunking over IP (PT_IP) solution enables ANSI ISUP payloads to be transported over the packet network.

PT-IP allows service providers to deploy trunking over a backbone IP packet network. IAW addresses the following Long Distance (LD) and tandem market requirements:

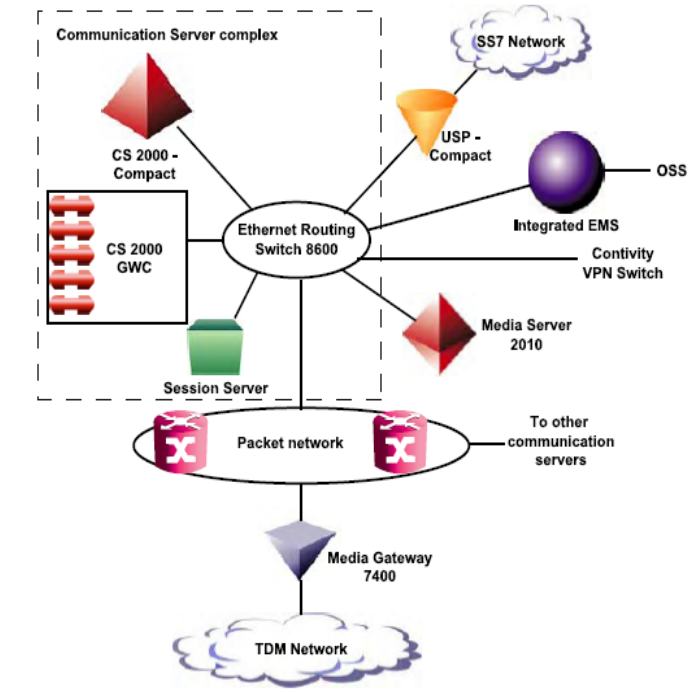
- voice-over-packet network services (voice application over a packet network)
- scalability (incremental port and Busy Hour Call Attempts (BHCA) capacity)
- reliability (99.999% service availability and in-service software upgrades during which no calls are lost)
- minimal footprint (high port density in a small amount of space)
- interoperability (system is standards-based so it is interoperable with other emerging solutions)
- reduced cost of ownership (lower cost of network infrastructure and operations)
- Greenfield and Evergreen solutions for smooth transition and upgrade plan to voice-over-packet unified network infrastructures (reuse of existing XA-Core architecture, support for existing OSS interfaces, preservation of DMS features, and integration of TDM and IP)
- support for DMS 100, 200, 250, and 500 feature sets on a unified software load

The following figures provide an architectural view of the PT-IP network.

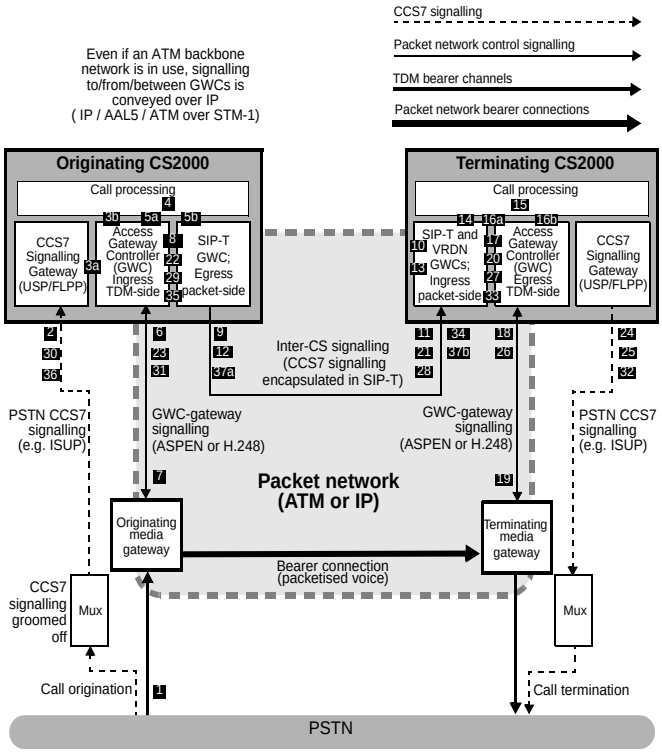
PT-IP solution architecture



PT-IP-Compact solution architecture



Call flow for PT-IP solution



Packet transit ATM
PT-AAL2

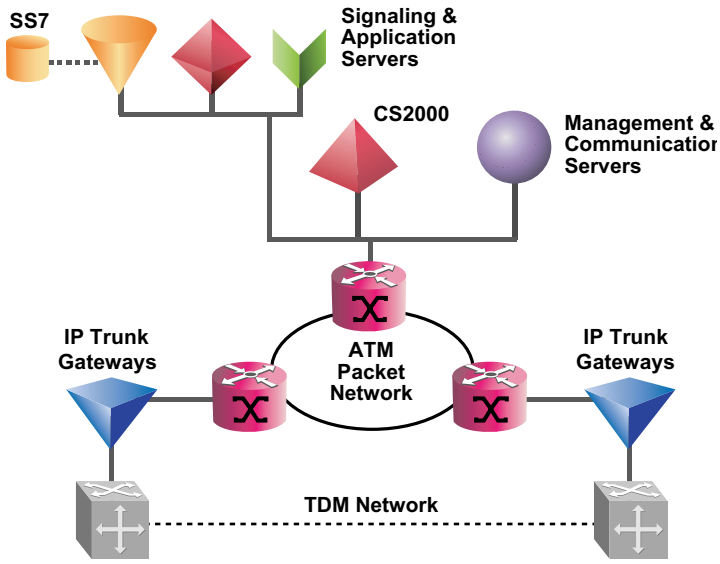
PT-AAL2 allows service providers to deploy trunking over a backbone ATM packet network.

PT_AAL2 addresses the following Long Distance (LD) and tandem market requirements:

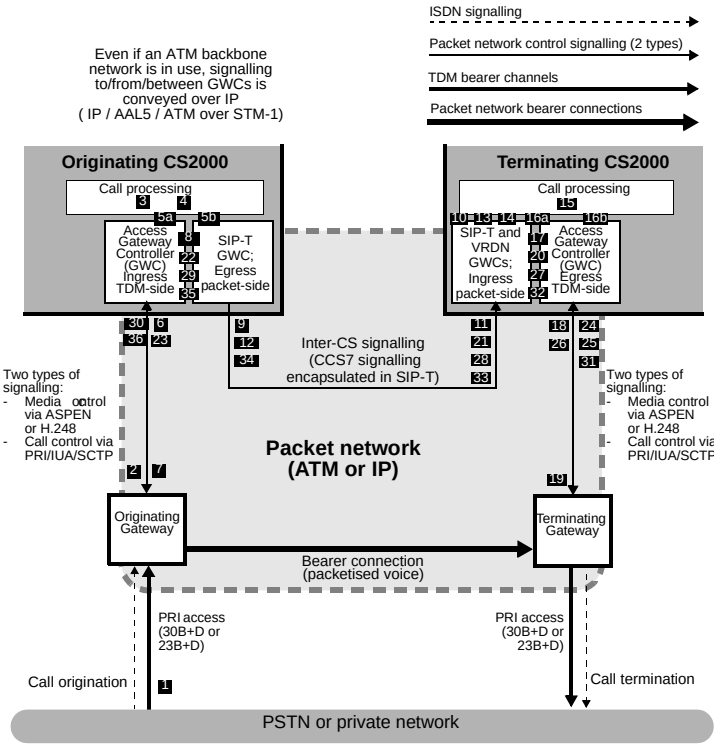
- voice-over-packet network services (voice application over a packet network)
- scalability (incremental port and Busy Hour Call Attempts (BHCA) capacity)
- reliability (99.999% service availability and in-service software upgrades during which no calls are lost)
- minimal footprint (high port density in a small amount of space)
- interoperability (system is standards-based so it is interoperable with other emerging solutions)
- reduced cost of ownership (lower cost of network infrastructure and operations)
- Greenfield and Evergreen solutions for smooth transition and upgrade plan to voice-over-packet unified network infrastructures (reuse of existing XA-Core architecture, support for existing OSS interfaces, preservation of DMS features, and integration of TDM and IP)
- support for DMS 100, 200, 250, and 500 feature sets on a unified software load

The following figure provide an architectural view of the PT-AAL2 network.

PT-AAL2 architecture



Call flow for PT-AAL2 solution



Call flow sequence

1 Incoming call arrives at originating media gateway.

2 IAM for incoming call groomed off to terminate on CS 2000 signalling gateway.

3 Signalling gateway (USP or FLPP) identifies ingress access GWC and media gateway and routes the IAM to the GWC. Ingress access GWC validates and processes IAM and sends it on to the CS 2000 core.

4 CS 2000 Core uses IAM to

- Perform translations and routing resulting in the selection of an outgoing trunk group to another CS 2000.
- Select a DPT (Dynamic Packet Trunk) from the pool supported by DPT GWCs.
- Allocate the selected DPT for the duration of the call.

5 The DPT GWC selects a trunk profile for the DPT on the basis of the CCS7 protocol to be used and the destination hostname and passes the telephony profile index to the core.

a See Figure 13 on page 62 for an illustration of how DPT GWCs interact with SP 2000 to support DPTs for inter-CS communication.

b CS 2000 Core sends FCM (Fabric Control Message) to ingress and egress GWCs to enable direct communication between them.

6 Ingress access GWC sends H.248 Add commands to originating media gateway to establish mapping between the TDM-side and packet-side terminations. First Add command identifies TDM-side trunk and requests gateway to add it to a newly created context. Second Add command asks gateway to reserve logical packet side termination in receive-only mode and add it to the same context.

7 Media gateway response to second Add command provides GWC with endpoint identifier (IP address) to use for logical termination together with SDP description of bearer capabilities supported (for use in codec negotiation with the gateway serving the remote endpoint.

8 Ingress access GWC passes media gateway IP address and SDP session description to egress DPT GWC.

9 Egress DPT GWC assembles outgoing IAM and forwards IAM to egress SP 2000. Egress SP 2000 encapsullates IAM in SIP-T INVITE message together with SDP session description including IP address of originating media gateway endpoint; egress SP 2000 then sends INVITE message to SP 2000 on terminating CS 2000.

10 Ingress SP 2000 on terminating CS 2000 immediately acknowledges INVITE message by sending back a SIP-T TRYING message with no payload.

11 Ingress SP 2000 selects an ingress DPT GWC that has an available DPT provides it with trunk profile information derived from the INVITE message. See Figure 13 on page 62 for an illustration of how SP 2000 and DPT GWCs interact to support DPTs for inter-CS communications.

12 Ingress DPT GWC allocates selected DPT for the duration of the call and defines its protocol characteristics in accordance with trunk profile from INVITE message.

13 Ingress SP 2000 forwards IAM extracted from INVITE message to selected DPT on ingress DPT GWC.

14 Ingress DPT GWC forwards IAM to CS 2000 core requesting it to initiate call processing.

15 CS 2000 core uses IAM to perform translations and routing and identifies the egress access GWC and media gateway serving the destination.

16 CS 2000 core sends FCM to ingress and egress GWCs to enable direct communication between them.

17 Ingress DPT GWC passes originating media gateway IP address and SDP session description to egress access GWC.

18 Egress Access GWC sends H.248 Add commands to terminating media gateway to establish mapping between the TDM-side and packet-side terminations. First Add command identifies TDM-side trunk identified via translations and routing and requests gateway to add it to a newly created context. Second Add command asks gateway to reserve logical packet side termination and add it to the same context.

19 Media gateway response to second Add command provides GWC with endpoint identifier (IP address) to use for logical termination together with SDP description of bearer capabilities supported (for use in codec negotiation with the gateway serving the remote endpoint.

20 Outgoing IAM sent out from signalling gateway (USP or FLPP) on terminating CS 2000.

21 Backward ACM received by signalling gateway on terminating CS 2000.

22 Backward ACM routed to ingress DPT GWC on terminating CS 2000 (directly or via the core depending on CCS7 protocol types involved); ingress DPT GWC forwards ACM to ingress SP 2000

23 Ingress SP 2000 encapsulates outgoing ACM in a backward SIP-T 183 SESSION PROGRESS message then sends message to originating CS 2000.

24 Ingress DPT GWC sends ingress SP 2000 a request for ringback tone to be applied to originating TDM-side trunk.

25 Ingress SP 2000 conveys ringback tone request to originating CS 2000 by means of a backward SIP-T 180 RINGING message

26 Egress SP 2000 on originating CS 2000 terminates SESSION PROGRESS and RINGING messages, extracting backward ACM from SESSION PROGRESS message and forwarding it to egress DPT GWC.

27 Egress DPT GWC on originating CS 2000 forward ACM to ingress access GWC (directly via the core depending on CCS7 protocol types involved.

28 Backward ACM sent out from signalling gateway on originating CS 2000.

29 Ingress Access GWC sends H.248 Modify message to originating media gateway, asking gateway to apply ringback tone to originating TDM-side trunk.

30 Backward ANM received by signalling gateway on terminating CS 2000 and passed to egress access GWC.

31 Egress Access GWC sends H.248 Modify message to terminating media gateway asking gateway to place the bearer conncetion in full duplex mode.

32 Backward ANM routed to ingress DPT GWC on terminating CS 2000 (directly or via the core depending on CCS7 protocol types involved); ingress DPT GWC forwards ANM to ingress SP 2000 together with SDP description of bearer capabilities supported by terminating media gateway endpoint.

33 Ingress SP 2000 encapsulates outgoing ANM and associated SDP in a backward SIP-T 200 OK message then sends messages to originating CS 2000.

34 Egress SP 2000 on originating CS 2000 extracts ANM from SIP-T message and forwards it to egress DPT GWC

35 Egress DPT GWC notifies ingress access GWC (directly or via the Core depending on CCS7 potocol types involved) of ANM arrival.

36 Ingress Access GWC sends H.248 Modify message to originating media gateway completing codec negotiation process and asking gateway to remove ringback tone and place the bearer connection in full duplex mode.

37 Backward ANM sent out from signalling gateway on originating CS 2000 thus completing call setup for the packet network bearer connection between the two media gateways.

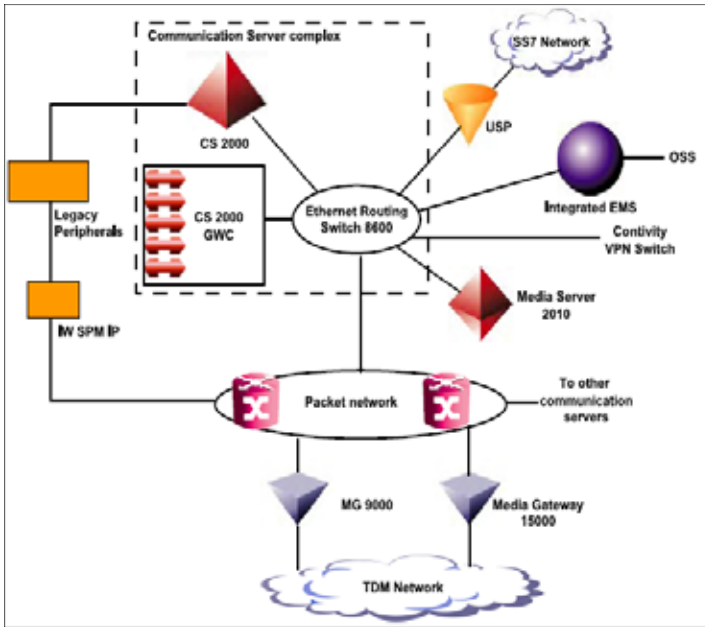
Universal access IP

The Universal Access IP (UA-IP) solution delivers end-office line and trunk services over an IP packet network.

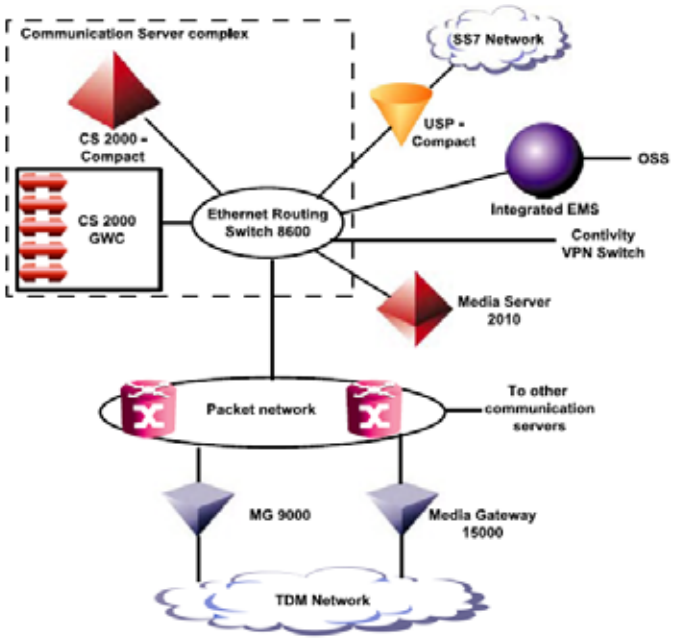
It delivers the traditional voice service suite on a converged packetized IP network, enabling carriers to offer inter-office trunking, long-distance, tandem and gateway functionality, plus emerging IP services. In addition, this solution also provides analog lines access in a CVoIP networking using the MG 9000 Lines Gateway.

The following figures provide an architectural view of the UA-IP network.

UA-IP solution architecture



UA-IP-Compact solution architecture



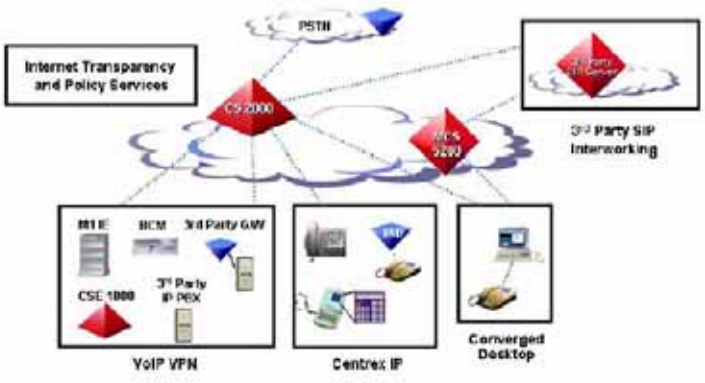
Services

Carrier Hosted Services (CHS)

This section briefly describes the call processing flows for the products and applications associated with the Carrier Hosted Services (CHS).

CHS is a portfolio of Nortel Networks products and services that provides IP-based solutions to IP network-based subscribers. This solution delivers legacy Digital Multiplex System (DMS) and Carrier VoIP-based Centrex capabilities to users connected to an IP network using voice multimedia integration. (Centrex is a portfolio of telecommunications services that emulate the private network capabilities of sophisticated, on-premise switching equipment – such as a key system or Private Branch Exchange [PBX] – using the switch and service resources of the public switch network delivered over voice or data lines, or both.)

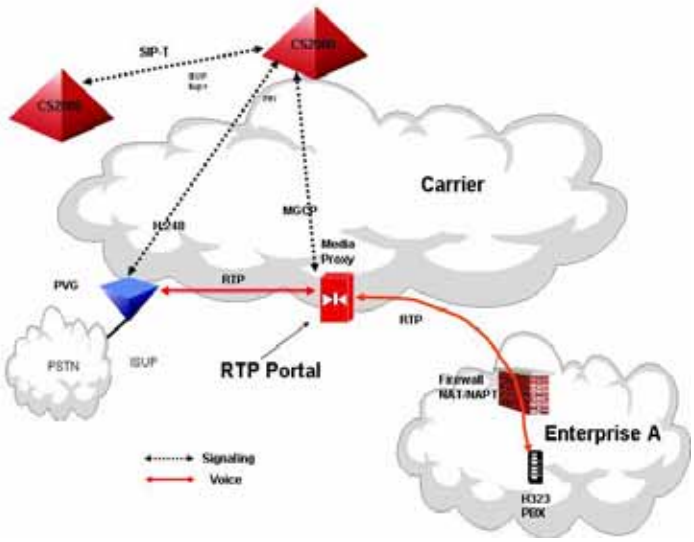
CHS architecture



VoIP VPN

The following figure shows a high-level view of the call control and media paths in a network with VoIP VPN

VoIP VPN call flow



Interfaces and Protocols

The following table lists the interfaces and protocols for different elements.

Element	Interfaces	Protocols
CS 2000 GWC	**Interface** • 10/100 BaseT Ethernet to CA LAN	**Protocol** • ARP • BOOTP • ICMP • IP • PPVM • TFTP • UDP **Call Control and Signaling** • H.248, MGCP, ASPEN, IUA, M3UA, SCTP, SIP-T • BICC • H.323 • MGCP • MPCP
UAS or MS 2000 Series	**Interface** • ATM- OC3c UNI 4.0 ATM • IP-100 BaseT Ethernet	**Codecs** • G.711 **Bearer** • AAL1 ATM or RTP/RTCP for IP **Call Control** • H.248
USP	**Interfaces** • DS0A, V.35, DS1 and E1 & T1 SS7 IP High Speed Link (HSL), E1 MTP2 HSL • 100 BaseT Ethernet to CS LAN	**Signaling** • M3UA over UDP to call server • MTP, SCCP, TCAP, ISUP to SS7 network
MSS 15000	**UNI interfaces** • OC3- 4 and 16 port UNI 4.0 ATM • DS3- 4 port channelized IMA 1.0 for DS1 MG 9000 • DS3 -12 port for channelized OC3 MG 9000 (upto 4 DS3 ports) • DS3- 12 port DS3 unchannelized for ISP connections **NNI interfaces** • OC3- 4 and 16 port PNNI 1.0 ATM • DS3- 12 port unchannelized over optical (upto 4 DS3 ports)	**Bearer** • AAL1 voice for ATM • AAL5 data

Element	Interfaces	Protocols
MG 9000	**Line Access Interfaces** • POTS 32 card for ATM and IP • SAA 12 card for ATM and IP, coin, MBS, ground start, POTS • 8x8 ADSL card for ATM and IP; combined voice and data **Network Interfaces** • OC3c UNI 4.0 ATM with APS for ATM and IP • 2 to 8 span DS-1 IMA 1.0 for ATM and IP • Channelized OC3 ATM with APS for ATM or IP • GigE for IP • DS1 IMA	**Codecs** • G.711 **Bearer** • AAl1 voice for ATM • AAL5 or RTP/RTCP voice for IP • AAL5 ADSL UBR data • ATMF UNI 4.0 • SNMP 2.0 **Call Control** • ITU H.248
MG 4000	**TDM Trunk Access Interfaces** • OC3 • STS-1 • DS1 **Network Interfaces** • OC3c UNI 4.0 ATM with APS	**Codecs** • G.711 **Bearer** • AAL1 voice for ATM **Call Control** • Nortel PPVM
MG 15000 (PVG)	**TDM Trunk Access Interfaces** • OC3 **Network Interfaces** • OC12 • GigE, carrier grade	**Codecs** • G.711 • G.729 **Bearer** • RTP/RTCP **Call Control** • Aspen • H.248
RTP Media Portal	**Interfaces** • 100 BaseT Ethernet	**Codecs** • G.711 • G.729 **Bearer** • RTP/RTCP **Call Control** • MGCP+ • MPCP
Centrex IP Client Manager	**Interfaces** • 100 BaseT Ethernet	**Call Control** • H.248 to call server • Nortel UNIStim to client

Note: Refer to the "Abbreviation and acronyms" chapter for the above acronyms.

Solution components

Overview

This chapter provides shelf layouts for Carrier VoIP and TDM components.

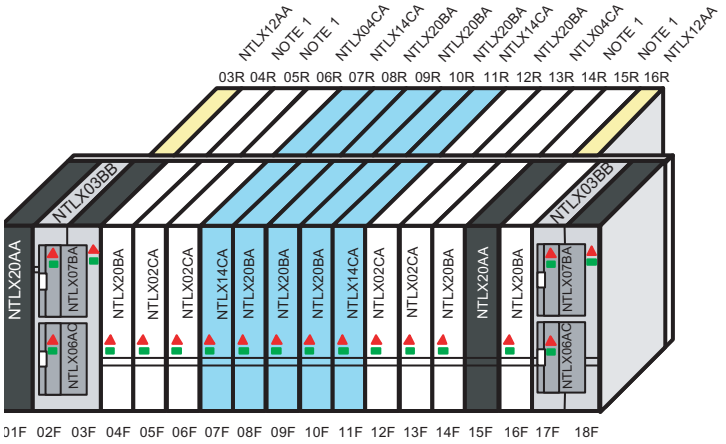
Note: For details on cabinet configuration or frame layout, refer to the appropriate component guides (listed under "Customer Support" chapter) for information.

Communication Server 2000 (CS 2000) hardware

XA-Core

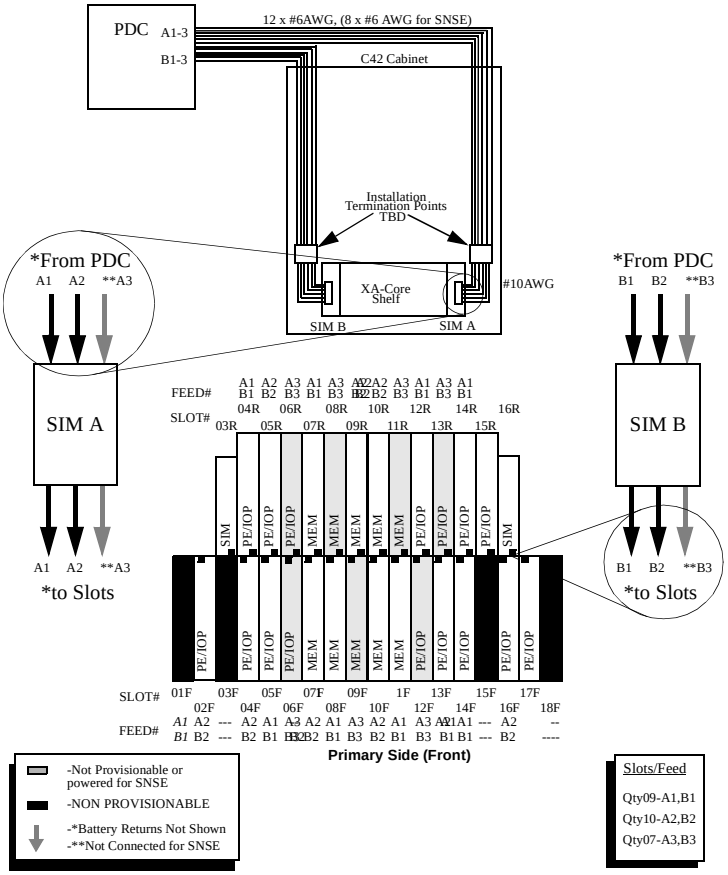
The XA-core is the call processing platform of the CS 2000 providing media and signalling gateway functionality. The XA-Core shelf (NTLX0101) is packaged in a standard C42 cabinet (NTLX01). The XA-Core shelf assembly has a mid-plane design with front and rear mountable cards.

XA-Core shelf



Note: Rear slots 4R, 5R, 14R, 15R contain NTLX03AB I/O processors which are populated with NTLX08AB (RTIF) and NTL05AB (CMIC) circuit packs.

Power cabling



PEC	Description
NTLX02CA and DA	Processor Element, 256 MByte PPC604 modules ***Note:*** Alternatively use NTLX02DA (ATLAS PE). Do not mix PEs.
NTLX03AB	I/O Processor Single Width
NTLX03BB	I/O Processor Double Width 2-Slot Module (each module supports either a Disk or DAT Drive)
NTLX04CA	High Performance I/O Processor ***Note:*** 1 HIOP replaces 2 IOPs with Ethernet packlets (PEC NTLX09AA).
NTLX05AB	OC3 Packlet, 2-port, CMIC
NTLX05BA	OC3 Packlet, 2-port, AMDI
NTLX06AB	Disk Drive, 8.4-GB ***Note:*** Alternatively, use NTLX06AC (Disk Drive, 34.2-GB) below
NTLX06AC	Disk Drive, 34.2-GB
NTLX07BA	Tape Drive, DAT

PEC	Description
NTLX08AB	RTIF Packlet ***Note:*** Replaced by NTLX17AA (HCMIC Pack)
NTLX09AA (MD)	Ethernet Packlet ***Note:*** Can be replaced by NTLX04CA
NTLX12AA	Shelf Interface Module
NTLX14CA	Shared Memory, 384 MByte modules
NTLX17AA	HCMIC Pack ***Note:*** Replaces NTLX03AB, NTLX05AB and NTLX 08AB
NTLX20AA	Filler/Terminator
NT9X63AB	MS Paddleboard

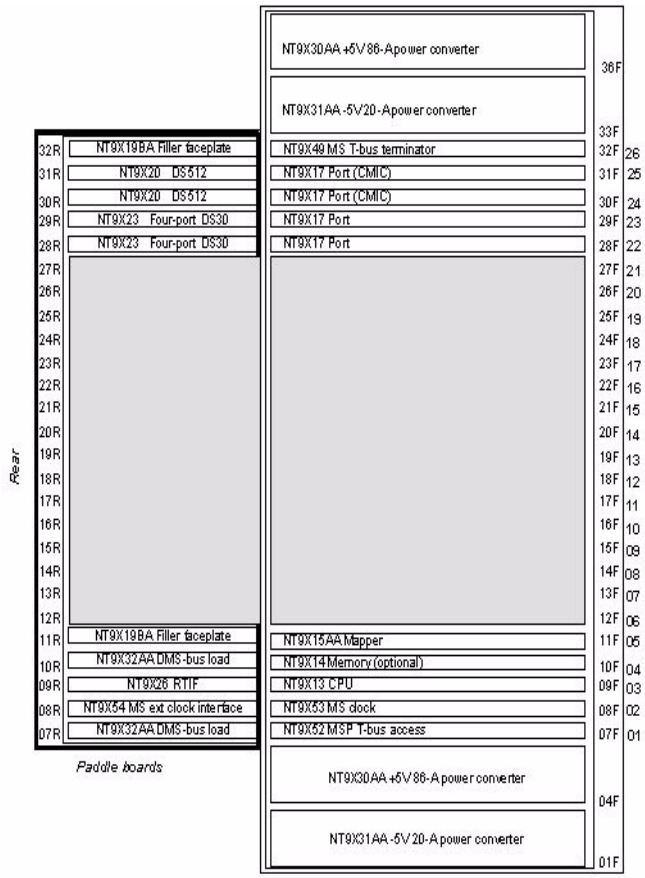
Note 1: For further description of the above PECs, refer to the "*Circuit pack description*" within this QRG

Note 2: For additional XA-Core information, refer to the "*XA-Core Reference Manual*", 297-8991-810.

Message switch

The message switch (MS) is a communications bus that provides peer to peer messaging between the distributed CS 2000 components. The MS shelf (NT9X04) is made up of two identical load sharing planes (MS 0 and MS1) located in the C42 cabinet (NTLX01) Each MS plane provides a system clock and supports the full internal CS 2000 messaging load.

MS shelf (NT9X04)



Note: Magnify graphic to view PECs. Shaded area above indicates provisionable paddleboard or card.

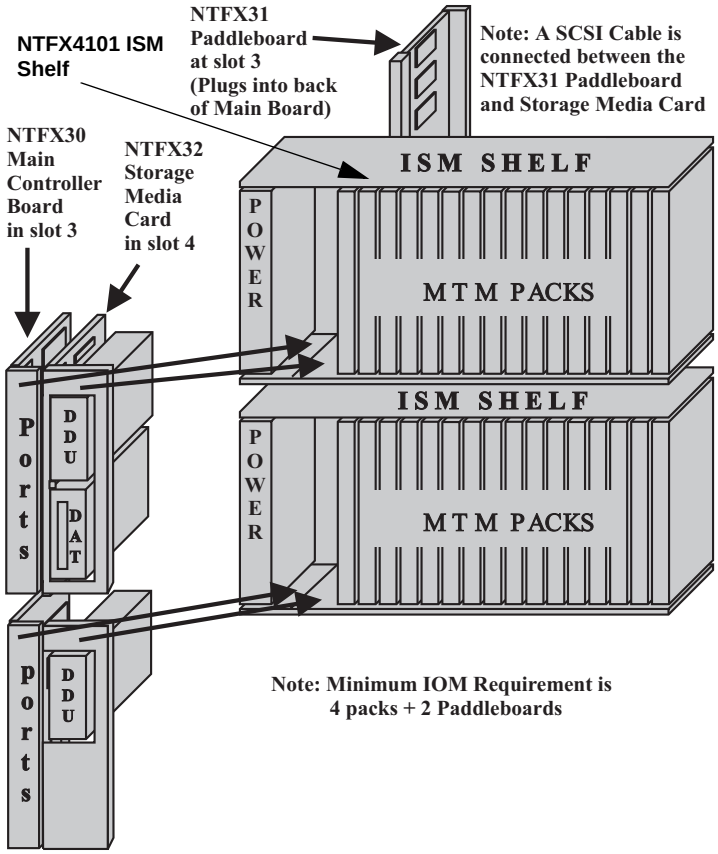
PEC	Component	Comments (card differences in a CS 2000)
NT9X63AA (MD) or BA	2- port OC-3 paddle boards	In the rear of each MS shelf, OC-3 paddle boards (NT9X63AA) replace two DS12 paddle boards.
NT9X13DG	Processor card	The MS processor on each shelf does not have downloadable firmware. Without new firmware, this card cannot communicate with the new OC-3 paddle boards. The XA-core requires the NT9X13DG.
NT9X17AD	MS 4-port card	The two corresponding cards in front of each MS shelf must be 4-port interface cards (NT9X17ADs). These cards are a baseline requirement and must be provisioned if not already present.

Note: Refer to the "*Circuit pack description*" within this guide for the above paddle boards and cards or the *Hardware Description* manual, 297-8991-905 for information on additional components of the message switch.

IOM

The Input Output Module (IOM) is a multi-link multi-protocol communication board with disk and/or tape drives on a separate board. The IOM design, without the Magnetic Tape Drive (MTD) and Disk Drive Unit (DDU) is a single slot card with an associated Paddleboard. The IOM product resides in an ISM shelf (NTFX4101) in a ISM frame (NTFX40). The IOM supports all peripheral equipment that a completely provisioned IOC shelf supports.

IOM located in an ISM shelf



PEC	Description	Comments
NTFX30AA	IOM Controller Card	Mounts in one of the two slots 3 front or 4 front of the ISM shelf.
NTFX31AA	IOM Paddleboard	Slot 3 of ISM shelf, each IOM controller card has an associated paddleboard that mounts on the rear
NTFX32AA	IOM Storage Media Card (SMC) for DDU and DAT packlets	Occupies 2 slots. Slot 4F and 5F of the ISM shelf ***Note:*** Requires SCSI cable-NTFX40HB
NTFX32BA	DDU Plug-in packlet	3.5 inch, 1 Gbyte disk drive. Inserted into a housing on the Storage Media Card. 2 DDUs can be mounted as unit 0 and or 1.

PEC	Description	Comments
NTFX32CA	DAT Plug-in packlet	1.3 Gbyte 3.5 SCSI 4mm DAT drive. Plugs into housing on the SMC. Provisionable in the unit 1 position.
NTFX32DA	Storage Media Filler Plug-in unit	Use on the SMC when an open plug-in module slot exists.
NTFX34AA	RS-232C Smart Connector Assembly	The NTFX34AA smart connector has a 6 pin teledapt connector on the IOM side (C side) and a DB25M (male) connector on the device side (P side). This converts the IOM link into a standard SR232C protocol for interface with Printer, VDU and Modem devices.
NTFX35AA	V.35 Smart Connector Assembly	The NTFX35AA smart connector has a 6 pin teledapt connector on the IOM side (C side) and a DB25M (male) connector on the device side (P side). This converts the IOM link into a standard V.35 protocol for interface with Modem devices.
NTFX35BA	512Kbps Compatible Smart Connector	Supports X.25 links at 512Kbps synchronous speed for up to a maximum of 2 links per IOM.
NTFX36AA	PERTEC Smart Connector Assembly	Contains IOM to PERTEC protocol conversion circuit for 9 track MTD support
NTFX38AA	Current Loop Smart Connector Assembly	Providing 20 mA current loop to the FSP portable VDU jacks on each FSP or MSP. Contains IOM to Current Loop protocol conversion circuitry.

Note 1: Refer to the "Circuit Pack Descriptions" in this guide for information on the above PEC and *additional components* (smart connector assemblies).

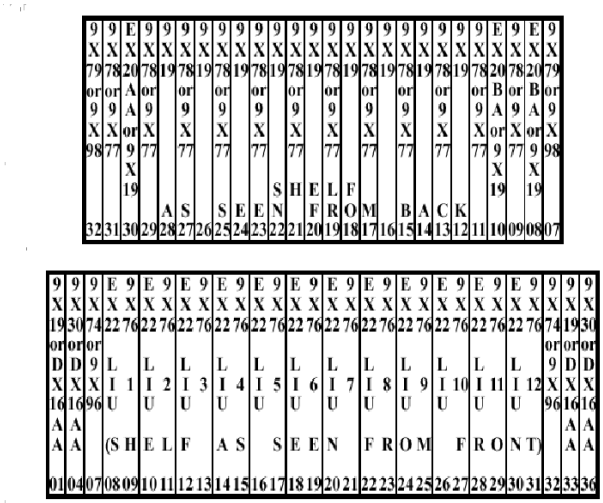
Note 2: Refer to the Input/Output Device Manual, 297-1001-590 for general information on the IOM.

FLPP/FLIS

The FLPP or Fiberized LIS (FLIS) is designed to provide a small number of Link Interface Units (LIUs) in a SuperNode. Up to two Link Interface Shelves (LISs) with a maximum total of twenty-four LIUs may be provisioned in an FLIS cabinet (NTZZ30PA).

The following figure shows an LIS shelf with eight 3-pack CCS7 Link Interface Units (LIU7s)

LIS shelf with LIUs (NT9X72)



PEC	Description
9X78	DSO Interface PB
9X79	F-Bus Ext/Term PB
9X98	LIS Fiber Interface PB
9X30	Power Converter
9X76	Signaling Terminal
9x75	P-bus to F-bus interface
9X74	F-Bus Repeater
9X77	V.35 Interface PB
EX20A	Intra F-bus “A” PB
EX20BA	Intra F-bus “B” PB
DX16	Dual Power convertor
9X13	LMS processor
EX22	Integrated Proc. & F-bus

Note 1: Refer to the "Circuit Pack Descriptions " for information on the above packs.

Note 2: For 12 two pack LIU shelves and other enhanced capacity EIU, FRIU, and NIU assignments, reference NTP 297-8991-805 and the NT9X72BA shelf layout located within the NT9X70BB cabinet.

Note 3: The Paddle Boards shown above are provisioned for eight 3-pack LIU shelves. See NTP 297-8991-805 and the NT9X72AC shelf layout for other provisionable options such as: the NT9X77 V.35 Paddle Board (PB), the NT9X79 F-bus extender PB, the NT9X85 Ethernet AUI PB, the NTEX20 Intra F-bus 1 termination PB, and the NTEX30 Frame Relay T1 PB. Various NT9X19 filler packs for power, vacant slots, and paddle board slots are described within NTP 297-8991-805.

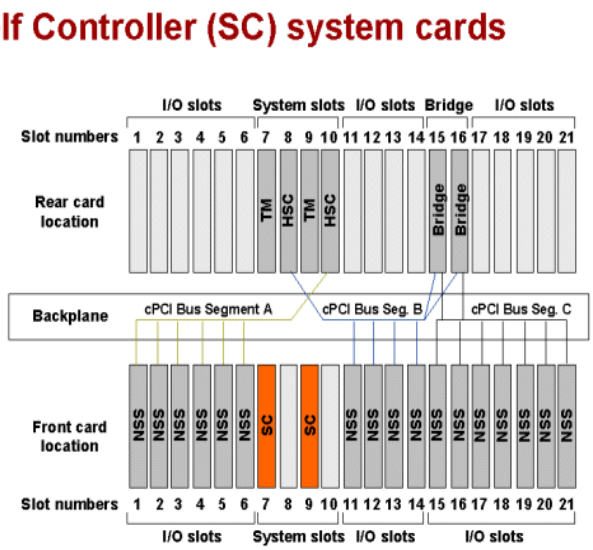
TDM core hardware

Note: Refer to the 'TDM components' section in this chapter for CS 2000 related hardware.

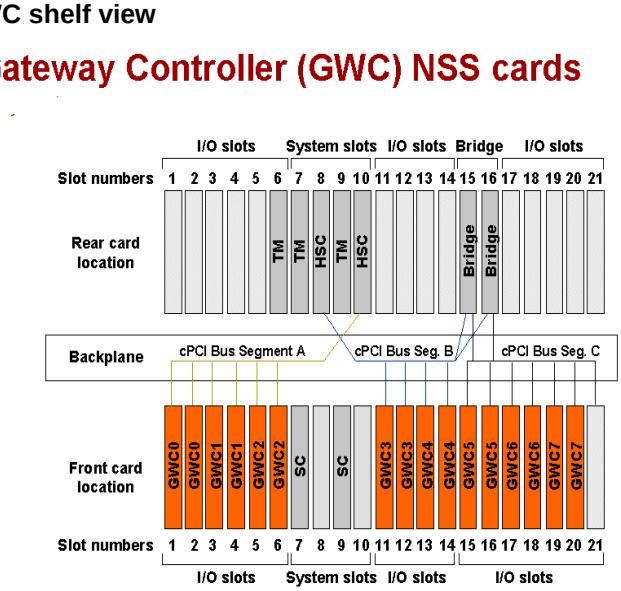
SAM21 SC and GWC

The Service Application Module 21 (SAM21) chassis (NTRX51FX) manages the hardware states of the cards on the shelf. The SAM21 shelf uses Motorola CPX8221 hardware and is housed in a CCF (NTRX51FA) or SAMF frame (NTRX51HA). The SAM21 shelf also houses the Gateway Controller cards (GWCs) that act as a call processing protocol convertor. The following figures show the SC and Gateway Controller (GWC) card layout in a SAM21 shelf.

SC shelf view



GWC shelf view



PEC	Description	Comments
NTRX51FH	SAM21 Shelf Controller, POWERPC, 366 MHZ, 128MB RAM, 256MB CFLASH	2 cards (slots 7 and 9 in front) ***Note:*** Replaces NTRX51BH
NTRX51BK	Transition module system cards	2 cards (slots 7 and 9 in rear)
NTRX51BT	Hot swap controller system cards	2 cards (slots 8 and 10 in rear) ***Note:*** The SC, TM behind the SC and the shelf controller's HSC act as one unit. For example, if the HSC in rear slot 8 has to be replaced, SC in front slot 9 has to be locked (taken out of service) first.
NTRX51BS	Bridge extension modules	2 cards (in rear slots 15 and 16)
NTRX51BL NTRX51DL	NSS card	Upto 16 GWCs can be provisioned. 2 per GWC node

Note 1: Refer to the "Circuit Pack description" in this guide from information on the above cards.

Note 2: In SAM21 SC figure, the Non-system slot cards (NSS) reside in front slots 1-6 and 11-21. Any of the following applications: Call Agent, MC and USP-Compact can also be run on the NSS cards. Refer to the "CS 2000 compact" hardware section for more information.

CS 2000 User interface

The CS 2000 components are managed by the following element managers

- XA-Core- Core and Billing Manager
- GWC - GWC manager
- SAM21 SCs- SAM21 Manager

TDM components are managed via the MAP interface.

Note: Refer to the "Integrated EMS" section in the OAM&P chapter for more information on the above managers.

CS 2000 Logs/OMs

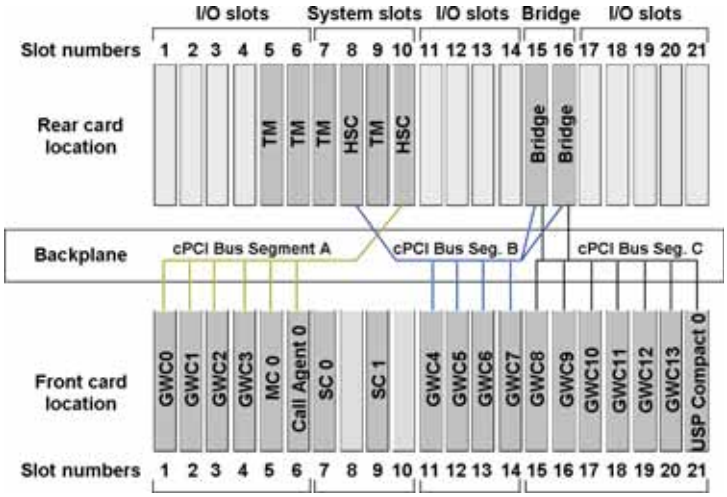
Refer to the *Succesion Logs Reference Manual*, NTP NN10275-909 for CS 2000 log information.

CS 2000-Compact hardware

The CS 2000 Compact employs a Motorola CPX8000 compact PCI (cPCI) system and linux operating system in a smaller footprint. Standard configuration includes 2 SAM21 shelves (NTRX51FX) that are configured in a call control frame (NTRX51FA).

Packfill depends on the office configuration and customer needs. The following figure and table shows packfill for front and rear card locations. The Message Controller in slot 5 is available in some markets for hybrid configurations.

CS 2000 Compact SAM21 shelf



Note: The compact components differ for the TDM only Hybrid and Full hybrid configurations available for some markets (see table).

PEC	Description	Comments (all configurations)
NTRX51FH (IP),	SAM21 Shelf Controller, POWERPC, 366 MHZ, 128MB RAM, 256MB CFLASH	2 cards required (slots 7 and 9). ***Note:*** Replaces NTRX51BH
NTRX51FE (ATM)	SAM21 shelf controller, ATM	
NTRX51BL NTRX51DL	NSS card	Upto 8 GWC pairs, 2 per GWC node. Not required for TDM only hybrid configuration. ***Note:*** Refer to the "GWC" section
NTRX51FZ (1.0 GB) or NTRX51 GZ (1.5 GB)	3 PC Card, 1.5-GB RAM	2 cards required (slot 6 and 11). ***Note:*** In a TDM hybrid, 2 cards reside on a single SAM21 shelf

PEC	Description	Comments (all configurations)
NTRXF1FN (T1), NTRXFJ (E1)	USP compact cPCI Blade	Optional ***Note:*** Refer to "USP compact" section
	UAS (MS 2000 series)	Optional ***Note:*** Refer to "MS 2000 Series" section
NTRX51FM	STORM NSS, Power PC, 366 MHZ, 256 MB RAM, FC PMC	1 Card required. ***Note:*** From SN07, STORM hardware is available in a rackmount configuration. Refer to "SAM21" section.
NTRX51GY	Message Controller card	2 Message Controller Cards (slots 5 and 12). Not required for Greenfield configuration. ***Note:*** In a TDM hybrid, 2 cards reside on a single SAM21 shelf
NTRX51FS	Transition Module	Required for each Message controller, call agent and shelf controller card.

Note: Refer to the "Circuit Pack Descriptions" in this guide for information on the above PECs and additional compact components.

User interface

The Call agent Manager allows management of the Call Agent and the STORM manager controls STORM functions. For more information, refer to the "Integrated EMS" section in the "OAM&P" chapter.

Logs/OMs generated

Refer to the *Succession Logs Reference Manual*, NTP NN10275-909 for log information.

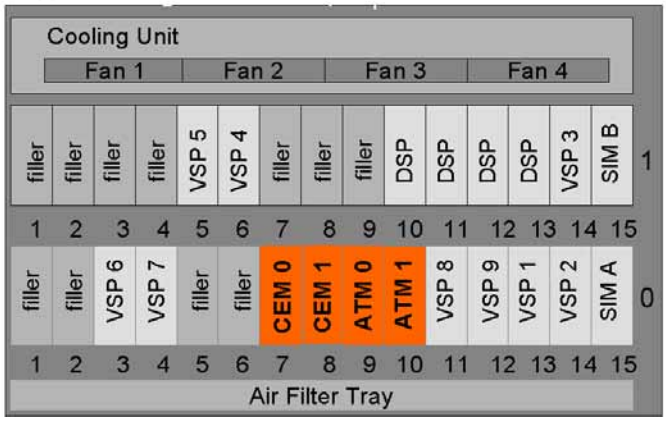
DPT SPM hardware

The Dynamic Packet Trunking (DPT) Spectrum Peripheral Module (SPM) is a enet based peripheral that allows DPT connections to and from other ENET based peripherals. The DPT SPM is connected to the ENET shelf with 2 redundant DS-512 links and to the ATM switch with 1 protected ATM OC-3 links.

The NTLX91BA frame assembly houses the two NTLX51BA dual-shelf assemblies (two complete DPT SPM ATMs) and the required support equipment.

The following figure and table outline the packs in a DPT SPM shelf.

DPT SPM shelf



PEC	Description	Quantity
NTLX82BA and EA	CEM processor	2
NTLX73BB	OC3c ATM RM (always located in slots 9 and 10 on SPM shelf 0)	2
NTLX61AA	SIM	2
NTLX65BA or AA	DSP (optional)	Upto 4
NTLX66BA	VSP (optional)	Upto 9

Note: Refer to the "Circuit Pack Descriptions" in this guide for information on the above packs.

User interface

MAP is used as an interface to DPT SPMs. For more information, refer to the "OAM&P" chapter.

Logs/OMs generated

Refer to the NTP NN10275-909, *Succession Logs Reference Manual* for log information.

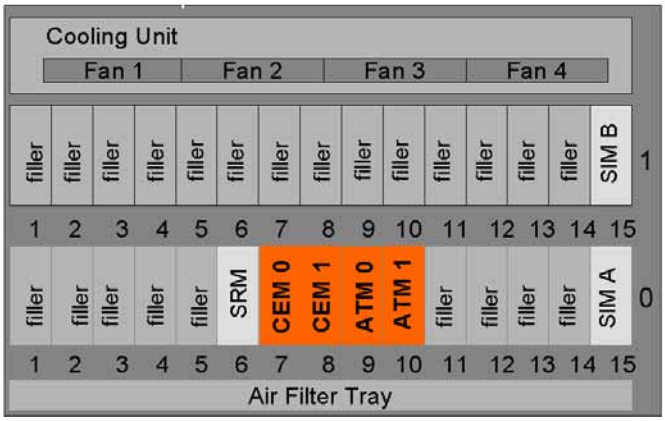
IW-SPM hardware

The IW-SPM bridges the circuit switched TDM trunk network to the IP or ATM based packet network.

The NTLX91BA frame assembly contains two NTLX51BA dual-shelf assemblies (two complete IW SPM IPs or IW SPM ATMs) and the necessary support equipment depending on the network configuration (IP or ATM).

The following figure and table outline the packs in a IW-SPM shelf.

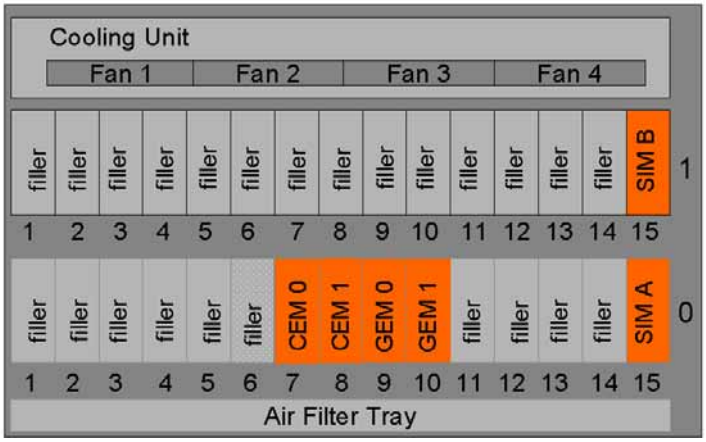
IW-SPM ATM shelf



PEC	Description	Quantity
NTLX82BA and EA	CEM processor	2
NTLX73BB	OC3c ATM RM (always located in slots 9 and 10 on SPM shelf 0)	2
NTLX61AA	SIM	2
NTLX44AA	sync RM (optional in slot 6)	1
NTLX86AA	ECAN (optional)	Upto 7
NTLX66BA	VSP (optional)	Upto 9
NTLX65BA	DSP (optional)	2

Note: Refer to the "Circuit Pack Descriptions" in this guide for information on the above packs.

IW SPM-IP shelf



PEC	Description	Quantity
NTLX82	CEM processor	2
NTLX61AA	SIM	2
NTLZ20BA	GEM RM	2

Note: Refer to the "Circuit Pack Descriptions" section in the guide for information on the above packs.

User interface

MAP is used as an interface to IW-SPMs for data provisioning, alarm surveillance, controls and performance monitoring. For more information, refer to the "OAM&P" chapter.

Logs/OMs generated

Refer to the NTP NN10275-909, *Succession Logs Reference Manual* for log information.

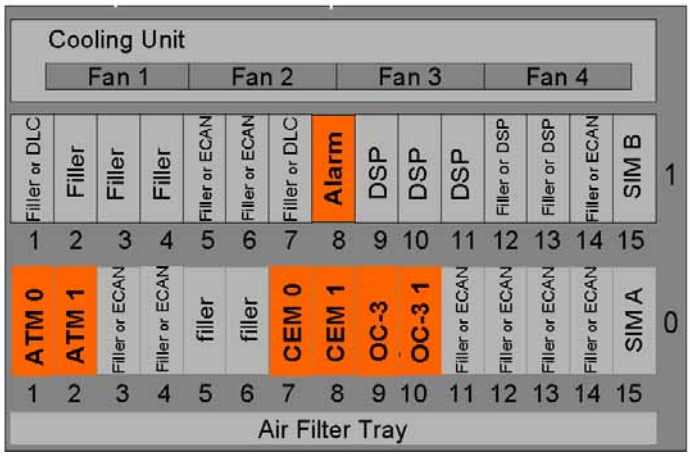
Multi-Service Gateway 4000 (MG4000) hardware

The Multi-Service Gateway 4000 (MG4000) leverages the existing SPM platform to provide voice processing capabilities along with conversion of TDM traffic to ATM. MG4000s offer high speed (OC-3), low speed (DS-1) and STS-1 access with OC-3 interface to the TDM network.

The NTLX91BA frame assembly contains two NTLX51BA dual-shelf assemblies (two MG4000s) and the necessary support equipment

The following figure outlines packs in a MG4000 with OC-3.

MG 4000 OC-3 shelf



PEC	Description	Quantity
NTLX82BA	SPM CEM processor	2
NTLX73BB	OC3c ATM RM (always located in slots 9 and 10 on SPM shelf 0)	2
NTLX61AA	SPM SIM	2
NTLX44AA	sync RM (optional)	2 per module
NTLX86AA	SPM Coherent ECAN (128ms) (optional, slots 3, 4, 11, 12, 13, 14)	Upto 7
NTLX71AA	OC-3 Interface Module	2
NTLX72BA	Data Link Controller (DLC) II (optional, slots 1 and 7)	2
NTLX65BA	SPM Digital Signal Processor (DSP) (optional, slots 9, 10 and 11)	3
NTLX83AA	Alarm RM (Required for each remote MG 9000, not required when co-located with CS 2000)	1

Note: Refer to the "Circuit Pack Descriptions" section in the guide for information on the above packs.

User interface

MAP is used as a user interface to the MG 4000. For more information, refer to the "OAM&P" chapter.

Logs/OMs generated

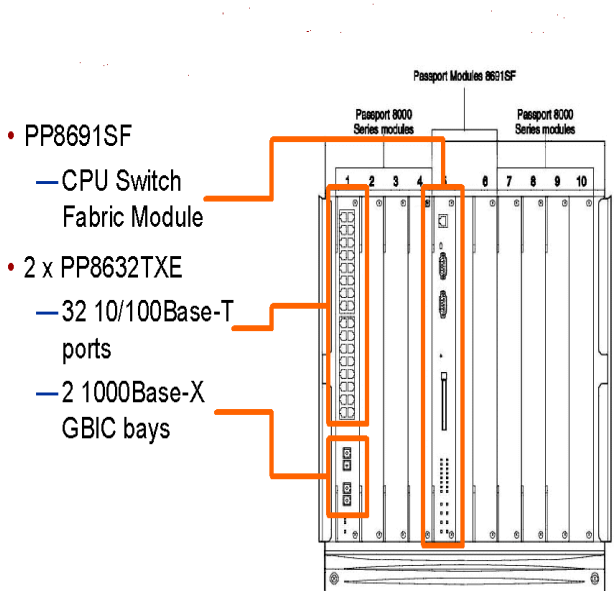
Refer to the NTP NN10275-909, *Succession Logs Reference Manual* for log information.

Ethernet Routing Switch 8600 hardware

The central components of the Communication Server LAN (dedicated network for OAM&P communications) are 2 Ethernet Routing Switch 8600's (formerly known as Ethernet Routing Switch 8600) 10 slot chassis (8010co).

The following figure shows the minimum configuration for a Ethernet Routing Switch 8600.

Ethernet Routing Switch 8600 chassis



PEC	Description	Quantity
PP8691SF	CPU switch fabric module (slot 5)	1
PP8632TXE	32 port 10/100 ethernet switch module (slots 1 through 4 or 7 through 10) and 2 1000Base-x Gigabit Interface connectors (GBIC)	2
PP8648TXE (optional)	48 port 10/100 ethernet switch module	1
PP8624FXE (optional)	24 port fast ethernet switch module	1
PP8608GBE (optional)	8 port GBIC	1
PP8616SXE (optional)	16 port GBIC	1

User interface

The device manager is used as a user interface. For more information, refer to the "Integrated EMS" section in the "OAM&P" chapter.

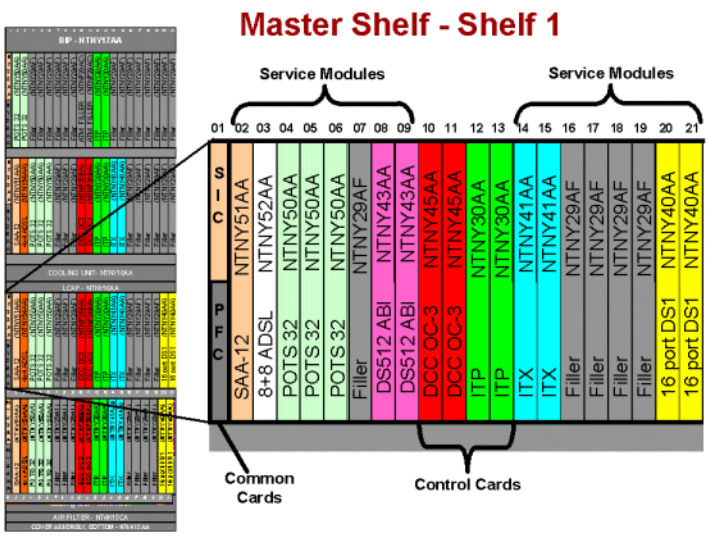
Logs/OMs generated

Refer to the NTP NN10275-909, *Succession Logs Reference Manual* for log information.

Media Gateway 9000 (MG 9000) hardware

The Multi-Service Gateway 9000 (MG 9000) is used as a single or multiple shelf network element depending on the customer line capacity requirements. Each of the 3 applications it supports (switched lines over ATM, private lines over ATM and Digital Subscriber line) can reside in the same shelf or different shelves in a NTNY01BB frame. The MG9000 node consists of one Master shelf configured for network interface and control and 15 subtended shelves equipped with subscriber interface circuits. The following figure shows packfill in a Master shelf.

MG 9000 shelf



PEC	Description	Comments
Common control cards		
NY26AA	Power I/O CP for shelf	Always required (located in the lower half of slot 1)
NY23AA	Shelf Interface Card for shelf	Always required (located in top half of slot 1)
NTNY45AA	Data Control card with OC-3 ATM	Maximum of 1 pair per shelf (slots 10 and 11)
NTNY45BA	DS1 IMA Supercore Card	Maximum of 1 pair per shelf (slots 10 and 11)
NTNY45CA	Supercore OC3	
NTNY30AA, NTNY30BA	Internet telephony processor card	Maximum of 1 pair per shelf (slots 12 and 13) ***Note:*** NTNY30AA is replaced by NTNY30AB. NTNY30BA is replaced by NTNY30CA

PEC	Description	Comments
NTNY30AB	ATM ITP Card	***Note:*** Replaced by NTNY30CA
NTNY30CA	Internet telephony processor card	
NTNY41AA	Internet telephony extender	Minimum of 2 cards per MG900 master shelf. Line service cards (slots 2-9 and 14-21). ***Note:*** Replaced by NTNY41BA
NTNY41BA	ITP Extender Card (ITX)	
NTNY29AF	Filler Card	slots 16 through 19
Shelf cards		
NTNY40AA	DS1 Linecard PCBA	16 port DS1 circuit emulation card. 4 DS1 cards per master shelf
NTNY50AA	POTS 32 linecard	The POTS 32 line card supports loop start lines (slots 2-9 and 14-21 in Master shelf). The number of line cards used on the master MG9000 shelf is dependent on the number of ITX and MTA cards required for the MG9000. ***Note:*** For ground start lines, SAA-12 line cards are required.
NTNY52AA	8+8 combo ADSL PCBA linecard	Provisioned in master shelf only (left to right) ***Note:*** Replaces NTNY54AA
NTNY64EA	Metallic Test Access card	1 card required in first subtended shelf and if the network element spans multiple frames, the first shelf in each subsequent frame

PEC	Description	Comments
NTNY43AA	DS512 ABI Line Card	Upto 4 x DS12 pairs can be deployed from a single master shelf. Upto 16 x DS12 pairs can be deployed across 4 shelves in a frame. ***Note:*** Replaced byNTNY43BA
NTNY43BA	DS512 ABI Line Card	

Note: Refer to the "Circuit Pack Descriptions" section in the guide for information on the above PECs.

User interface

MAP is used as a user interface. For more information, refer to the "Integrated EMS" section in the "OAM&P" chapter.

Logs/OMs generated

Refer to the NTP NN10275-909, *Succession Logs Reference Manual* for log information.

Media Gateway 3200 (MG3200) hardware

The Media Gateway 3200 (MG3200) supports a broad selection of voice processing related algorithms, including G.711, G.723.1 and G.729A Vocoders, G.168-2000 compliant echo cancellation, T.38 real-time Fax over IP, a wide selection of In-band and Out-of-band tone detection and generation, as well as signaling protocol support, including ISDN PRI, SIGTRAN (M2UA, M3UA, IUA) and CAS.

MG3200 shelf

PEC	Description	Comments
NTRX51JT	MG3200 1 span, AC power	
NTRX51JU	MG3200 2 span, AC power	
NTRX51JV	MG3200 4 span, AC power	
NTRX51JX	M 3200 8 span, AC power	
NTRX51JY	MG3200 16 span, AC power	
NTRX51QA	MG3200, 1 span, DC power	
NTRX51QB	MG3200, 2 span, DC power	
NTRX51QC	MG3200, 4 span, DC power	
NTRX51QD	MG3200, 8 span, DC power	
NTRX51QE	MG3200, 16 span, DC power	

User interface

MAP is used as a user interface. For more information, refer to the "Integrated EMS" section in the "OAM&P" chapter.

Logs/OMs generated

Refer to the NTP NN10275-909, *Succession Logs Reference Manual* for log information.

Media Gateway 3500 (MG3500) hardware

The Media Gateway 3500 (MG3500) provides up to 16 spans of E1 / T1 / J1 VoIP interworking in a single 1U simplex chassis. The MG3500 Media Gateway provides from 16 Spans to 96 Spans of interworking with a Chassis supporting replicated common equipment including, Controllers, Ethernet Switches, Power Supplies and Fans. The MG3500 also provides the option to use one of the DSP cards as a redundant spare for the others, thus supporting up to 80 spans of processing in an N+1 protection scheme.

MG3500 shelf

PEC	Description	Comments
NTRX51XD	Circuit Pack, G.711	TP1610B/480/16 span, G.711
NTRX51XE	Circuit Pack	TP1610B/480/16 span
NTRX51XH	Alarm Module	
NTRX51XJ	Ethernet switch card	
NTRX51XK	Power Entry Module, DC	
NTRX51XL	Power Entry Module, AC	
NTRX51XQ	Power Supply Module, DC	
NTRX51XR	Power Supply Module, AC	
NTRX51XV	RTM, Ethernet switch	

User interface

MAP is used as a user interface. For more information, refer to the "Integrated EMS" section in the "OAM&P" chapter.

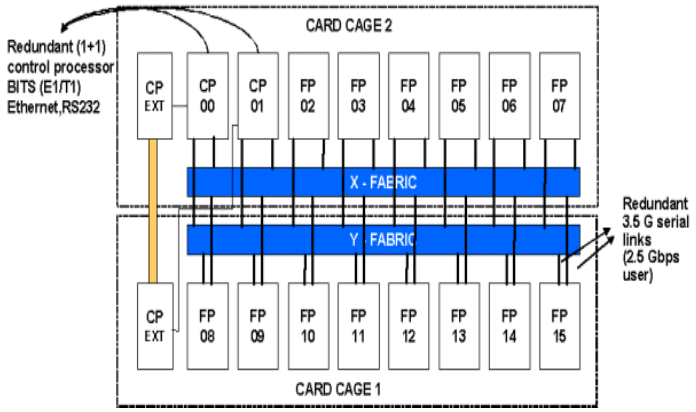
Logs/OMs generated

Refer to the NTP NN10275-909, *Succession Logs Reference Manual* for log information.

Multiservice switch 15000 hardware with PVG

The Nortel Networks Multiservice Switch 15000 (formerly known as Passport 15000) is an ATM based data switch that can be deployed as a backbone for existing Passport edge switch networks, service provider ATM backbone or Packet Voice gateway.

The Nortel Networks Multiservice Switch 15000 MSS is a frame based architecture where two 18 slot shelves can be inserted into a single frame. 14 of these slots are dedicated for Function processors (FPs) and two are dedicated for redundant Control Processors (CPs). The remaining 2 slots are reserved as CP/FP expansion slots. The fabric modules (2 per shelf) are located at the rear of the Passport shelf provide communication between the processor FPs and other FPs on the shelf.



The following table lists the cards for the Multiservice Switch (including PVG).

PEC	Description
NTHW06CA	CP3 Processor
NTHW06DA	CP3 Processor
NTHR21CA	4-port OC-3 card - SM
NTHR21DA	4-port OC-3 with PQC2
NTHW21FA	4-port OC-3c Single-mode Intermediate Reach ATM FP
NTHW31AA	16-port OC-3 FP with LC connector
NTHW31AB	16-port OC-3 FP with LC connector
NTHW87AB	VSP2
NTHR90	2-port DS-3 TDM FP
NTHW91AA	2-port DS3C TDM FP
NTHW70AA	4-port OC-3 TDM FP
NTHW92AA	32-port TDM E1 TDM FP
NTHR16EA	Fabric card

PEC	Description
NTHR23	12-port DS3 ATM FP
NTHW49AA	4-port Gigabit interface (4pGe) FP
NTHR89AA	4-port DS3 Frame Relay FP
NTHR31DA	4-port DS3 Channelized ATM w/IMA FP
NTHW44AA	16P OC3/STM-1 MS3 ATM FP

Note 1: Refer to the "Circuit Pack Descriptions" section in the guide for information on the above PECs for the Multiservice switch.

Note 2: Refer to the NTP " Nortel Networks Multiservice Switch 7400/15000/20000 Basics", NN10600-030 for information on additional Passport hardware.

User interface

The Nortel Networks Multiservice Data Manager is used to manage Passport. For more information, refer to the "Integrated EMS" section in the "OAM&P" chapter.

Logs/OMs generated

Refer to the NTP NN10092-911, "Nortel Networks Multiservice Data Manager in Succession Networks Fault Management Overview" for information.

UAS/Media Server 2000 series hardware

The Universal Audio server is a set of 2 modules in a SAM16 (NTRX51CX) chassis housed in a CCF (NTRX51FA) or SAMF (NTRX51HA) frame. It provides interactive voice capabilities such as conferencing and announcement. **From SN07, the Media Server 2000 Series (MS 2000 Series) replaces the UAS** for IP, ATM and Trimodal configurations. The MS 2000 series is available as MS 2010 for IP and MS 2020 for ATM configurations.

Note: Refer to the SAM21 and C2000-Compact hardware shelf for the UAS configuration view.

MS 2010 for the IP network

The MS 2010 uses a rack mount IPMedia 2000 chassis that is 1U high and 19 inches wide. The chassis contains one board, the IPM-1610 and its rear transition module, which contains the Ethernet interface for the unit. Up to six MS 2010 chassis can be configured in a SAMF. The MS 2010 is available in five configurations. These configurations are described in the table below.

PEC	Description	Number of Logical IPM-1610 modules	Number of Ports
NTRX51JF	Media Server 2010 - No Conferencing - IVR (announcements and digit collection) - Test Trunks - Legal Intercept (CALEA)	1	120
NTRX51JJ	Media Server 2010 - Conferencing - IVR (announcements and digit collection) - Test Trunks - Legal Intercept (CALEA)	1	120
NTRX51JG	Media Server 2010 - No Conferencing - IVR (announcements and digit collection) - Test Trunks - Legal Intercept (CALEA)	2	240

PEC	Description	Number of Logical IPM-1610 modules	Number of Ports
NTRX51JK	Media Server 2010 - Conferencing - IVR (announcements and digit collection) - Test Trunks - Legal Intercept (CALEA)	2	240
NTRX51JL	Media Server 2010 - No Conferencing - PT-IP-Megaco - Test Trunks	2	240

MS 2020 for the ATM network

The MS 2020 uses the rack mount IPMedia 3000 chassis that is 2U high and 19 inches wide. The TP6310 chassis contains one board, the TP6310 and has ATM network interfaces and redundant Ethernet connections (for control - H.248 using IP over ethernet). Up to three MS 2020 chassis can be configured in a SAMF frame.

The MS 2020 Series is available in four configurations. These configurations are described in the table below.

PEC	Description	Number of Logical TP-6310 modules	Number of Ports
NTRX51MA	Media Server 2020 - No Conferencing - IVR (announcements and digit collection) - Test Trunks - Legal Intercept (CALEA)	1	240
NTRX51MC	Media Server 2020 - Conferencing - IVR (announcements and digit collection) - Test Trunks - Legal Intercept (CALEA)	1	240

PEC	Description	Number of Logical TP-6310 modules	Number of Ports
NTRX51MB	Media Server 2020 - No Conferencing - IVR (announcements and digit collection) - Test Trunks - Legal Intercept (CALEA)	1	480
NTRX51MD	Media Server 2020 - Conferencing - IVR (announcements and digit collection) - Test Trunks - Legal Intercept (CALEA)	1	480

Audio Provisioning Server

The Audio Provisioning Server (APS) is a separate component of the UAS. It serves as a centralized location and Graphical User Interface (GUI) for configuring and administrating the audio database and audio files used by the Universal Audio Server (UAS).

User interface

The Universal Audio Server manager and the current MS 2000 manger application is used to manage the UAS network elements and view performance measurements. The Audio Provisioning Manager application is available to view alarms and logs sent by the APS network elements. For more information, refer to the ‘Integrated EMS’ section in the ‘OAM&P’ chapter.

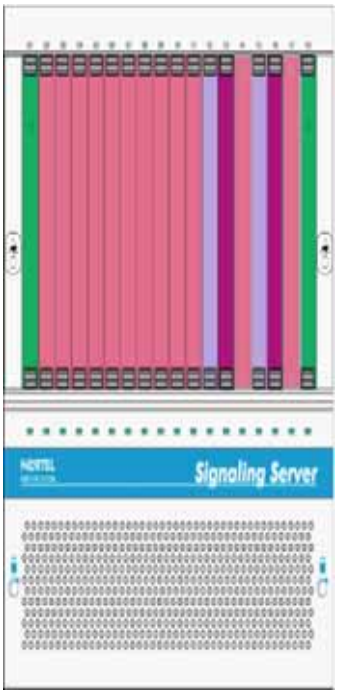
Logs/OMs generated

Refer to the NTP NN10275-909, *Succession Logs Reference Manual* for UAS and APS logs information.

Universal Signaling Point (USP) hardware

The Universal Signalling Point (USP) provides a bi-directional message switching function between nodes in an SS7 network and the IP application servers. The USP consists of a single control Control Application Module (CAM) shelf plus optional extension shelves (upto 7). The CAM shelf consists of 18 front and 18 rear slots with Mission cards in the front and transition modules (TMs) at the back. The resulting functionality of a mission card and TM card, when combined, is a system node (such as RTC, SS7, IP, CC). The following figure shows the USP in a dual shelf configuration.

Control CAM shelf -front



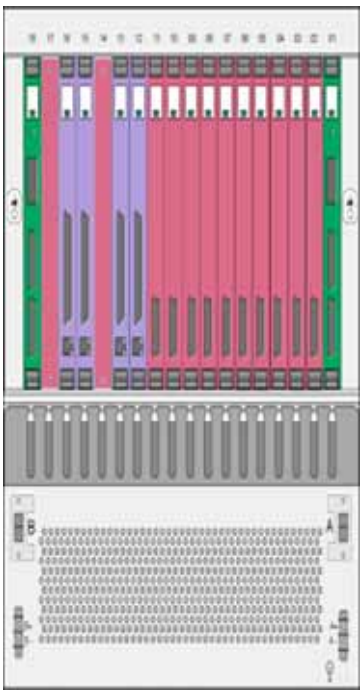
NTST02AB - CAM Controller (CC) mission card (Single or dual-shelf system)

NTST10AB - Link mission card (LE2) for DS0/V.35
NTST10BA - Link mission card (LE3) for ATM HSL E1 channelized
NTST10CA - Link mission card (LE4) for multi-link T1/E1

NTST11BA - Real-time Controller (RTC) mission card (CE3)
NTST11BA - IPS7 or SS7 IP HSL link mission card

NTST12BA - SCSI Disk single slot
NTST12CA - 20G HD

Control CAM shelf -rear

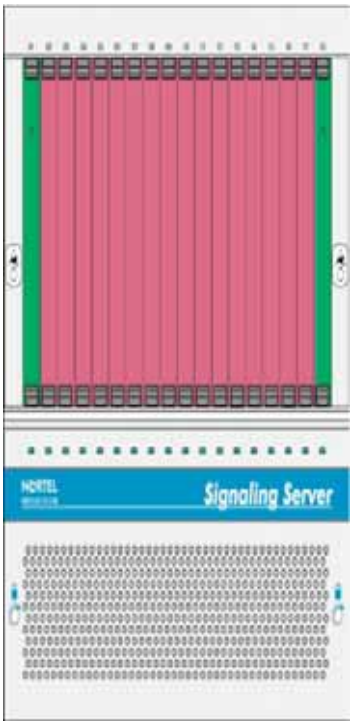


NTST07AB - OC-3 transition module (TM)

NTST08AB - DS0A transition module (TM) or
NTST58AA - V.35 transition module
NTST81AA - E1 channelized transition module
NTST81BA - Multilink E1/T1 transition module
NTST09AC - IPS7 gateway or SS7 IP HSL PSE

NTST09AB - Power/SCSI/Ethernet (PSE) transition module (TM) or
NTST09AC - Power/SCSI/Ethernet (PSE) transition module (TM) or
NTST81AA - T1-E1 transition module
NTST12CA - 20G HD

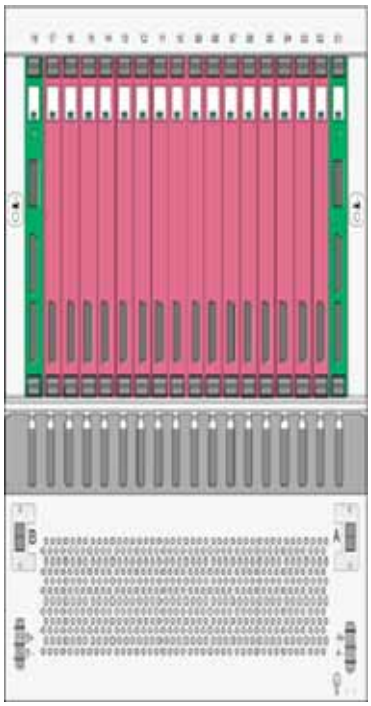
Extension CAM shelf -front



NTST02AB - CAM Controller (CC) mission card or (Single or dual-shelf system)

NTST10AB - Link mission card or
NTST10BA - Link mission card (LE3) ATM HSL or E1 channelized
NTST10CA - Link mission card (LE4) for multi-link T1/E1
NTST11BA - Link mission card for IPS7 or SS7 IP HSL links

Extension CAM shelf -rear



NTST07AB - OC-3 translation module

NTST08AB - DS0A transition module (TM) or for channelized E1 and ATM HSL
NTST58AA - V.35 transition module (TM) or
NTST09AB - Power/SCSI/Ethernet (PSE) transition module (TM) or
NTST09AC - Power/SCSI/Ethernet (PSE) transition module (TM) or
NTST81AA - T1/E1 Transition Module
NTST81BA - T1/E1 TM for multi-channel E1/T1

PEC	Description	Comments
NTST02AA	CC1: CAM Controller	1
NTST02AB	CC1: CAM Controller	1
NTST10AB	LE2 Link Engine, Type 2, 64M, PP3	1
NTST10BA	LE3 Link Engine, Type 3, 128M, PP4, HA2	1
NTST10CA	LE4 Link Engine, Type 4, 128M, PP4, HA3	1
NTST10EA	LE3N on PP5 w/256MB	1
NTST10FA	LE4N on PP5 w/256MB	1
NTST11BA	CE3 Compute Engine Type 3, 128M, PP4	1
NTST11BB	CE3 Compute Engine, Type 3, 1024MB, PP4	1
NTST11DA	CE4 - 256MB PP5 CE	1
NTST11DB	CE4D- 256MB PP5 CE w/PMC Disk	1
NTST11FA	CE6, 3GB PP5 CE	1
NTST11FB	CE6D, 3GB PP5 CE w/PMC disk	1
NTST12AA	2-GB Hard Drive mission card	1
NTST12BA	6-GB Hard Drive mission card	1
NTST12CA	Hard Drive 3 mission card	1
NTST07AA	TM-OC3c Trans. Module	1
NTST07AB	TM-OC3c Trans. Module	1
NTST08AB	TM-DS0a Trans. Module	1
NTST10EA	ATM HSL & DS0/V.35 links	
NTST10FA	E1-T1 8 Channelized SS7 links, China E1 HSL	
NTST11DA	IP/HSL and IPS7 Gateway Node	
NTST11DB	RTC Node	
NTST11FA	3GB PP5 CE	

PEC	Description	Comments
NTST11FB	3GB PP5 CE w/ PMC disk	
NTST75AA	Spare Switch Fabric Module for TNX-210	
NTST95BA	4-Port OC-3/STM-1 Network Module for TNX210	
NTST93BA	Switch Control Processors for TNX210	
NTST94BA	Spare DC Power Supply for TNX-210	
NTST68BA	Enclosure for SM-210 Switch Module	
NTST09AC	Ethernet Transition Module	2
NTST58AA	TM-V.35 Trans. Module	1
NTST81AA	TM-E1/DS1 Trans. Module (4 links)	1

Note 1: Refer to the "Circuit Pack Description" section for information on the above cards.

Note 2: Refer to the NN10008111, *USP Product and Technology Fundamentals* for additional information on USP components.

User interface

The USP manager provides management of the USP. For more information, refer to the "Integrated EMS" section in the "OAM&P" chapter.

Logs/OMS generated

Refer to the NTP NN10275-909, *Succession Logs Reference Manual* for information.

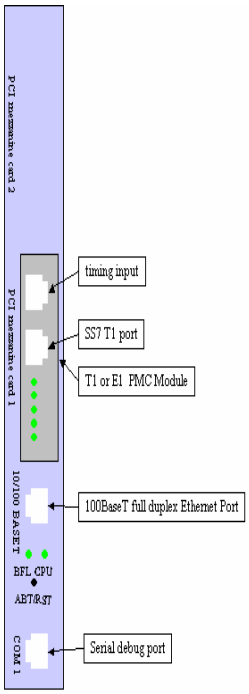
USP-Compact hardware

The USP-Compact is a smaller footprint alternative to the USP and provides the same services as the USP. Functionality of a full chassis based USP is complemented by the USP Compact card.The USP Compact resides in a CCF Frame.

Note: Refer to the "CS 2000 Compact" section for the card configuration.

The USP Compact system or cards consist of 2 USP blades. It is recommended that the blades be installed in 2 different SAM21 shelves to increase redundancy. The following figure shows the USP Compact blade.

USP Compact Blade



PEC	Description	Quantity
NTRX51FJ	USP-Compact cPCI Blade (E1)	1
NTRX51FN	USP-Compact cPCI Blade (T1)	1
NTST92AA	T1/E1 cable (2 connector) used with BALUN NTST13AA	2 for each USP-Compact blade (600 feet)
NTRX5131	SAM21 Serial Maintenance Cable	1 for each USP-Compact blade.
NTRX5132	Ethernet Twisted Pair Cables	2 for each USP-Compact blade.(OAM and CallP Ethernet Ports)
NTST30EA	Sun 150 Workstation	

PEC	Description	Quantity
NTST33BA	Sun 150 Monitor (17 inch)	
NTTD40AA	SUN 150 mouse & keyboard	
NTST91AA	T1/E1 cable (1 connector), 600 feet	2 for each USP-Compact blade.

Note: Refer to the "Circuit Pack Description section" for information on the above PECs.

User interface

The USP Manager provides element management for the USP-Compact. For more information, refer to the ‘Integrated EMS’ section in the ‘OAM&P’ chapter.

Logs/OMS generated

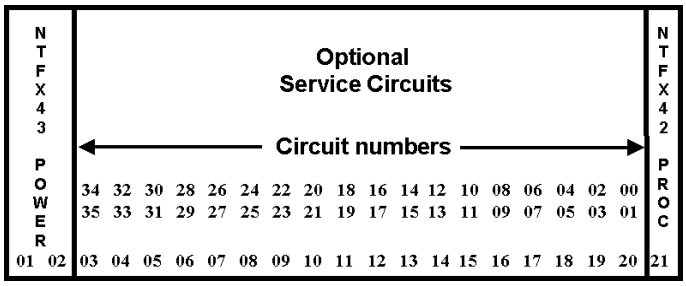
Refer to the NTP NN10275-909, *Succession Logs Reference Manual* for information.

TDM components hardware

ISM

The ISM is a single shelf unit that replaces the Trunk Module (TM) or the Maintenance Trunk Module (MTM) shelf. The ISM Shelf provides 18 slots for TM and MTM service circuit packs, Peripheral Module (PM) circuit packs, or IOM circuit packs (CISM and ISME only).

ISM shelf (NTFX4101)



PEC	Description
NTFX43	ISM DC convertor
NTFX42AA	ISM processor
NT0X50AC	Filler plate

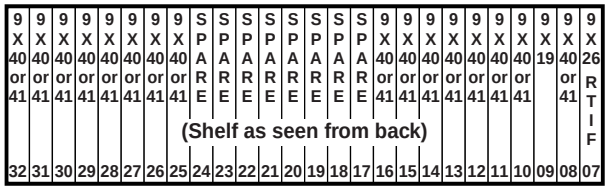
Note 1: For further description of the above PECs and additional circuit packs (NTFX44 and NTFX45), see the "circuit pack description" in this guide.

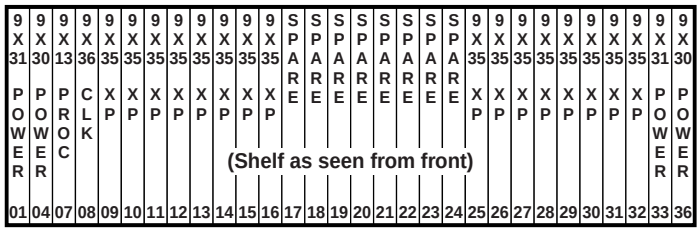
Note 2: Refer to the NTP TAM-1001-018, *DMS-100 Quick Reference Guide* for the ISM NT4X44 shelf assignment.

ENET

The ENET controls the message flow between the XA-Core and peripheral TDM components (available in 128K 2 cabinet or 64K single cabinet configuration).

ENET shelf (NT9X08)





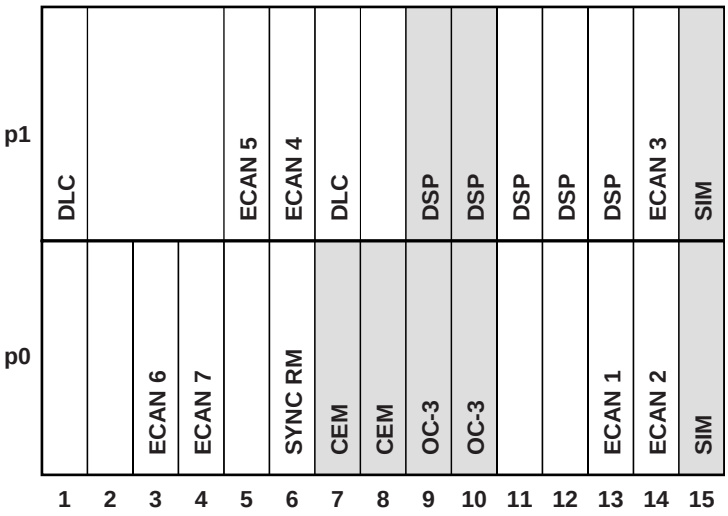
PEC	Description
9X12	CPU Port
9X13	ENET Processor
9X21	CM Bus Term. PB
9X22	CM Subsystem Clk PB
9X26	RTIF
9X27	CM Bus Ext. PB
9X30	Power Converter
9X31	-5V Power Converter
9X35	16K X 16K Crosspoint
9X36	ENET Clock & Message
9X40	DS512 Quad Fib. I/F PB
9X41BA	16 port DS30 link PB
9X47	Power Converter
9X46	Parallel CM Port I/F
DX16	Dual Power Converter

Note: For further description of the above PECs, see the “Circuit Pack Description” section.

SPM

The SPM connects to the ENET and provides an OC-3 interoffice TDM trunk interface (84 T-1s) to the TDM network. The following are the basic packs required for a DMS SPM with OC-3 connection capability

SPM shelf (NTLX51)



PEC	Description	Qty
NTLX61AA	SPM Shelf Interface Module (SIM) located in slot 15 ***Note:*** 4 SIMs per frame	2 (1+1)
NTLX82AA, NTLX82BA, NTLX82EA	Enhanced Common Equipment Module (CEM) with Ethernet is located in Slots 7 and 8.	2 (1+1)
NTLX71AA	OC3 - Interface Module	2 (1+1)
NTLX65AA, NTLX65BA	SPM Digital Signal Processor (DSP)	2 (1+1)
NTLX16	ECAN	9
NTLX86AA	SPM Coherent ECAN (128ms)	7
NTLX72AA	Data Link Controller (DLC)	2 (1+1)
NTLX72BA	Data Link Controller (DLC) II	2 (1+1)
NTLX65AA, NTLX65BA	DSP	Upto 3 additional
NTLX44AA	Synchronization Resource Module (SRM)	1

Note: For further description of the above PECs, see the “Circuit Pack Description” section.

The following additional peripherals are supported in Carrier VoIP

- MTM/TM8
- SMU, SMA, SMS, ESMA
- LTC, LTCI, LGC, LGCI, DTC, DTCI

Note: Refer to the TAM-1001-018, DMS-100 QRG for TDM components that are not included.

Maintenance Trunk Module (MTM)

MTM shelf (NT2X58)

2X45 or 4X65	0X70 PROC	2X53 CONT	2X59	<	—	**O**	**P**	**T**	**I**	**O**	**N**	**A**	**L**	—	>	2X09	POWER	0X50	2X06 or 2X70	POWER	
							CN	IU	RM	CB	UE	IR	TS								
				01	23	45	67	89	10 11	12 13	14 15	16 17	18 19	20 21	22 23						
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22

0X70 — Processor
2X06 — Power Converter
2X09 — Power Converter
2X45 — MTM Interface
2X53 — Control
2X59 — CODEC
2X70 — Power Converter
4X65 — Control

Examples of Optional Maintenance Cards

1X00 — 102 Milliwatt Test Trunk; **1X00AE** — International Version
1X31 — Conference Circuit
1X80 — EDRAM (post as DTM at PM MAP level) (see note below)
1X80 — International EDRAM (post as DTM at PM level of MAP)
Note: The 1X80 is a digital trunk module (DTM) with its own ports to the network. The power comes from the host MTM.
Note: See NTP 297-1001-527 for the following EDRAM procedures:

- Recording custom announcements on EDRAM
- Reloading factory-produced voice files to EDRAM
- Uploading EDRAM files to a storage device
- Reloading custom announcements to EDRAM

1X81 — Compact Conference
1X90 — TTT Test Signal Generator
2X11 — LTU Digital Card
2X43 — Office Alarm Circuit #3
2X48AB — Digital 4-channel DGT Receiver (2X48BB for ESA Digitone)
2X50 — Horizontal/Vertical TAN Driver
2X66 — CAMA Suspension and Calls Waiting Loop or E&M
2X71 — Transmission Terminating Trunk
2X96 — TTT PCM Level Meter (Level & Frequency)
3X09 — Remote Metallic Test
5X30 — 101 Communication Test Line Circuit

TOPS Digital Modem located within slots 5 thru 16

3X02 — Even MTM slot: Digital Signal Processor
3X03 — Odd MTM slot: Control Processor (stand-alone)

Note: Refer to the "Circuit Pack Descriptions" in this guide for the above PECs.

Trunk Module (TM8)

TM8 shelf (NT2X52)

2X45 NETIF 01	0X70 PROC 02	2X53 CONT 03	2X59 CODEC 04	< 05	— 06	T 07	OR N 08	PU O 09	TN T 10	IK SE 11	O E 12	NC EB 13	AA E 14	LR L 15	D O 16	S W 17	— 18	> 19	2X09 20	POWER 21

0X70 —TM Processor **2X53** — TM Control
2X09 — Mult. Power Converter **2X37** — Group Codec
2X45 — TM Network Interface **0X50** — Filler

Note 1: Refer to the "Circuit Pack Descriptions" in this guide for the above PECs.

Note 2: See NTP 297-1001-152, *Trunk Selection and Compatibility Reference* for other supporting information.

Digital Trunk Controller (DTC)

DTC shelf (NT6X02)

6X50 DS1 or 0X50 01	6X50 DS1 or 0X50 02	6X50 DS1 or 0X50 03	6X50 DS1 or 0X50 04	6X50 DS1 or 0X50 05	0X50 FILLER 06	0X50 FILLER 07	0X50 FILLER 08	0X50 FILLER 09	0X50 FILLER 10	0X50 FILLER 11	MX77 or AX74 or SX05 12	0X50 or 6X70 13	6X44 or AX78 14	0X50 or 6X92 15	0X50 or 6X92 or 6X62 16	0X50 or 6X62 17	0X50 or 6X69 or MX76 18	0X50 or 6X79 19	6X42 CSM 20	6X41 FORMAT 21	6X40 DS30 NI 22	6X40 DS30 NI 23	0X50 FILLER 24	2X70 POWER 25 26 27

Line Trunk/Line Group Controller (LTC/LGC)

LTC/LGC shelf

6X50 DS1 or 0X50 01	6X50 DS1 or 0X50 02	6X50 DS1 or 0X50 03	6X50 DS1 or 0X50 04	6X50 DS1 or 0X50 05	6X48 or 0X50 06	6X48 or 0X50 07	0X50 FILLER 08	0X50 FILLER 09	0X50 FILLER 10	0X50 FILLER 11	MX77 or AX74 or SX05 12	0X50 or 6X70 13	6X44 or AX78 14	0X50 or 6X92 15	0X50 or 6X92 or 6X62 16	0X50 or 6X62 17	0X50 or 6X69 18	0X50 or 6X79 19	6X42 CSM 20	6X41 FORMAT 21	6X40 DS30 NI 22	6X40 DS30 NI 23	0X50 FILLER 24	2X70 POWER 25 26 27

DS30A Links to LCMs

DS30A Links to LCMs

Unit 1 Ports				
19	15	11	7	3
18	14	10	6	2
Unit 0 Ports				
17	13	9	5	1
16	12	8	4	0

Unit 0 or 1		
	2	3
	6	7
Duplicated DS30A Links to LCMs	10	11
	14	15
	18	19

Unit 0 or 1		
	0	1
	4	5
Duplicated DS30A Links to LCMs	8	9
	12	13
	16	17

Unit #0 Pl #0

Unit #1 Pl #1

ISDN LTCI/LGCI/DTCI

Common Peripheral Controller shelf

6X50 or BX02 or 0X50 01	6X50 or BX02 or 0X50 02	6X50 or BX02 or 0X50 03	6X50 or BX02 or 0X50 04	6X50 or BX02 or 0X50 05	6X48 or 0X50 06	6X48 or 0X50 07	0X50 FILLER 08	0X50 FILLER 09	0X50 FILLER 10	0X50 FILLER 11	SX05 at NA012 12	0X50 or 6X78 13	6X44 or AX78 TS 14	6X92 UTR 15	BX01 ISDN SP 16	0X50 FILLER 17	6X69 or MX76 MSG 18	0X50 FILLER 19	6X42 CSM 20	6X41 FORMAT 21	6X40 DS30 NI 22	6X40 DS30 NI 23	0X50 FILLER 24	2X70 POWER 25 26 27

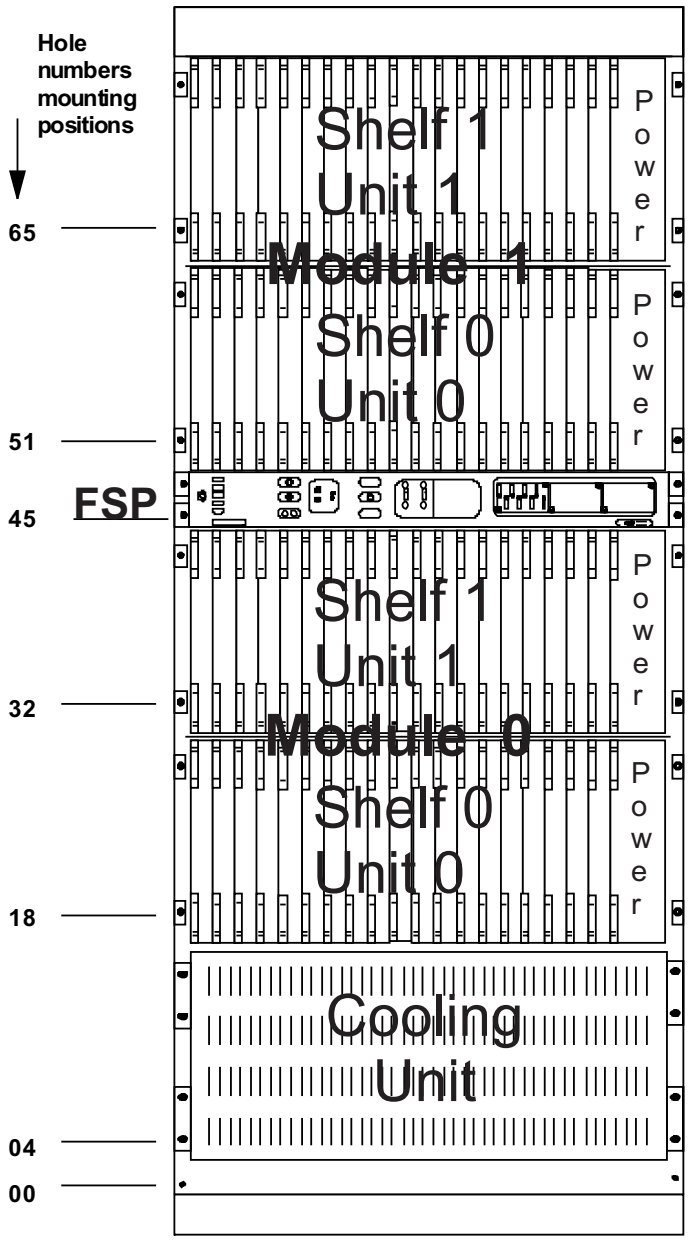
AX74 — Processor
AX78 — ISDN Enhanced Time Sw.
BX01 — Enhanced ISDN SP
BX02 — Enhanced DCH for ISDN
MX77 — Unified Processor
MX76 — Enhanced Messaging
SX05 — XPM Processor
2X70 — Power Converter
6X40 — DS30 Network Interface
6X41 — Speech Bus Formatter
6X42 — Channel Supv. Message
6X43 — Message and Tone IF
6X44 — Time Switch
6X48 — DS30A LCM Interface
6X50 — DS1 Interface
6X62 — DMS-250 Tone Receiver
6X69 — Msg. & Tone Protocol
6X70 — Continuity Tone Det
6X78 — CLASS Modem Res
6X79 — Tone Generator
6X92 — UTR or GTR
0X50 — Filler Pack

Note 1: For further description of the following DTC, LTC, LGC, and ISDN LTCI/DTCI shelf packs, see “Circuit Pack Description” within this QRG.

Note 2: For 6X50, 6X48, and 6X40 port and link assignments, see the LTC/LGC hardware and the “XPM Pack Relationship Diagram” and the “XPM Link Configuration Diagram” within this QRG.

Common Peripheral Controller Equipment Frame

LGC, DTC, DTCI, LTC, SMU, SMS equipment



Subscriber Carrier Module Shelves

Subscriber Carrier Module Urban shelves (SMU)

6X85 <	6X85 D	6X85 S	6X85 1	6X85 >	0X50	0X50	0X50	0X50	0X50	0X50	MX77 UP	0X50	6X44 TS	0X50 or 6X92	6X78 or 6X92	0X50 or 6X92	6X43 or 6X69	6X80	6X42 CSM	6X41	6X40	6X40	0X50	2X70 POWER
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

Subscriber Carrier Module SLC96 (SMS) shelf

6X85 <	6X85 D	6X85 S	6X85 1	6X85 >	0X50	0X50	0X50	0X50	0X50	0X50	MX77 UP	6X86	6X44 TS	0X50 or 6X92	0X50 or 6X92	0X50 or 6X92	6X43 or 6X69	6X80	6X42 CSM	6X41	6X40 AA or AB	6X40 AA or AB	0X50	2X70 POWER
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

Subscriber Module Access (SMA) shelf

6X50 or BX02	6X50 or BX02	6X50 or BX02	6X50 or BX02	6X50 or BX02	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	AX74 at NA06	0X50 FILLER	6X44 TS	6X92 UTR	BX01 EISP	6X78 CMR	6X69 MI	6X80 PAD	6X42 CSM	6X41 HLF	6X40 AC or FA	0X50 FILLER	0X50 FILLER	2X70 POWER
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

Note: Slot 19 in the rear shelf has an NTMX71 XPM Plus Terminator Paddle Board. Slot 22 in the rear shelf has an NT6X40GA DS512 Paddle Board that is used with the front shelf NT6X40FA DS512 Interface Card.

AX74 — Access Processor
BX01 — Enhanced ISDN SP
BX02 — Enhanced DCH for ISDN
MX77 — Unified Processor
2X70 — Power Converter
6X40 — DS30 Net. Interface
6X41 — Speech Bus Formatter
6X42 — Channel Supv. Message
6X43 — Msg. and Tone IF
6X44 — Time Switch
6X50 — DS1 Interface
6X69 — Msg & Tone Protocol
6X78 — CLASS Modem Res.
6X80 — SCM Ring/Pad
6X81 — A-bit/B-bit Word
6X85 — SLC-96 DS1 Interface
6X86 — A-bit/B-word Interface
6X92 — UTR; 6X92EA is GTR
8X18 — SMS-R DS30A Cside IF

Note: For further description of the following SMU, SMS, SMA packs, see the “Circuit Pack Description” within this QRG. For information on SMR and SMS-R shelves, see TAM-1001-018 or NTP 297-8991-805.

Expanded Carrier Module Shelves

SMA2 Main shelf

MX72 POWER	& EMI SHIELD	AX74 PROCESSOR	BX01 ESIP	6X78 CMR	6X92 UTR/GTR	6X92 UTR/GTR	MX76 MSG/CSM	6X40 C-SIDE IF	MX75 MATRIX	MX73 SIG PROC	MX87 P-SIDE IF	0X50 FILLER	MX87 or BX02 IF	0X50 FILLER	MX87 or BX02 IF	MX73 SIG PROC	MX75 MATRIX	6X40 C-SIDE IF	MX76 MSG/CSM	6X92 UTR/GTR	6X92 UTR/GTR	6X78 CMR	BX01 ESIP	AX74 PROCESSOR	MX72 POWER	& EMI SHIELD
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
Unit 0															Unit 1											

AX74 — Access Processor
BX01 — Enhanced ISDN Sig. Proc.
BX02 — Enhanced DCH
MX72 — Power Converter
MX73 — Signalling Processor
MX75 — Enhanced Matrix
MX76 — Message & CSM
MX79 — DS60 & Power Supply
MX87 — Quad PCM Carrier Fr
6X40 — C-Side DS30/DS512 IF
6X78 — CLASS Modem Res.
6X92 — UTR or GTR

Note: For further description of the above PECs or packs, see the “Circuit Pack Description” within this QRG.

Carrier VoIP Networks Capacity and limits

The following table provides information on call processing and system limits for Carrier VoIP components.

Element	Description
CS 2000 & CS 2000-Compact	**CS 2000 Call capacity** • Maximum BHCA: 2M (IP/hybrid call model) • Maximum BHCA: 1.65M (AAL1 Call Model) **CS2K Compact call capacity** • Maximum BHCA: 1.4M end office call model **Ports** Maximum AAL1 trunks: 150,000, Maximum IP trunks: 200,000 Maximum trunks & lines combined: 200,000
USP & USP-Compact	Maximum SS7 trunks supported: 200,000
Nortel Networks Multiservice Switch 15000	**Call Capacity** Maximum BHHCA: 80, 000 (VSP3-0), 43, 500 (VSP3) **Ports** • Maximum Ports/ VSP3-0: 2016 (G.711, G.729 and G.711) • Maximum ports /VSP3: 2016 (G.711), 1512 (G.729 and G.711) **Service limits** • Maximum PRI D-channels: 84
MG 9000	Maximum BHHCA(HDBH) • MG 9000 node HDBH hcps (OC-3): 13.9 • MG 9000 node HDBH hcps (IMA): 1.0
MG 4000	Maximum BHHCA: 43, 200 (ISUP and PRI), 36,000 (PTS)
IW-SPM	Number of ports per IW SPM: 2016 Maximum bridges per sec supported per IW SPM: 12 Maximum number of IW-SPM supported: 14
UAS	• 120K busy hour call attempts per shelf
GWC	BHCCA: 96,000 (ISUP GWC, Aspen 2.1 or H.248), 78,000 (ANSI PRI GWC, Aspen 2.1 or H.28), 40,000 H.323 GWC, 38,000 (IP line GWC, MGCP or NCS), 38,000 UA-AAL1 Line GWC Maximum number of GWCs supported: 60

Operations, administration, maintenance and provisioning

Integrated Element Management System (Integrated EMS)

Integrated Element Management System (Integrated EMS) is a next generation element management system that provides a single point of data integration and network management for all solutions. The Integrated EMS software runs co-resident with the CS 2000 Management (CS2M) components on Sun Netra t1400 or the new Sun Netra 240 servers.

Access to Integrated EMS information is via two types of interfaces ‘Java Webstart’ and ‘Web client’.

Note: Refer to the procedures on ‘Logging in Integrated EMS’, ‘Launching the Java WebStart client’ and ‘Launching the Integrated EMS Web Client’ in the *Integrated EMS Basics, NN10329-111* document.

Integrated EMS components

This section provides an overview of the applications that can be launched from the Integrated EMS GUI and references the relevant procedures for managing faults.

Application	Description	Procedures
All	All Integrated EMS applications that are listed below.	**Fault Management**: **-** See "Troubleshooting" chapter in this QRG • "Viewing event details" • "Viewing Alarm details", " • "Clearing an Alarm" • "Resynchronizing Alarms"
CS 2000 Core Manager/CBM	The CS 2000 Core manager and Core and Billing Manager GUIs are based on the SDM platform and provide the primary interface for the management of the core.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching CS 2000 Core Manager" • "Launching MAPCI session for Call Agent core and XA-core" • "Launching applications for SDM platform" and *ATM/IP Fault Management Guide, NN10408-900* • "Launching CS 2000 Management tools GUI" **Fault Management (CS 2000):** See 'Troubleshooting chapter' in this QRG for CS 2000 related fault management procedures.
APS (CS 2000 Management tools)	The APS manager is available to view alarms and logs sent by the APS Network elements	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launch APS GUI" **Fault Management (APS):** See "Troubleshooting chapter" in this QRG for APS related fault management procedures.

Application	Description	Procedures
UAS Manager/ MS 2000 Manager (CS 2000 Management tools)	Configuration and maintenance of the UAS	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching UAS Manger" • "Launching MS 2000 Client" **Fault Management (UAS):** See *UAS Fault Management*, *NN10073-911* and *MS 2010 Fault Management NN10328-911* guides.
LMM Manager	Line Maintenance Manager application is used to post lines and perform maintenance activities on them	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching LMM application"
TMM Manager	Trunk Maintenance Manager displays trunks and performs maintenance activities on them.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching TMM application"
BPT	Batch Provisioning tool performs bulk configuration of Carrier VoIP lines and bulk flow via configuration of ADSL, view and deletes log output files. The batch provisioning commands are executed using a single OSS gate connection.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching OSS gate" **Fault Management (BPT)-** See "Troubleshooting" chapter in this QRG for the following: • "Starting the Batch provisioning tool" • "Setting up users on a Sun server"
NPM	Network Patch Manager provides a GUI and CLUI to: • apply and remove patches • audit devices • activate and deactivate patches • restart OAM devices • perform file management tracking and reporting	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching NPM application" **Fault Management (NPM):** See "Troubleshooting chapter" in this QRG for NPM related fault management procedures.

Application	Description	Procedures
CS 2000 SAM21 Manager	CS 2000 SAM21 Manager resides on the same server as the SSPFS and allows remote device management of multiple SAM21 network elements at the card level.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launch CS 2000 SAM21 Manager" **Fault Management (SAM21):** See "Troubleshooting chapter" in this QRG for SAM21 related fault management procedures.
CS 2000 GWC Manager	The GWC manager coordinates the configuration of the GWC and is used for fault management of the GWC node	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching GWC Manager" **Fault Management (GWC):** See "Troubleshooting chapter" in this QRG for GWC related fault management procedures.
Nortel Networks Multiservice Data Manager	Nortel Networks Multiservice Data Manager (formerly known as Preside MDM) allows management of the Passport PVGs.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launch Nortel Networks Multiservice Data Manager" • "Launching applications for SDM platform" **Fault Management (APS):** See "Troubleshooting chapter" in this QRG for Passport/Media Gateway related fault management procedures.

Application	Description	Procedures
Ethernet Routing Switch 8600 Device Manager	The Device Manager for Ethernet Routing Switch 8600 allows management and configuration of a Ethernet Routing Switch 8600 chassis	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching Ethernet Routing Switch 8600 Device Manger" **Fault Management (Ethernet Routing Switch 8600):** See "Troubleshooting chapter" in this QRG for Ethernet Routing Switch 8600 related fault management procedures.
Call Agent Manager	The Call Agent manager provides element management of the CS 2000 Compact.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching MAPCI session for Call Agent Core and XA-core **Fault Management (CS 2000 Compact):** See *CS 2000 Compact Fault Management, NN10083-911*
STORM Manager	STORM manager allows provision and control of application level STORM functions.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching STORM Client" **Fault Management (STORM):** See *STORM Fault Management, NN10088-911*
USP Manager	Allows remote management of USP and USP- Compact.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching USP Applications" **Fault Management (USP):** See *USP Fault Management, NN10071-911 and USP Compact Fault Management NN10072-911 guide.*

Application	Description	Procedures
MG 9000 Manager	MG 9000 manager is a client server application consisting of server software that resides on a central server and a mid-tier database between the client and server for data storage. It is used for remote management of MG 9000 components.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching MG 9000 Manger" **Fault Management (MG 9000):** See *MG 9000 Fault Management, NN10074-911.*
SSPFS	SSPFS is a high performance Unix based processing platform for OAM&P services.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching applications for SSPFS platform"
QoS collector application	The Quality of service (QoS) Collector Application (QCA) collects QoS records and stores them.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching QoS collector application"
OSSGate	OssGate acts as a gateway to the Node, Carrier, Trunk, Line, ADSL Provisioning applications and the Trunk maintenance application.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching OSSGate application"
OMPUSH application (SSPFS)	The OMPUSH is used to make scheduled OM (CSV/SSV) file transfers to predefined remote servers using File Transfer Protocol.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching applications for SSPFS platform "
PM Poller (SSPFS)	The Performance Monitoring Poller provides a simple network management protocol (SNMP) based system to gather performance information from the GWC, UAS, SAM21 SC, MS2010 and SSPFS.	**GUI Access**- *Integrated EMS Basics Guide, NN10329-111* • "Launching applications for SSPFS platform "
Resource Monitor (SSPFS)	The Resource Monitor (RESMON) application detects hardware and software faults.	**GUI Access**- • "Launching applications for SSPFS platform "

Note: Additional Fault Management procedures that are not listed above can be referenced in the *Integrated EMS Fault management* guide, NN10334-911.

Carrier VoIP Networks commands

The following table lists commonly used Carrier VoIP Networks commands by Network element.

Note 1: Commands are not sequential and can be used in any order

Note 2: Refer to the "Troubleshooting" chapter for additional commands within troubleshooting procedures.

Element	Command string	Interface	Purpose
NPM	q patchlist	CLUI	Query list of known patches and state in NPM
NPM	maintenance> reports>reportlist> patchlist	GUI	Query list of known patches and state in NPM
SDM	querysdm loads	CLUI	Query list of loads applied on SDM
APS	more/opt/uas/aps/ conf/APSBuildStamp.txt	CLUI	Determine the APS s/w loadbuild
APS	pkginfo l grep aps	CLUI	Determine the APS s/w RMR
CMT	pkginfo -x NTnpm	CLUI	Determine the NPM s/w version
CMT	pkginfo -x NTpse	CLUI	Determine the PSE s/w version
CMT	pkginfo -x NTsesm	CLUI	Determine the SESM s/w version
CMT	echo $SSPFS_VERSION	CLUI	Determine the SSPFS s/w release
CMT	echo $SSPFS_PATCH	CLUI	Determine the SSPFS s/w version
CMT	/opt/nortel/sam21em/bin/s am21emCtrl stop	CLUI	Stop the SAM21EM application
CMT	/opt/nortel/sam21em/bin/s am21emCtrl start	CLUI	Start the SAM21EM application
CMT	/opt/nortel/sam21em/bin/s am21emCtrl status	CLUI	Provide a status of the SAM21EM application

Element	Command string	Interface	Purpose
CMT	/opt/nortel/NTsesm/admin/bin/ptmctl stop	CLUI	Stop the SESM agent without stopping the proxy agent
CMT	/opt/nortel/NTsesm/admin/bin/ptmctl start	CLUI	Start the SESM agent witchout stopping the proxy agent
CMT	/opt/nortel/NTsesm/admin/bin/ptmctl status	CLUI	Provide a status of the SESM application
CMT	/opt/nortel/NTsesm/admin/bin/ptmctl/ -f stop	CLUI	Stop the SESM application including stopping the proxy agent
CMT	/opt/nortel/NTsesm/admin/bin/ptmctl/ -f start	CLUI	Start the SESM application including starting the proxy agent
CMT	npmsrvr stop	CLUI	Stop the NPM server application
CMT	npmsrvr start	CLUI	Start the NPM server application
CMT	npmsrvr status	CLUI	Provide a status of the NPM server application
CMT	/etc/init.d/ddmsproxy stop	CLUI	Stop the DDMS proxy application
CMT	/etc/init.d/ddmsproxy start	CLUI	Start the DDMS proxy application
CMT	/etc/init.d/ddmsproxy status	CLUI	Provide a status of the the DDMS proxy application
CMT	/etc/init.d/apache stop	CLUI	Stop the Apache Web server and Tomcat servlet application

Element	Command string	Interface	Purpose
CMT	/etc/init.d/apache start	CLUI	Start the Apache Web server and Tomcat servlet application
CMT	/etc/init.d/apache status	CLUI	Provide a status of the Apache Web server and Tomcat server application
CMT	>cd/opt/nortel/qca>qcaserver	CLUI	Start the QoS Collector application
CMT	>cd/opt/nortel/qca>stop_qca	CLUI	Stop the QoS Collector application
CMT	su-oracle/opt/nortel/sspfs/bks/bkfullora <filename>.dmp	CLUI	Performs a backup of the oracle database
CMT	su-rootmt-f/dev/rmt/0 rewind/opt/nortel/sspfs/bks/bkfullsys	CLUI	Performs a full backup of the CMT to tape
CMT	./etc/init.d/dbora stop	CLUI	Shuts down the Oracle database
CMT	./etc/init.d/dbora start	CLUI	Starts the Oracle databse
CS2K	imagename	CLUI	Determine the s/w version of XA-Core or Compact
Ethernet Routing Switch 8600	Edit/Chassis/Bootconfig/SwVersion	GUI	Determine Ethernet Routing Switch 8600 s/w version
Ethernet Routing Switch 8600	show bootconfig choice	CLUI	Determine Ethernet Routing Switch 8600 s/w version
PVG	d sw avl	CLUI	Determine PVG s/w version.

Element	Command string	Interface	Purpose
SDM	sshl -l root <storm ip address>	CLUI	Secure Shell access to the Storm application
SDM	lslpp -l	CLUI	Determine which SDM patches are applied

DMS menu and nonmenu commands

This section lists and provides a description of various menu and nonmenu commands in a DMS switch. The menu commands are associated with a MAP display containing a numbered list or menu of commands and parameters when the level or sub-level from which the commands are entered has been accessed. The nonmenu commands are not associated with a MAP display even when the level or sub-level from which the commands are entered has been accessed. The commands are organized in an alphabetical order.

AFT and RASL commands

The following AFT directory commands are used to query and manipulate the Automatic File Transfer (AFT) System. AFT automatically transfers files recorded by DIRP.

>**AFT** enter Automatic File Transfer (AFT) utility.

>QUERYAFT query information about AFT files.

>QUERYMNP query MNP information.

>SETAFT set the next AFT file to transfer.

>SETOVR set an Override file transfer.

>RESETPFTresets PFT information on a file.

>RESETOVR resets the Override file pointer.

>COPYAFT copy an AFT file to tape.

>DELAFT delete a file from DIRPHOLD and the directory.

>STARTAFT starts the AFT system transferring files.

>STOPAFT stops the AFT system transferring files.

>QUIT quit out of the AFT utility.

The following robust application and session layer (RASL) directory commands are used to manipulate network connections. They are used to terminate and re-enable a network connection. They also are used to disable a network connection for datafill changes, and summarize operational network connections. See table RASLAPPL for parameters that make the commands available.

>RASL enter RASL utility.

>RASLCLOSE manually closes a network connection.

>RASLSTOP disables a network connection.

>RASLSTARTre-enable a network connection.

>SHOWRASL display a summary of all network connections.

AMADUMP commands

NTP 297-1001-570 & NTP 297-YYYY-545

>MAPCI NODISP;MTC;IOD;DIRP;QUERY AMA shows active volume. (Repeat query to verify AMA collection).

CAUTION: in a very busy office, a very large file can be generated from AMA calls after entering the next command.

>RECORD START FROM <active vol.> ONTO <scratch vol.> make test calls to generate desired AMA record(s).

>RECORD STOP FROM <active vol.> ONTO <scratch vol.>

>DSKUT;LISTVOL <scratch vol.> list RECORDFILE on associated scratch volume.

>AMADUMP <format—BC or NT> RECORDFILE gives AMADUMP prompt.

>FILTER ADD '00<structure code>' prompts for characteristics for filter—enter blank carriage returns except for desired refinements (“$” to end).

>FILTER ADD '10<structure code>' repeat with same refinements.

>FILTER ENABLE

>DUMP CALL DETAILS use **>HELP DUMP** for details.

Note: If a filter is not used, then type:

>DUMP CALL DETAILS <from block> <# blocks>

Comparison of CM amadump and SDM amadump

The following table lists CM and SDM parameters that are approximate equivalents. The term “none” indicates that there are no equivalent parameters for the listed function. Also, if other functions perform close to equivalent functions, those functions are noted in the ‘Differences’ column.

Function	CM	SDM	Differences
Startup Command	amadump <record_format> <file_name>	amadump <streamname>	When SDM amadump receives the stream name, it uses it to derive the record format and to establish a file-locating context for use with the dump sub-command. Although there is no file name parameter for SDM startup, the file name is prompted for by the dump sub-command.
General Filter Usage	Filters and their logical relationship with each other (AND, OR) are setup with the filter add command before running dump	Filters that are separated by logical operators in the filter parameter (-ft) of the dump sub-command, implicitly enable or disable the filters and establish their logical relationship.	Prior to running CM amadump, enable or disable filters using the filter enable and disable commands. In SDM `amadump`, executing the command dump -ft “%5”, for example, enables the filter at table entry 5 and disables the remaining filters. In the more complex example, dump -ft “%5 & (%6 | %7)” enables filters 5, 6, and 7 and displays a record if it matches filter 5 and either filter 6 or 7.

Function	CM	SDM	Differences
Filters Supported	enable	none	SDM amadump supports add, delete, and display as part of the filter sub-command. Enable and disable are not directly supported, but the filter (-ft) parameter of the dump sub-command provides the equivalent function.
	disable	none	
	add	add	
	delete	delete	
	display	display	

Function	CM	SDM	Differences
Filter Add Function	Keywords: EQ NEQ none none LTE GTE none none none	Filter symbols: = != < > <= >= bitwise & |	CM FILTER ADD keywords are used to compare the value of the record field identified by the specified field name with “AND” or “OR” filters. SDM FILTER ADD requires a filter location, or index, to determine the table location where it stores the filter string. The SDM implementation also allows the use of parentheses to specify operation precedence and multiple sets of field name/operator/filter value within a single filter string. SDM FILTER ADD does not allow the use of “AND” and “OR” to combine filters. However, the dump sub-command allows this technique to combine filter (-ft) parameters. CM FILTER ADD defaults to the equality (EQ) operator. However, SDM `amadump` has no default operator. As a result, an operator must be explicitly specified. SDM FILTER ADD allows a string constant specified within single quotation marks. However, the equality (=) operator must be used in conjunction with it.

Function	CM	SDM	Differences
Filter Display Function			With both implementations, when FILTER DISPLAY is invoked with no parameters, it shows the entire filter table. When the CM FILTER DISPLAY is invoked with field arguments, it displays all of the field names of the AMA record. With the SDM FILTER DISPLAY, there is no parameter for displaying AMA record field names, but the SDM `amadump listfields` command provides an equivalent function. When invoked with an accompanying numeric argument, the SDM FILTER DISPLAY displays the contents of the specified filter row.
NumBlk Sub-command	There is no equivalent command on the CM.		With SDM implementation, this command allows the number-of-blocks-to-dump value to be set independently prior to the execution of commands that can use it. It can also be set by way of the (-nb) parameter of the dump sub-command. CM provides a similar function by way of the startBlk parameter of the dump sub-command.

Function	CM	SDM	Differences
NumOut Sub-command	There is no equivalent sub-command on the CM.		With SDM implementation, this command allows the number-of-records-to-dump value to be set independently prior to the execution of the commands that can use it. It can also be set by way of the (-no) parameter of the dump sub-command. CM provides a similar function by way of the numBlk parameter of the dump sub-command, but this specifies the number of blocks to be dumped, instead of the number of records.
NumSrch Sub-command	There is no equivalent function on the CM.		With SDM implementation, this command allows the number-of-records-to-search value to be set independently prior to the execution of the commands that can use it. It can also be set by way of the (-ns) parameter of the dump sub-command.
Dump Sub-command and File Selection	Selected at Startup with explicit filename or with special purpose names AMA_ACTIVE, AMA_PARALLEL and CALLDUMP	Selected after Startup with Dump Subcommand	With SDM amadump, the filename can be stated explicitly or by way of the -fn parameter followed by a list of filenames. Also, files can be selected by using start time (btime or -b) and stop time (etime or -e). The CM special purpose filenames cannot be used in SDM `amadump`.

Function	CM	SDM	Differences
Dump Sub-command and Dump Type/ Format	Dump Types:	Display Modes:	CM amadump HEX is mutually exclusive with all dump formats. SDM `amadump` HEX is specified with SUM (-s).
	CALL	none	
	DATA	none	
	HDR	none	
	HEX	HEX	
	NEW	none	
	Dump Formats:		
	NODETAILS	NODETAILS	
	DETAILS	DETAILS	
	SUMMARY	sum (-s)	
	none	NOSHOW	
Dump Sub-command and NumBlk	Referred to as startblk on the CM		NumBlk applies only to `DIRP` files only (not `AMADNS`).
Dump Sub-command and NumOut	Referred to as numblks on the CM		With CM amadump, numblks is the number of blocks to dump; With SDM `amadump`, NumOut is the number of records to be dumped.
Dump Sub-command and NumSrch	There is no equivalent function on the CM.		With SDM amadump, NumSrch specifies the maximum number of records that `amadump` searches.
Startup Command	amadump <record_format> <file_name>	amadump <streamname>	When SDM amadump receives the stream name, it uses it to derive the record format and to establish a file-locating context for use with the dump sub-command. Although there is no file name parameter for SDM startup, the file name is prompted for by the dump sub-command.

Function	CM	SDM	Differences
General Filter Usage	Filters and their logical relationship with each other (AND, OR) are setup with the filter add command before running dump	Filters that are separated by logical operators in the filter parameter (-ft) of the dump sub-command, implicitly enable or disable the filters and establish their logical relationship.	Prior to running CM `amadump`, enable or disable filters using the filter enable and disable commands. In SDM `amadump`, executing the command dump -ft “%5”, for example, enables the filter at table entry 5 and disables the remaining filters. In the more complex example, dump -ft “%5 & (%6 | %7)” enables filters 5, 6, and 7 and displays a record if it matches filter 5 and either filter 6 or 7.
Filters Supported	enable disable add delete display	none none add delete display	SDM amadump supports add, delete, and display as part of the filter sub-command. Enable and disable are not directly supported, but the filter (-ft) parameter of the dump sub-command provides the equivalent function.

Function	CM	SDM	Differences
Filter Add Function	Keywords: EQ NEQ none none LTE GTE none none none	Filter symbols: = != < > <= >= bitwise & |	CM FILTER ADD keywords are used to compare the value of the record field identified by the specified field name with “AND” or “OR” filters. SDM FILTER ADD requires a filter location, or index, to determine the table location where it stores the filter string. The SDM implementation also allows the use of parentheses to specify operation precedence and multiple sets of field name/operator/filter value within a single filter string. SDM FILTER ADD does not allow the use of “AND” and “OR” to combine filters. However, the dump sub-command allows this technique to combine filter (-ft) parameters. CM FILTER ADD defaults to the equality (EQ) operator. However, SDM `amadump` has no default operator. As a result, an operator must be explicitly specified. SDM FILTER ADD allows a string constant specified within single quotation marks. However, the equality (=) operator must be used in conjunction with it.

Function	CM	SDM	Differences
Filter Display Function			With both implementations, when FILTER DISPLAY is invoked with no parameters, it shows the entire filter table. When the CM FILTER DISPLAY is invoked with field arguments, it displays all of the field names of the AMA record. With the SDM FILTER DISPLAY, there is no parameter for displaying AMA record field names, but the SDM amadump `listfields` command provides an equivalent function. When invoked with an accompanying numeric argument, the SDM FILTER DISPLAY displays the contents of the specified filter row.
NumBlk Sub-command	There is no equivalent command on the CM.		With SDM implementation, this command allows the number-of-blocks-to-dump value to be set independently prior to the execution of commands that can use it. It can also be set by way of the (-nb) parameter of the dump sub-command. CM provides a similar function by way of the startBlk parameter of the dump sub-command.

Note: For more information on SDM AMADUMP commands, refer to the procedure on "Searching and Viewing Billing Records" in the "Troubleshooting" chapter.

CALLDUMP CI level commands

Outputs billing records using same format as AMADUMP. Records are dumped directly from CCs internal call record buffer rather than the DIRP

file. CALLDUMP is safe to use and has little impact on real-time usage.

Note: CALLDUMP does not work in offices with SDM because AMA does not go to DIRP.

>CALLDUMP <stream name (default=AMA)> <format=HEX or FULL>

>CALLDUMP PREVIOUS to dump records from previous CALLDUMP command

DISPCALL commands

DISPCALL User Guide, *TAM-1001-003*

Note: Call deaths produce AUD395, AUD398, and some AUD4XX log messages. DISPCALL can save call deaths and make data representation easier to understand.

>QUIT exits DISPCALL level.

>CLEAR clears DISPCALL buffers.

>DEATH [PUP|SEARCH] <ON|OFF> toggles on/off to save call deaths; PUP can be specified to save protected/unprotected data for the agents in the call; SEARCH can be specified to search for agents linked to the call but not appearing in any part of the call.

>DISPTID <node #> <terminal #> verifies node and terminal number.

>FREE deallocates and frees the buffers.

>QUERY displays the number of buffers allocated and the number of buffers in use; also displays current setting of DEATH parameters.

>SAVELEN <len> takes a snapshot of the call on which the given line is currently active.

>SAVETID <node #> <terminal #> takes a snapshot of the call on which the given terminal is currently active.

>SAVETRK <CLLI> <member number> takes a snapshot of the call involving this CLLI.

>SET <type> <num> allocates buffers for the given buffer type.

Ranges:	CCB	0-30	EXT	0-34
	CDB	0-31	PROT	0-20
	MBUFF	0-600	UNPROT	0-17

>SHOW <what> <0-255> <H|F> shows collected data for CCB, CDB, EXT, PROT, UNPROT, P1P, P2P in hex or formatted form. i.e., to show collected data for all buffers of first call death input:

>SHOW CALL 0 F

DLOG commands

NTP 297-1001-545 or NTP 297-8021-350 & 297-9051-350 (International)

Note: DLOG (Disk LOG) utility can be used to retrieve logs.

>DLOG enters DLOG utility >QUIT exits DLOG utility.

>EXCLUDEALL removes all logs, except PROTOLOGS from the set of logs to be formatted.% start out by excluding all logs or it will dump out too many logs in the out file. See the EXCLUDEPROTO subcommand.

>INCLUDEALL resets the set of logs to format to all logs except PROTOLOGS. See INCLUDEPROTO subcommand.

>EXCLUDE accepts logs, except PROTOLOGS, to EXCLUDE from format executed by FORMAT subcommand. See the EXCLUDEPROTO subcommand.

>INCLUDE <logs> accepts logs, except PROTOLOGS, to INCLUDE in format executed by FORMAT subcommand. (i.e, >INCLUDE ISDN PM or

>INCLUDE PM see INCLUDEPROTO subcommand.

>INCLUDEPROTO & EXCLUDEPROTO commands removes or excludes all **PROTOLOGS (TRAP, SWER, INIT, etc.)** from the FORMAT subcommand execution.

>STATUS displays the logs and PROTOLOGS INCLUDED/EXCLUDED, earliest valid start time and previous use information.

>FORMAT accepts parameters for date/time range and “tofile” such as SFDEV, or “to terminal” to appear on screen.

>FORMAT YYYYMMDDHHMMSS YYYYMMDDHHMMSS toterminal

>FORMATFILE accepts filename of unformatted DLOG file to format.

>LISTFILES displays the raw DLOG files recorded in the internal table with their start times and end times.

>PRINT <formatted filename>print a copy of “tofile” in FORMAT.

DMSMON commands

Service Problem Analysis Administration Guide, NTP 297-1001-318

CAUTION: The RESET command deletes all accumulated data.

>DMSMON access to DMSMON commands from CI level.

>HIGHLOGS displays the 20 logs most frequently issued.

>LOGCOUNT counts log occurrences.

>LOGBUFFER dumps the TRAPS, SWERRs, and MM buffers.

>HIGHPARMS displays the high watermarks for office parameters.

>HIGHCPOCC displays high-water CP occupancy (non-BRISC).

>HIGHCAP displays high-water CP CAPacity (BRISC only).

>RESTARTINFO reports number of restarts and associated downtime.

>PMCONFIG displays the PM configuration.

>EQPCOUNTS displays the office equipment counts.

>MEMORY displays memory usage information.

>PMLOADS displays the PM loads currently available.

>ASSESS displays normalized peg counts per 10,000 calls.

>OMS counts major OM peg information.

>COUNT executes the count procedures for switch equipment.

>NEWPATCHlists the new patches applied to the switch.

>OPR displays an office performance report.

>DBLOCKS displays digit block counts for various digilator tables.

>DUMPALL dumps all DMSMON data.

>IBNEXPCT counts free tuple spaces in table IBNXLA internal table.

>RESET OMS resets the OMs to 0.

>RESET LOGCOUNT resets the log counts to 0.

>RESET RESTARTINFO resets the number of restarts to 0.

>RESET NEWPATCH resets the new patch date to the current date.

>RESET ALL resets OMs, logcount, restartinfo, and new patch.

>QUIT or LEAVE leave or quit DMSMON level.

DMS MAPCI level commands

Command Reference Manual, NTP 297-1001-820, 821, or 822

Note: Use >HELP <command> to get online details for each command.

>**ABORT** use if difficulty is experienced with using a command

>**CALLDUMP** outputs billing records using same format as AMADUMP

>**CLLIREF** use parameter MEMBERLESS to search for CLLIs in table TRKGRP against table TRKMEM CLLIs. Use SEARCH parameter to search for CLLI(s) in all or specified tables.

>**CLLIRBT** use to scan for differences between table CLLI and CLLIMTCE or between TRKMEM and CLLIMTCE subtable DIAGDATA. Generates DFIL106 log if problems.

>**COMMAND <x> (full command name)** used to create user defined commands to simplify routine or repetitive input tasks. (i.e., COMMAND T (TABLE)). T is now TABLE

>CPSTAT display of SuperNode switch activity. Example of CPSTAT results for a SuperNode:

:CATMP/HR CPOCC AUXCP CPAVAIL E NGLEVEL ENGPARM CCOVRLD

840 2% 0% 79% BELOW 77% OFF

SCHED FORE MAINT DNC OM GTERM BKG NETM SNIP IDLE

13% 1% 6% 0% 1% 0% 33% 0% 0% 46%

>CAPCI display of XA-Core switch activity. Example of CAPCI results for a XA-Core:

```
CATMP/HR UTIL ENGCATMP MAXCATMP COMPLEX ENGLEVEL CCOVRLD
PESC

  0            0%       --            --            --
BELOW         OFF         NO
```

>CNAMDVER used to check the name and the permanent privacy status associated with the name at the SCP database without making an actual call.

> **>CNAMDVER** <Calling Number (10 digits)> STRING
> <Calling Number Presentation (0-allowed, 1-restricted)>
> {0 TO 1} [<Timeout (in seconds)> {0 TO 255}]

Do Not Disturb (DND) Queries:

>**DND STATUS** displays next wakeup time (table DNDSCHED).

>**DND DISPLAY** <custname> <disprange> {DN7D <dn>, GRPNO [<group> {1 to 63}], ALLGRPS, INTERVAL} displays DN data.

>**DTDETECT** command to activate digitone fraud program. Suggest using this program after a restart to prevent no-dial-tone customer reports from customers that are not supposed to have digitone phones.

>**E800VER** command to verify the validity of SS7 messages used by toll-free services.

>**EXPAND** use to uncompress files.

>**ERASE** deletes a symbol from the user's directory (i.e., ERASE T to erase command named “T”).

>**FILECLOSE <filename><device>** closes a specified store file/device.

>**FINDTAB** finds all tables which begin with a specific set of letters. The output indicates the table's position in the DART table, the dump and restore method and the complete table name

>**FINDREF<table name> <key> [filename] [device]** a searching tool that finds all tuples that reference a specific owner tuple. Use **>FINDREF LISTTABLES** to display a list of owner tables which the FINDREF command can be run against.

>FORCEOUT<username> used to force out a user.

>LISTSF INFO ALL finds store file owner.

>LISTST use at MAP levels to get a list of directories, then use the **PRINT <dir>** command to get list of hidden commands.

>LISTVFGS <customer name or VFG name> use to get a list of VFG members and their status.

>LTCCH can be used to obtain detailed information on the usage of channels on both the C-Side and P-Side of certain host XPMs. Use Q LTCCH to get command syntax.

Keyboard Shortcuts:

<ctrl>E deletes from current cursor position to end of line.

<ctrl>F moves cursor forward one character.

<ctrl>I used to insert at the current cursor position.

<ctrl>J line feed.

<ctrl>M enter

<ctrl>U erases line.

<ctrl>X exits insert mode.

? entering '?' displays the last line input (up to 3 lines).

>MAPCI NODISP use to suppress the MAP level display.

>MSG sends a message to another user (i.e., MSG NTAS 'Hello').

>NAG Node Assessment Graph (NAG) is an hourly snapshot of equipment status, REX, and overload (see NAG400 log).

>PERMIT defines a new valid user and assigns parameters.

>UNPERMITremoves an existing user.

>PRIVCLAS adds, deletes, or changes, the privilege class(es) for specified command(s) or program module(s).

>OMPRDUMP requests OMPRSPEC reports from the OMTAPE data.

Query Commands:

>QCUST retrieves information about all the lines associated with one or more customer group(s).

>QCM this command displays the contents of CLASS incoming and outgoing call memory.

>QCM <directory number> or <line equipment number> <F or H>
F = formatted or H = hex

>QDN displays information about a subscriber line.

>QDNWRK displays a range of working lines using directory #'s.

>QGRP display various equipment groups using DN or LEN.

>QHASU display hardware assigned and software unassigned.

>QHLR displays DN in HLR for mobility numbers.

QLRN Command:

>**qlrn 8197251111**

Query sent: 1999/12/31 11:59:59.571 FRI.

Valid QLRN response received.

Routing number: 9057220000.

CALLING DN: 6136210000. Office:TASCAPTIVE_P.

Elapsed Time (mm:ss:mS): 0:0:5.

>QLEN displays information about a subscriber line.

>QLENWRKused to query a range of working lines using LENs.

>QMADN display Multiple Appearance Dir. Number (MADN).

>QPDN list ported in and out DNs and ported DNs of a single NPANXX

>QUERYCMhidden command off the CM MAP level used to query information on CM hardware. Use HELP QURYCM.

Note: The QUERYCM and QUERYMS commands are dependent upon table PECINVs datafill being current.

>QUERYMS hidden command off the MS MAP level used to query information on MS hardware. Use HELP QUERYMS.

>QUSER displays a list of user names and associated devices.

>QUSER COMPLETE includes names, devices, and processes the user is running in. (see QUERY PROCID).

>QUERY PROCID <procid> displays what process has been started by the user (use the PROCID field data from the QUSER COMPLETE command).

>QSL provides detailed lists for each Screening List Editing (SLE) feature on a specified line. The line can be specified by either DN or LEN. One or all features can be specified. When parameter ALL is selected, information is given in FULL format; when one feature is specified, the subscriber can select FULL or HEX format.

>QSL <dn or len> <SLE feature name or ALL> <FULL or HEX>

>RECORD QUERY displays all recording links.

>TRKQUERY TM <TMTYPE> <TMNO> displays TM ckt. info.

>TRKQUERY PM <PMTYPE> <PMNO> <CKT> disp's ckt info.

>QUIT used to change current display to the previous directory.

> Quit# used to quit a certain number of levels (Example: "Quit 2", "Quit 4" etc.)

>QUIT ALL used to quit all levels

>RCCMAP gives information on the channel usage of an RCC - LTC.

>RECORD START sends output from your dev. to dev. ispecified:

>RECORD START ONTO <device name> sends output to devicespecified.

>RECORD START FROM <device name> ONTO <device name> sends output from and to devices specified.

>RECORD STOPstops recording: **>RECORD STOP ONTO <device name>**, **>RECORD STOP FROM <device name> ONTO <device name>**

>RENAMECLLI <old_clli> <new_clli> chg. clli names in CLLI table.

>REPEAT used to repeat CI expression specified number of times. (Example: **>REPEAT 3 (NEXT)** to repeat next command 3 times).

>SEND redirects the user's terminal response to an alternate device:

>SEND <device> <filename> terminal response sent to file, >**SEND <device name>** terminal response sent to dev. specified.

>SEND PREVIOUS resets terminal response to original terminal.

>SHERLOCK request data for service failure analysis.

>SHOW USERS displays valid users list (use PRINT USERS for copy).

>SHOWUSES<table> displays dependency table(s) for specified table.

>SHOWUSERS <table> displays tables that use the specified table.

>SSR 15 min. switch status report—try **>DISPLAY SSR600 VERBOSE** command. See tables SSRFORM & SSRDEF.

DRAMREC utility commands

DRAM-EDRAM Guide, 297-1001-527

>**DRAMREC** accesses the DRAM recording utility subcommands.

>**QUIT** exits the DRAM recording utility.

Note: (Use **QUIT#** to quit a level and **QUIT ALL** to quit several levels)

>ABORT cancels the previous command.

>ASSIGN datafill the memory management tables for PROMS with SIT and speech data, but for RAMS with SIT data only.

>ASSIGNDUMP <function> {COMMANDS, ANNS}.

>COMMANDS creates a file containing all of the ASSIGN commands used in assigning DRAM phrases.

>ANNS displays the valid DRAM phrases.

>CONNECT connects a specified trunk to a DRAM for recording.

>DISCONNECT disconnects a previously connected trunk from DRAM.

>DISPLAY displays the phrase contents of speech memory.

>ERASE erases the given phrase from speech mem on DRAM

>FIND lists all occurrences of a phrase name on all DRAMs

>POSITION record a phrase at a given position in memory

>PLAYBACK repeatedly plays back the desired phrase

>RECORD define and record a phrase. Do not use optional parameters for normal recording

>SITLOAD puts special info. tones in RAM

>DEBUG <table> <dram/ann> displays the contents of DRAM tables

>ANNSDEBUGprints contents of internal ANNS tables (could be large!)

References

Documentation: DRAM/EDRAM Maint. Ref. Man., NTP 297-1001-527, Translations Guides, NTP 297-YYYY-350,

Tables: DRAMS, ANNS, ANNMEMS, DRAMTRK, CLLI, DRMUSERS, EDRAMINV, TMINV

Logs: AUDT205 — CC message trouble, AUDT206 — Diagnose & check announcements, AUD207 — Power loss detection in RAM (action required)

OM's: (ANN Group) see registers — ANNATT, ANNMBU, ANNOVFL, ANNSBU, ANNTRU

Note: For the EDRAM location, see the MTM shelf.

FLEXTAB command

Command Interface Reference Manual, NTP 297-8991-824

>**FLEXTAB ALL** this option creates a DMSPRO file for undoing all the tuple operations recorded in the FLEXRES table, starting from the latest record.

>**FLEXTAB all userid user1 sfdev dmo_file** the DMS switch generates this confirmation response when any of the ALL, KEYRANGE, or DATE options are used by the operating company personnel and the file is created successfully.

>**FLEXTAB all userid user1 ntdev dmo_file** to create a DMSPRO file for undoing all the tuple operations made by User1 recorded in the FLEXRES table starting from the latest record.

The flextab command syntax is as follows:

```
flextab
 <ACTION> {ALL.
        KEYRANGE <FROMKEY> {1 TO 10000}
              <TOKEY> {1 to 10000},
        DATE <FROMDATE> {FROM <DD> {1 TO 31}
                        <MMM> {JAN.
                              FEB,
                              MAR,
                              APR,
                              MAY,
                              JUN,
                              JUL,
                              AUG,
                              SEP,
                              OCT,
                              NOV,
                              DEC,

                        <YYYY> {2000 TO 2039}}
                <TODATE> {TO <DD> {1 TO 31}
                        <MMM> {JAN,
                              FEB,
                              MAR,
                              APR,
                              MAY,
                              JUN,
                              JUL,
                              AUG,
                              SEP,
                              OCT,
                              NOV,
                              DEC,
                        <YYYY> [2000 TO 2039}}}
   [<UserID> {USERID <UserID> STRING}]
   [<Device [SFDEV]]> DEVICE name]
   [<Filename [FLEXRES$DMO]> STRING]
```

IOC/IOM DSKUT nonmenu commands

Disk Maintenance Subsystem Reference Manual, *NTP 297-1001-526*, *DMS-100 Family Input/Output Devices Maintenance Guide, 297-1001-590*

>COPYVOLUME <volume from> <volume to> copies all files from one volume to another (i.e., >CV D010FCIMG D010SCR1).

>COPY <filename> sfdev copies file to SFDEV

>CLEARBOOT <volume name> removes boot pointer previously assigned by SETBOOT command from the file that has the current image file status on the volume specified by LISTVOL: (i.e., >CB D010FCIMG).

>DSKUT activates this command directory.

>Devtype displays device node type, class and number for a specified port

>DISPLAYVOLS <disk number> displays information on all volumes in the specified disk (i.e., >DV 0).

>ERASEFL <filename> erases a specified file from a disk volume:

(i.e., >EF RECORDFILE)

>MDN displays the maximum device number equipped for a port.

>RESET initializes the IOM or any of the IOM ports on an IOM controller card again.

Caution: Use this command under the direction of a maintenance support group.

>LISTVOL <volume name> ALL lists all files owned by a user on a Disk Volume into the User Directory: (i.e., >LIV D010SCR1 ALL).

>REBOOTIOM requests the IOM to perform a firmware reboot restart from the base load that is in RAM.

>RENAMEFL <old filename> <new filename> renames an existing file:

(i.e., >RF LOGINFO COREDATA).

> Status queries the IOC or the device on the port side of the MS or CMC

>SETBOOT <filename> assigns current image file status, via boot pointer to a file on the volume specified by LISTVOL: (i.e., >STB IMG_93_11_16).

>SHOWBOOT <volume name> displays the current image file on the specified volume: (i.e., >SHOWBOOT D010FCIMG).

>SHOWFL <filename> ALL displays ALL information about a specified file name.

>SHOWVOL <volume name> ALL displays ALL information about a specified volume name: (i.e., >SV D010FCIMG ALL).

>TrnsI_ translates the console name into IOC, console DC card and circuit numbers.

> QIOMALL displays the information on the data entry of IOM ports

>QUERY queries the IOC or the device on the port side of an MS or a CMC

>QUERYPROC tests that the IOC maintenance process

LOGUTIL log browsing commands

Input/Output System Reference Manual, *NTP 297-1001-129*

Note: See the REMLOGIN command within the Tier II Tools area of this QRG.

>OPEN access to display log subsystem or SYSLOG buffers.

>FIRST displays oldest report in the current log subsystem.

>LAST displays most recent report in current log subsystem.

>FORWARD <number or ALL> displays report(s) after current one.

>BACK <number or ALL> displays report(s) before current one.

>CLEAR deletes all reports from specified log subsystem buffer.

>FORMAT queries or sets the NORMAL or SHORT format in which output reports will be printed.

>TYPE re-displays the report in the current log subsystem buffer that was previously displayed by commands LAST, FIRST, BACK, and FORWARD.

DMS Scheduler (DMSSCHED) commands

This tool replaced AUTOSCHED and is used to automatically execute pre-written exec file(s). Users, input file(s) and device name(s), output device(s), and start times are defined using the following commands:

>DMSSCHED enters the DMSSCHED utility at the CI level.

>DEFINE associates the exec file with the user and defines the output storage device (use NOOUTPUT if no output file is needed).

>START schedules user login time, day, duration, & periodic logons.

>OUTPUT names the output file and device. If not specified, then the output device is defaulted to the input device, and the output file name is generated automatically using the following format:
<userid><month><day><hour><min>

>INQUIRE displays all automatic log-in request data.

>CANCEL cancels a particular automatic log-in request.

>STOP forces out a disconnected user that is currently logged on.

>HIST displays a history of previous DMSSCHED operations.

>CLEAR clears the DMSSCHED history buffer

Note: See NTP 297-1001-546 for an example on how to use this tool.

LOGUTIL info, control, routing, and devices commands

Input/Output System Reference Manual, *NTP 297-1001-129*

Note 1: LOGUTIL should only be used as a temporary measure for log control. Tables LOGCLASS, LOGDEV, and TERMDEV should be used for permanent control of logs. Unless there is a clear understanding of the use of the following commands and the potential loss of log reports, they should not be used.

Note 2: See the REMLOGIN command within the Tier II Support Tools area of this QRG.

>HELP LOGUTIL lists LOGUTIL commands.

>LOGUTIL access to LOGUTIL commands.

>QUIT or LEAVE quits LOGUTIL.

>ADDCLASS adds output report classes to specified primary IOD.

>ADDREP adds more reports to specified primary IOD.

>BACKUP assigns alternative IOD to back up primary IOD.

>CLASS assigns report class #'s to specified output reports.

>CONTEXTallow the user to change the context of applicable nodes without having to use the REMLOGIN command (use LISTNODES command for list of nodes).

>DELCLASS deletes specified report classes with specified IOD.

>DELDEVICE deletes specified IOD from receiving log reports.

Note: Must use STOPDEV command first.

>DELREP deletes specified report(s) from specified IOD.

>LISTDEVS displays status of each IOD associated with log system.

>LISTREPS SPECIAL displays a list of special log reports that have special routing or thresholding, and those suppressed.

>LISTREPS SYSLOG displays only syslog reports.

>LISTREPS CLASS displays a list of reports by log class.

>DUMPLOGS <logname> <log number> display specified log reports in a buffer in the chronological order as they were generated.

>LOGTRACE ON/OFF <logname and number> turns ON/OFF the traceback feat. (a LOGT is generated for each rep).

>RENUMBER assigns a report # to all report types not assigned.

>LISTROUTE displays specified report classes, report names, and IOD, by CLASS, DEVICE, or REPORT.

>LISTNODES list all nodes in the switch.

>LISTTIME displays log reports on a threshold reset schedule.

>LISTLOGS list all lognames, except SECRET lognames.

>RESET resets to zero all threshold values that were applied.

>REROUTE reroutes reports from primary IOD to backup IOD.

>RESETROUTE restores the temporary routing of output reports.

>RESUME resumes the output reports previously suppressed.

>START starts log reports to specified device.

>STOP stops printing of reports on specified device.

>STOPDEV stops the output of reports to the specified device(s).

>STARTDEV starts the output of reports to the specified device(s).

>SUPPRESS suppresses specified output reports.

>THRESHOLD sets a threshold value for specified report(s).

>**TIMERESET** sets a time value for the threshold counter.

OM commands

Basic Administration Procedures, *NTP 297-1001-300*

> ***Note:*** The following OM commands are used to add, delete, change, display, and query OM data.

>CLRINVREG can be used to clear invalid INWATS registers after a restart. Use it before reading or resetting INWATS registers after a restart.

>OMDUMP used with table OMACC to display groups and fields already assigned.

>OMSHOW displays all or part of a specified OM group's key structure and part or all of the contents. i.e. **>OMSHOW UTR HOLDING**.

>**QOMSHOW** use this command to get a list of the OM groups and classes defined by the OMCLASS command

>OMCLASS used to define or change a class for table OMACC. Once defined, a class name cannot be deleted, but it can be renamed. Registers and register groups are added to the class using commands OMACCFLD and OMACCGRP

>OMACCFLD assigns or deletes individual OM register fields to the accumulating classes.

>OMACCGRP assigns or deletes OM groups to the accumulating classes that were previously defined by OMCLASS.

>OMFORMAT similar to the OMSHOW command, except that only one OM group is displayed.

>OMACCKEY allows the operating company to select specific tuples within a named group and class for display or printout.

>OMTOTAL this useful command turns the totalling feature on or off for a specified OM group.

>**OMACCTOT** turns the totalling feature on or off for a specified class and group.

>OMBR this command—along with parameters, stops, starts, displays—provides control for buffered OMs. It can be used when problems arise with buffered OM reports.

>OMGETGD this command processes the header (H), class (C), group (G), field (F), and key (K) records stored at the beginning of the data file. This command causes a translation database to be built. Close the requested file in DIRP before issuing this command.

>OMPRDUMP provides the capability to generate operational measurement special reports (OMPRSPEC) for the OM data stored on the tape or disk in the standard recording format (OMTAPE).

>OMPRTREP requests the printing of the OMPRSPEC report.

>OMPRTSET sets or queries the time and date parameters for report generation.

>OMMASTER this command, executed on the CM, allows the user to configure a node as the central collector for billing. This is the node (CM, FP2, or the enhanced input/output controller (EIOC)) on which the OM accumulation and reporting functions take place. WARNING - Use of the OMMASTER command causes loss of currently defined accumulation classes and their data. Also, do not “break” (use command HX) from the OMMASTER command.

>OMRESET this command provides for the record count to be reset only on reload restarts.

>OMREPORT allows the capability to query for a list of all report names in the OMREPORT system and to request an OM report by SCHEDNO in table OMREPORT.

>READ used to query the register content of specified lines and displays the line information.

>READPX displays information for INWATS registers associated with options INW and 2WW for PX trunks.

>READRESET queries register content of specified lines, displays line information, and resets register to zero.

>READRESETPX displays the information for INWATS registers associated with options INW and 2WW for PX trunks, and resets the registers back to zero.

>READVFG displays the information for INWATS VFGs.

>READRESETVFG displays the information for INWATS VFGs, and resets the registers back to zero.

>SETDBDEV <device>designates a disk file for the storage of KEY and INFO values read from the input data file.

>SLU accesses the SLU system.

>SLUADD & SLUDEthese commands add or delete line identifiers for subscriber line usage (SLU) input tables.

>SLU_INSTALLlooks for errors in the SLU input tables before filling the OM group with new data. Lines not previously installed are set to zero while the installed lines are retained.

>SLU_DEINSTALL stops all OMs on lines in specified OM group but doesn’t affect the entries in associated input table.

>SLU_LMINSTALL for LMs and their associated lines, this command removes all lines from OM group ENG650M1 and creates an OM group ENG640M1. The SLU input table is not affected.

>SLUDUMP except for the SLU_DEINSTALL command, the SLUDUMP command lists the commands issued for SLU input tables that have been installed.

>SLUFINDI finds and displays specified line identifier within an input SLU input table. If associated with a hunt group, then all the members are displayed.

>SLUFINDO finds and displays the register counts for a specified line identifier within an OM group. This command is more effective if the SLU_DEINSTALL command is used to make the OM group inactive so that the register counts are held.

>SLUSET establishes a default table for commands SLUADD, SLUDEL, SLUFINDO, and SLUFIND1.

>SLU_TABLE_STATUS displays a list of active and inactive tables.

>SLU_TEST<table_name> checks each datafill in the specified SLU input table.

>ZEROSUP turns the zero suppression on or off. This command is part of the OMPRDUMP directory.

Pending Order (PO) subsystem

Basic Translations Tools Guide, NTP 297-1001-360

The commands available in the Pending Order (PO) subsystem include:

>ACTIVATE activates POs.

>CREATE enters the file name of any previously produced DMO file in the PO subsystem.

>DELETEuse to delete the POF and SFDEV file.

>DISPLAY use the DISPLAY command to display the contents of all or specified POs in the PO subsystem by either the due date or sort option, which uses the parameters TIME and POF.

>HELP <cmd_name> use HELP command to display a brief functional description of desired PO subsystem command.

>LEAVE leave the Pending Order Subsystem.

Other Supporting Commands:

>DUMPTAB used to move table(s) into SFDEV for manipulation by user.

>DMOPRO activates/applies the SFDEV file to switch translations.

>DMOVER verifies the DUMPTAB SFDEV file and checks it for errors.

>INPUT replaces table tuples by looking for (a) key field(s) match.

>PUT add or replace tuples in a table if there is no matching key field or fields already in the table. It will replace a tuple if it finds a matching key field or fields.

SCANF commands

NTP 297-8991-303, NTP 297-8991-510 & 297-5001-540 (International)

> ***Note:*** The SCANF command performs operations on multiple files which reside on one or multiple given device or volume. The choice of SCANF operation may be specified with several options of which a few are listed below. For additional information, please refer to NTPs above.

>BRIEF OR FULL list data about all or selected files on a disk or tape and place the file names in the user directory.

>DELETE this may not apply to all device types such as tapes. For example, delete is not supported for SLM tapes.

>COPY copy the selected files to the specified volume. The copy maintains the file attributes of the original file when creating a copy. SLM tapes do not support this operation.

>FROMI start from a file index value.

>TOI end file index. Select those files upto and including the index specified.

>NOPROMPT do not prompt for confirmation of each file.

>PROMPT prompt for confirmation before carrying out the operation.llow the user to change the context of applicable

>NOTMATCH operate on only those files which do not match the specified criteria.

>MATCH operate on only those files which do match the specified criteria.

>NAME operate on files with names matching the supplied name expression.

>NOTNAME operate on only those files which do not match the format of the supplied name expression.

>SORT sort entries by name, creation date, late modified date or size in blocks (NAME, CDATE, MDATE, SIZE).

>GLOBAL for the brief and full options, display the output sorted as one sequence.

SHOWAUD command

Note 1: This tool is used to display audit log dumps of CCBs, CDBs, and EXTs in text format. Simply specify the file name containing the audit logs and the data is then formatted and displayed.

Note 2: You might have to erase RECORDFILE in store file before using.

>SHOWAUD <filename> <ALL> displays audit log dumps of CCBs,

CDBs, and EXTs in symbolic format.

Procedure for using SHOWAUD command:

>LOGUTIL

>RECORD START ONTO SFDEV

>OPEN AUD find AUD logs (i.e. AUD395, AUD398) using BACK and FORWARD commands.**>RECORD STOP ONTO SFDEV**

>LISTSF list SF to verify that RECORDFILE exists.

>SHOWAUD RECORDFILE ALL

>LEAVE or QUIT leaves or quits LOGUTIL.

SLM DISKUT nonmenu commands

SuperNode Patching Procedures, NTP 297-5001-540

>DISKUT activates this command directory.

>HELP (try >HELP <command>) the DISKUT help command.

>ALL list all within defined request.

>FULL when used with LISTVOLS and LISTFL commands, it provides more detailed info.

>INSERTTAPE(>IT) mounts the tape cartridge.

>EJECTTAPE (>ET) demounts the tape cartridge.

>LISTVOLS (>LV) lists volumes on disk.

>LISTFL (>LF) lists files on a tape or disk.

>DELETEFL >DDF) deletes a file on a disk volume.

>LISTBOOTFL(>LBF) lists the registered boot files.

>CLEARBOOTFL(>CBF)removes a registered boot file.

>SETBOOTFL (>SBF) adds a boot file and registers it.

>RENAMEFL (>RF) renames a file on a disk volume.

>BACKUP(>BA) creates backup copies of disk files on tape.

>RESTORE (>RE) restore disk files from backup copies on tape.

>CLEARVOL(>CVOL) clears all files on a disk volume.

>VOLINFO(>VINFO) displays info about an INSV disk volume.

>QUIT exits the DISKUT super command.

>COPY <filename> sfdevcopies file to SFDEV

Software Optionality Control (SOC)

DMS-100F Software Optionality Control User Manual, NTP 297-8991-901

Software optionality control (SOC), part of the DMS Evolution product delivery process, facilitates the definition and delivery of product computing module loads (PCL). Once the new PCL is loaded, all the features it contains can be activated by the customer as needed without a software reload. The user interface for SOC consists of the following SOC level commands on the MAP terminal.

>SELECT displays information about options. There are several types of options: **>SELECT <select_type> <value> [<report_type>]>SELECT ALL [<report_type>]**

>DBAUDIT performs a detailed audit and reports any internal database inconsistencies as well as any discrepancy between a database value and a feature's reported value.

>ASSIGN RTU can be used to grant the operating company permission the right to use (RTU) an option. (When an operating company purchases a state option, Nortel gives the operating company a password called a key code for the option.

>REMOVE RTU allows operating company personnel to remove the right-to-use (RTU) from a state option.

Store File (SF) editor commands

Basic Translations Tools Guide, *NTP 297-1001-360*

Note: The following store file commands are most of the commonly used commands and is not a complete list of store file commands.

>EDIT creates a new file or enters an existing file.

>READ CI level command used to run a specified store file.

>ERASESF CI level command that erases a specified store file.

>FILE dev_type file_name refiles the file to a specified device (SF if not specified) with any updated information and exits EDIT.

>LISTSF lists the files in SFDEV that the user created.

>LISTSF ALLlists all the files contained in SFDEV.

>LISTSF INFO ALLlists all the SFDEV files and user information.

>LISTSF <user> list files for a specific user—such as NTAS.

>INPUT n used to add line(s) to a store file (“Enter" twice ends input).

>DOWN n moves the pointer down one line or specified # (n) of lines.

>UP n moves the pointer up one line or specified # (n) of lines.

>FIND 'string'moves down to line beginning with 'string'.

>VERIFY displays all, or any part of line at terminal after processed.

>DELETE deletes line or number of lines as specified.

>CHANGE 'old' 'new' change characters as defined within parameters.

>TOP takes pointer to the EDIT: line within the store file.

>END takes pointer to bottom line within the store file.

>LINE n moves the pointer to the specified line number (n).

>LINE 'string'moves down to line containing the specified string.

>TYPE n displays one line(s) according to line number (n).

>SAVE SFDEV saves existing store file device without exiting the editor (EDIT mode).

>PRINT print all the specified store file or PRINT LINE.

>QUIT exits from store file editor (EDIT mode).

To rename a file in SFDEV:

>COPY <old_filename> <new_filename> sfdev

Switch Performance Monitoring System (SPMS) commands

DMS-100F SPMS Application Guide, NTP 297-1001-330

>SPMS enters the SPMS utility at the CI level

>SET sets the parameters for the DISPLAY command

>SETREP sets parameters for the SPMSREP automated log report

>DISPLAY displays the index values over the last ‘N’ days or date

>DESCRIBE used to describe the indexes you have selected

>EXCEPTION displays the critical index values over the last ‘N’ days

>HELP use help plus subcommand to get detailed parameters

Example, to get current display of SPMS report with unsatisfactory level set at 90 and unacceptable level at 80 use the following commands:

>SET UNSATLEVEL 900;SET UNACCLEVEL 800;DISPLAY

Example, to get a description of the INTEGFL index, use the command:

>DESCRIBE INTEGFL

Response:

```
INTEGFL Basic index. Cutoffs of established calls, lost
network integrity. OM:SYSPERF CINTEGFL. Check
NETINTEG/INTEG at the NET/ENET level of the MAP.
```

Table Audit (TABAUDIT) commands

One Night Process Software Delivery Procedures, NTP 297-8991-303

TABAUDIT is a table verification process that can be run prior to making an image tape or as a scheduled routine to verify office data. Table verification can be run manually using TABAUDIT or automatically by using AUTOTABAUDIT and scheduling the process.

Nortel recommends that table verification be an ongoing part of routine maintenance.

TABAUDIT performs the following check with the DMS switch in sync.

Generic table checks: Performs per table verification for corruption.

Syntax checks: Perform per tuple verification for syntax field consistency.

Table specific checks: Performs per tuple verification for data consistency.

WARNING: TABAUDIT can take up to 10 hours or more to run and should not be run same time as TABXFR or an image dump.

SUGGESTION: Review any service bulletins and notices before attempting to correct any table data errors.

>TABAUDIT enters TABAUDIT directory at CI level.

>AUTO used to enter AUTOTABAUDIT from TABAUDIT.

>INCLUDE used to setup one table or a range of tables to be checked; including failed tables from last check or changed tables since last check.

>EXCLUDE used to exclude tables; NODR option used with the EXCLUDE excludes all dump and restore tables.

>TIMEFRAME a AUTOTABAUDIT command used for scheduling.

>STATUS displays included/excluded table range.

>REPORT used to generate data integrity reports based upon specified options (use HELP REPORT to see options).

>CLEAR clear included tables or specified failed table.

>EXECUTEused to start verification and a device to store data.

>INFO information about TABAUDIT.

Table editor commands

Basic Translations Tools Guide, NTP 297-1001-360

> **Note:** In addition to the Table Editor commands below, see the FINDTAB, FINDREF, SHOWUSES, and SHOWUSERS commands under “DMS CI: Level Commands” within this QRG.

>HELP use HELP <command> to get command description.

>ABORT used to cancel a command or input.

>REPlace used to replace a specified tuple with a new tuple; user is prompted for field values or field values may be specified (i.e., REP <field 1> <field 2> <field 3>).

>ADD adds tuple(s) to a table.

>DELete deletes a tuple from a table.

>CHAngechanges the value of existing field data for a tuple.

>CHECK displays next <COUNT> tuples or ALL tuples

>SUBtable enters subtable. Parameter not required if only one subtable.

>RETurn exits back from a subtable in a previous level.

>OVErride

CAUTION: This command cancels the system prompt when a “NO JF AVAILABLE” and/or “MACHINES OUT OF SYNC” condition exists.

>VER ON

>**VER OFF**

CAUTION: The above commands turns on/off the system prompt for verification and confirmation when altering table data.

>COUNT without parameters displays the number of tuples in a table.

>COUNT <parameters>count number based upon the following parms:

& = And EQ = Equal toGT = Greater than

GE = Greater than or equal toNE = Not equal to

LE = Less than or equal toLT = Less than

EX: >TABLE LINEATTR

>COUNT (PRTNM EQ POTS)

Note: Counts the tuples with a pretranslator name equal to POTS.

>FORMAT PACK defines the format to be printed/displayed at 130 lines per character—ignores CUSTFLDS table.

>FORMAT UNPACKdefines the format to be printed/displayed at 70 lines per character as defined in CUSTFLDS table.

>LISt displays tuple(s) within a table; to LIST examples, enter:

>LIST <number of tuples to list> or **>LIST ALL**

>LIST <condition>% see count parameters

>HEADINGdisplays heading line without a tuple display.

>DOWn moves cursor down specified number of tuples in the table.

>NEXT positions to next tuple in table but does not display it.

>UP moves cursor up the specified number of tuples in the table.

>PREV positions to the previous tuple but does not display it.

>POSition positions the cursor at a specified tuple in the table.

>DISplay displays the tuple entry for the current tuple.

>LOCate locates tuple by field(s) but does not display (see DISplay).

>RANge displays the table heading field(s) by number and/or name

plus parameter type(s) with a sample of valid inputs.

>INForm displays the current table name.

>TOP positions on the first tuple in the table and displays it.

>FIRST positions to first tuple in table but does not display it.

>BOTtompositions on the last tuple in the table and displays it.

>LAST positions on the last tuple in the table but does not display it.

>LEAVE exits current table (or number of levels specified, i.e., ALL).

>POF enters the Pending Order (PO) subsystem (see following).

TRAVER commands

Basic Translations Tools Guide, *NTP 297-1001-360*

The TRAVER command simulates a call and displays the translation and routing tables the call accesses.

Note 1: The following information is an overview of TRAVER and provides only samples of the many variables that are possible using TRAVER. Use HELP TRAVER at CI level for details. Also, see the REVXL_VER command within this QRG.

Note 2: Refer to the "Quick reference" chapter for AIN and LNP traver examples.

>TRAVER L<digits> [T,NT,B] %% see Notes & Trace Option

TR <clli> [T,NT,B]

TR <clli> <digits> <RPOA/RPOAS> [T,NT,B]

C <console> [T,NT,B]

V <vfg> [T,NT,B]

R <table> [T,NT,B]

L <digits> <bc> <64kdata/56kdata> [T,NT,B]

Notes:

1. For digits—'*' substitute a 'b'—for a '#' substitute a 'c'.

2. For ISDN, bc = bearer capability.

3. For DMS PH, RPOA = registered private operating agencies.

Trace Options

The ‘T’ (Trace) option simulates a call and displays the tables used to translate and route a call and displays the appropriate tuple for each table. The ‘NT’ (No Trace) option invokes translation utilities to determine a result and displays only the digit translation routes, position routes, and the circuits and/or treatments on which the call would terminate. The ‘B’ (Both) option invokes both the T and the NT options and displays both the translation table information and call's route and treatment.

Optional Parameters

There are numerous optional parameters that can be input for specific types of translation capabilities such as authorization codes, alternate billing numbers, and private translations for IBN. Refer to Basic Translations Tools Guide (NTP 297-1001-360) and the All Product Computing-Module Loads, Maintenance and Operations Manual (NTP 297-8991-500) for more detailed information.

Line TRAVERs

>TRAVER L <calling_dn> <called_dn> [T,NT,B]

>TRAVER L <ISDN_dn> <bc> [T,NT,B]

>TRAVER L <calling_dn> <called ISDN _dn> <bc> <bc_name> [T,NT,B]

Trunk TRAVER

>TRAVER TR <CLLI> <digits> [T,NT,B]

Options for routing based on bearer network of originating trunk

>TRAVER TR <CLLI> [TRKMEM <originating trunk member number>] <digits> [T,NT,B]

>TRAVER TR <CLLI> [BEARNET <originating bearer network>] <digits> [T,NT,B]

Console TRAVER

>TRAVER C <console CLLI> <digits> [T,NT,B]

Virtual Facility Groups TRAVERs

>TRAVER V <vfg> <digits> [T,NT,B]

>TRAVER L <calling_dn> <called_dn> [T,NT,B] RTEVFG ALL

ISDN TRAVERs

Bearer Capability Routing example travers:

> traver l 4844015 94834035 bc 64kdata b% for BC 64kdata calls

> traver l 4844016 94834036 bc 56kdata b % for BC 56kdata calls

Some PRI routing examples: (PUBlic call type is traver default)

> traver tr PRITEST1 n cdn e164 19192384567 b % NPI:E164, NSF:nil, call type:PUBlic

> traver tr PRITEST2 n cdn e164 2831199 prvt b% NPI:E164, NSF:PRVT, call type:PriVaTe

> traver tr PRITEST3 n cdn pvt 095 tie b% NPI:PVT, NSF:TIE, call type:PriVaTe

The type of number (TON) is in the “Called Party Number” and“Calling Party Number” information element. According to the Nortel PRI protocol specifications, when the NPI is “Private” the TON is “Subscriber.” When the NPI is “E.164,” the TON is based on the number of digits dialed as follows:

• less than 10 digits: TON is “Subscriber”(Local)

• exactly 10 digits: TON is “National”(NAtional)

• more than 10 digits: TON is “International”(INternational)

Wireless LWW Traver

>traver mx moborig 6905 5415222 b %%6905 see table MTXTRAV%%5415222 use QHLR command

Carrier VoIP Networks lines and trunks

The following tables list the line class codes supported in Carrier VoIP Networks.

Line class code	Description	UAA	UAIP
ADATA1	Meridian ARIES set option	Yes	Yes
ATA	Analog terminal adaptor	Yes	
CCF	Coin first service	Yes	Yes
CDF	Coin dial tone first service	Yes	Yes
CFD	Coin Free Dialing	Yes	Yes
CSD	Circuit Switched digital data service	Yes	Yes
CSP	Coin semi-post pay service	Yes	No
DATA	Data unit	Yes	Yes
PDATA	POTS Data Unit	Yes	
EOW	Enhanced outward WATS	Yes	Yes
ETW	Enhanced two-way WATS	Yes	Yes
IBN	Integrated Business Network station	Yes	Yes
INW	INWATS service	Yes	Yes
ISDNKSET	ISDN Business Sets	Yes	
MOB	Mobile cellular service		
M5008	Meridian set (8 keys)	Yes	Yes
M5009	Meridian set (9 keys)	Yes	Yes
M5018	Meridian set (18 keys)	Yes	Yes
M5112	Meridian set (12 keys)	Yes	Yes
M5208	Meridian set (8 keys, built-in display)	Yes	Yes
M5209	Meridian set (9 keys, built-in display)	Yes	Yes
M5212	Meridian set (12 keys, built-in display, handsfree)	Yes	Yes
M5216	Meridian set (16 keys, built-in display, headset)	Yes	Yes
M5312	Meridian set (12 keys, built-in display, handsfree)	Yes	Yes

Line class code	Description	UAA	UAIP
M5316	Meridian set (16 keys, built-in display, handsfree)	Yes	Yes
OWT	OUTWATS service	Yes	
PBM	PBX message rate service	Yes	Yes
PBX	PBX flat rate service	Yes	Yes
PSET	Electronic business set without liquid crystal display	Yes	Yes
RES	Residential Enhanced Services	Yes	
TWX	TWX service. (Teletypewriter Exchange)	Yes	Yes
VLN	Virtual line		
ZMD	Zero minus denied service	Yes	Yes
ZMZPA	Zero minus zero plus allowed service	Yes	
1FR	Individual flat rate service	Yes	Yes
1MR	Individual message rate service	Yes	Yes
2FR	Two-party flat rate service	Yes	Yes
2WW	Two-way WATS	Yes	Yes
4FR	Four-party flat rate service	Yes	Yes
8FR	Eight-party flat rate service	Yes	Yes
10FR	Ten-party flat rate service	Yes	Yes

The following table lists the trunk types supported in Carrier VoIP Networks.

Trunk type	Description	UAA	UA-IP	PTA	PTIP
AI	Automatic Intercept System (AIS)	Use IT			
AN	Automatic Number Announcement	Use IT			
ATC	Access Tandem to Carrier (Originating from SC,IT,TOPS and Terminating to SC and IT trunk group types	Yes	Yes	Yes	Yes
CELL	Cellular (Bellcore type 2A interconnect to CMC switch)	Yes		Yes	
DA	Directory Assistance Charging	Use OP			
ES	Emergency Service Bureau	Yes		Yes	
E911	Enhanced 911 Emergency Service	Use legacy E911 trunk			
IBNT2, TI, TO	Integrated Business Network (IBN) 2-way, Incoming, and Outgoing Trunk Groups	Yes	Yes	Yes	
ISUP	Integrated Service User Part	Yes			Yes
IT	Intertoll Trunk Group	Yes	Yes	Yes	Yes
NFA	Network Facility Access	Yes		Yes	

Trunk type	Description	UAA	UA-IP	PTA	PTIP
NU	Nailed-Up Connection	Yes		Yes	
OI	Incoming Operator Verification	Use OP			
OP	Outgoing or 2-way from Local & Toll Offices to TOPS/TSPS	Yes		Yes	
PX	DID and DOD or both with a Digital PBX	Yes		Yes	
P2	DID and DOD or both with a PBX	Use PX or PRA			
SC	Incoming and Two-way CAMA	Yes			
TI,TO,T2	Incoming, Outgoing, and 2-way End Office	Use IT			Yes
TOPS	TOPS Trunk Group	Use legacy trunk			
TOPSARU	TOPS External Audio Response Unit	Use legacy trunk			
TOPSVL	TOPS Voice Link	Use legacy trunk			
VR	Verification Trunk	Use OP			
X75	X.75 Trunk Group for connection to a DMS Packet Handler	Use legacy trunk			
ZI	Tandem 0+ or 0- to TOPS	Use SC			

Carrier VoIP Networks Maintenance

Preventative maintenance for Carrier VoIP Networks components

This section provides a list of procedures used to perform preventative maintenance for Carrier VoIP Networks components. Preventative maintenance is required on components to prevent service-impacting fault conditions. The procedures are divided into the following categories:

- “Tasks to be performed daily”
- “Tasks to be performed weekly”
- “Tasks to be performed monthly”
- “Tasks to be performed per office schedule or as required”
- “Backup and restore”

Tasks to be performed daily

The following table illustrates the tasks to be performed daily

Component	Task	Document	Notes
GWC	Monitor for alarms and check that functions continue without interruptions	GWC Fault Management, NN10202-911	
Media Server 2000 series	Monitor alarms	Media Server 2000 Series Fault Management, NN10328-911	
Ethernet Routing Switch 8600	Monitor LEDs	Passport 8010co Chassis hardware components, 312746-C	
Nortel Networks Multiservice Switch/Media Gateway 15000	Monitoring equipment status LEDs	Nortel Networks Multiservice Switch 15000/20000 Hardware Installation, Maintenance, and Upgrade, NN10600-130	
Nortel Networks Multiservice Switch 7400/15000	Monitoring ATM services	Nortel Networks Multiservice Switch 7400/15000/ 20000 ATM Fault and Performance Management, NN10600-715	

Component	Task	Document	Notes
Nortel Networks Multiservice Switch/Media Gateway 15000 or 7400	Using status indicator LEDs and sounds	Nortel Networks Multiservice Switch 15000/20000 Hardware Description, NN10600-120	
SAM21 SC	Monitor alarms and check that functions continue without interruptions	SAM21 Shelf Controller Fault Management, NN10089-911	
UAS	Monitor alarms	UAS Fault Management, NN10073-911	
XA-Core	Monitor alarms	CS 2000 Fault Management, NN10083-911	

Tasks to be performed weekly

The following table illustrates the tasks to be performed weekly

Component	Task	Document	Notes
GWC	Inspect the LEDs on all GWC cards in your system to ensure there are no faults and that all cards appear to be functioning properly.	GWC Fault Management, NN10202-911	
USP	Visually inspect the LEDs	USP Security and Administration, NN10159-611	

Tasks to be performed monthly

The following table illustrates the tasks to be performed monthly

Component	Task	Document	Notes
XA-Core/Call Agent	Perform LED maintenance	XA-Core Maintenance Manual, 297-8991-510	

Tasks to be performed per office schedule or as required

The following table illustrates the tasks to be performed per office schedule or as required

Component	Task	Document	Notes
Audio Provisioning Server	Apply APS patches	UAS Upgrades, NN10047-461 or MS 2000 Series Upgrades, NN10335-461	perform as required
Contivity VPN Switch	Saving current system configuration	Reference for the Contivity VPN Switch, 311643D	perform immediately upon completion of the configuration or when changes are made to the configuration/firmware
	Performing file maintenance	Reference for the Contivity VPN Switch, 311643D	perform immediately upon completion of the configuration or when changes are made to the configuration/firmware
	Creating a recovery disc	Reference for the Contivity VPN Switch, 311643D	perform immediately upon completion of the configuration or when changes are made to the configuration/firmware
Core Billing Manager	Monitor log files in the /var/adm directory for system or security abnormalities	no formal procedure required	as part of scheduled maintenance
CS 2000 Core Manager	Monitor log files in the /var/adm directory for system or security abnormalities	no formal procedure required	as part of scheduled maintenance

Component	Task	Document	Notes
GWC	Configure a recurring data integrity audit	GWC Configuration Management, NN10205-511	includes Line, Trunk, V5.2, and CS 2000 data integrity audits
	Enable GWC software auto-imaging	GWC Configuration Management, NN10205-511	the system will take a software image automatically once daily
	Take a manual software image	GWC Upgrades, NN10196-461	should be taken after patches have been applied
	Retrieve GWC services alarm history	GWC Fault Management, NN10202-911	
	Retrieve and correlate GWC PM logs	GWC Fault Management, NN10202-911	
	Retrieve and correlate Syslog logs	GWC Fault Management, NN10202-911	
Nortel Networks Multiservice Data Manager	Clean up accumulated log files	Nortel Networks Multiservice Data Manager Administrator Guide, 241-6001-303	This procedure is not normally necessary because there is one log file for each day of the week and information can only accumulate in a log file for a one week period, then the file is automatically overwritten. Should it become necessary, there are two ways to clean up current log files: manually by entering a command, or automatically by running the command as a cron job

Component	Task	Document	Notes
XA-Core/ Call Agent	Create a test volume on disks	XA-Core Maintenance Manual, 297-8991-510	perform after installation of new disk in disk drive packlet in the IOP card
	Create volumes on disks	XA-Core Maintenance Manual, 297-8991-510	perform on an unformatted or earlier formatted disk, or perform after installation of the disk in the disk drive packlet in the IOP card

Backup and restore

For component-level backup and restore procedures, refer ATM/IP Administration and Security, NN10402-600.

Routine maintenance for Carrier VoIP Networks components

This section provides a list of procedures used to perform routine maintenance for Carrier VoIP Networks components. Routine maintenance is required on components to ensure the components continue normal operation over time. The procedures are divided into the following categories:

- “Tasks to be performed after four or eight hours”
- “Tasks to be performed daily”
- “Tasks to be performed after twenty-five hours”
- “Tasks to be performed weekly”
- “Tasks to be performed monthly”
- “Tasks to be performed every six weeks”
- “Tasks to be performed every three to six months”
- “Tasks to be performed every six months”
- “Tasks to be performed annually”
- “Tasks to be performed per office schedule”

Tasks to be performed after four or eight hours

The following table illustrates the tasks to be performed after four or eight hours

Component	Task	Document	Notes
CS 2000 Core Manager	Clean the DAT drive	CS 2000 Core Manager Fault Management, NN10082-911	Clean the DAT drive after the first 4 hours of use for each new cartridge.
XA-Core/ Call Agent	Clean the tape drive	XA-Core Maintenance Manual, 297-8991-510	Clean the tape drive after the first 4 hours of operation.

Tasks to be performed daily

The following table illustrates the tasks to be performed daily

Component	Task	Document	Notes
XA-Core	Check and adjust the TOD clock	XA-Core Maintenance Manual, 297-8891-510	

Tasks to be performed after twenty-five hours

The following table illustrates the tasks to be performed after twenty-five hours

Component	Task	Document	Notes
CS 2000 Core Manager	Clean the DAT drive	CS 2000 Core Manager Fault Management, NN10082-911	Clean the DAT drive after each 25 hours of use for each used cartridge.
XA-Core	Clean the tape drive	XA-Core Maintenance Manual, 297-8991-510	Clean recording heads after 25 hours of read/ write operation or according to your office standards.

Tasks to be performed weekly

The following table illustrates the tasks to be performed weekly

Component	Task	Document	Notes
CS 2000 Management Tools	Clean the DAT drive on the Netra t1400/240	ATM/IP Fault Management, NN10408-900	Clean the DAT drive every 1 to 8 weeks depending on the number of tapes used each day.
USP	Set the date and time on the OAM&P workstation and the USP to synchronize them	USP Administration and Security, NN10159-611	

Tasks to be performed monthly

The following table illustrates the tasks to be performed monthly

Component	Task	Document	Notes
CS 2000 Management Tools	Inspect the air filter.	Netra T1400/1405 Installation and User's Guide. Link to Sun documentation: http://sunsolve.sun.com/data/806/806-0575/pdf/806-0575-10.pdf	
GWC	Inspect the SAM21 filter	Go to: http://mcg.motorola.com and search for the specific CPX822 product documents.	Filters last from 3 to 6 months depending on environmental conditions.

Component	Task	Document	Notes
Nortel Networks Multiservice Switch/Media Gateway 15000	Inspect and vacuum equipment	Nortel Networks Multiservice Switch 15000/20000 Hardware Installation, Maintenance, and Upgrade, NN10600-130	Vacuuming reduces the frequency that air filters need to be changed. May need to inspect and vacuum more frequently, depending upon environmental conditions.
Ethernet Routing Switch 8600	Inspect and clean Passport 8010co Chassis air filter	Installing and Maintaining the Passport 8010co Chassis and Components, 312746-C	Inspect monthly and replace every three months or more frequently, depending upon environmental conditions.
Nortel Networks Multiservice Data Manager	Inspect the air filter.	Netra T1400/1405 Installation and User's Guide. Link to Sun documentation: http://sunsolve.sun.com/data/806/806-0575/pdf/806-0575-10.pdf	
UAS	Inspect the SAM21 filter	Go to: http://mcg.motorola.com and search for the specific CPX822 product documents.	Filters last from 3 to 6 months depending on environmental conditions.

Component	Task	Document	Notes
USP	Inspect and clean the fan filter	USP Administration and Security, NN10159-611	You may need to perform this task more frequently depending on environmental conditions.
	Test the LAN-to-LAN remote access connection	USP Administration and Security, NN10159-611	
	Test the dial-up remote access connection	USP Administration and Security, NN10159-611	
XA-Core/Call Agent	Test wrist-strap grounding cords	XA-Core Maintenance Manual, 297-8991-510	

Tasks to be performed every six weeks

The following table illustrates the tasks to be performed every six weeks

Component	Task	Document	Notes
XA-Core/ Call Agent	Replace the cooling unit filters	XA-Core Maintenance Manual, 297-8891-510	

Tasks to be performed every three to six months

The following table illustrates the tasks to be performed every three to six months

Component	Task	Document	Notes
GWC	Replace the SAM21 filter	Go to: http://mcg.motorola.com and search for the specific CPX822 product documents.	You may need to perform this task more frequently depending on environmental conditions.
CS 2000 Management Tools	Replace the air filter	Netra T1400/1405 Installation and User's Guide. Link to Sun documentation: http://sunsolve.sun.com/data/806/806-0575/pdf/806-0575-10.pdf	You may need to perform this task more frequently depending on environmental conditions
UAS	Replace the SAM16 air filter	Go to: http://mcg.motorola.com and search for the specific CPX822 product documents.	Filters last from 3 to 6 months depending upon environmental conditions.

Component	Task	Document	Notes
Ethernet Routing Switch 8600	Replace the Passport 8010co Chassis air filter	Installing and Maintaining the Passport 8010co Chassis and Components, 312746-C	Inspect monthly and replace every three months or more frequently, depending upon environmental conditions.
Nortel Networks Multiservice Data Manager	Replace the air filter	Netra T1400/1405 Installation and User's Guide. Link to Sun documentation: http://sunsolve.sun.com/data/806/806-0575/pdf/806-0575-10.pdf	Inspect monthly and replace every three months or more frequently, depending upon environmental conditions.

Tasks to be performed every six months

The following table illustrates the tasks to be performed every six months

Component	Task	Document	Notes
XA-Core/ Call Agent	Schedule tape drive maintenance	XA-Core Maintenance Manual, 297-8891-510	

Tasks to be performed annually

The following table illustrates the tasks to be performed annually

Component	Task	Document	Notes
GWC	Replace the three air filters from the front of the fan sleds on the SAM21 shelf.	GWC Fault Management, NN10202-911	
USP	Tighten the screws on the cable connections, power cables, and shelf monitoring	USP Administration and Security, NN10159-611	

Tasks to be performed per office schedule

The following table illustrates the tasks to be performed per office schedule

Component	Task	Document	Notes
Audio Provisioning Server	Apply APS patches	UAS Upgrades, NN10047-461	use the APS maintenance release process
Core Billing Manager	Clean the DVD drive	Refer to the documentation for your hardware platform	

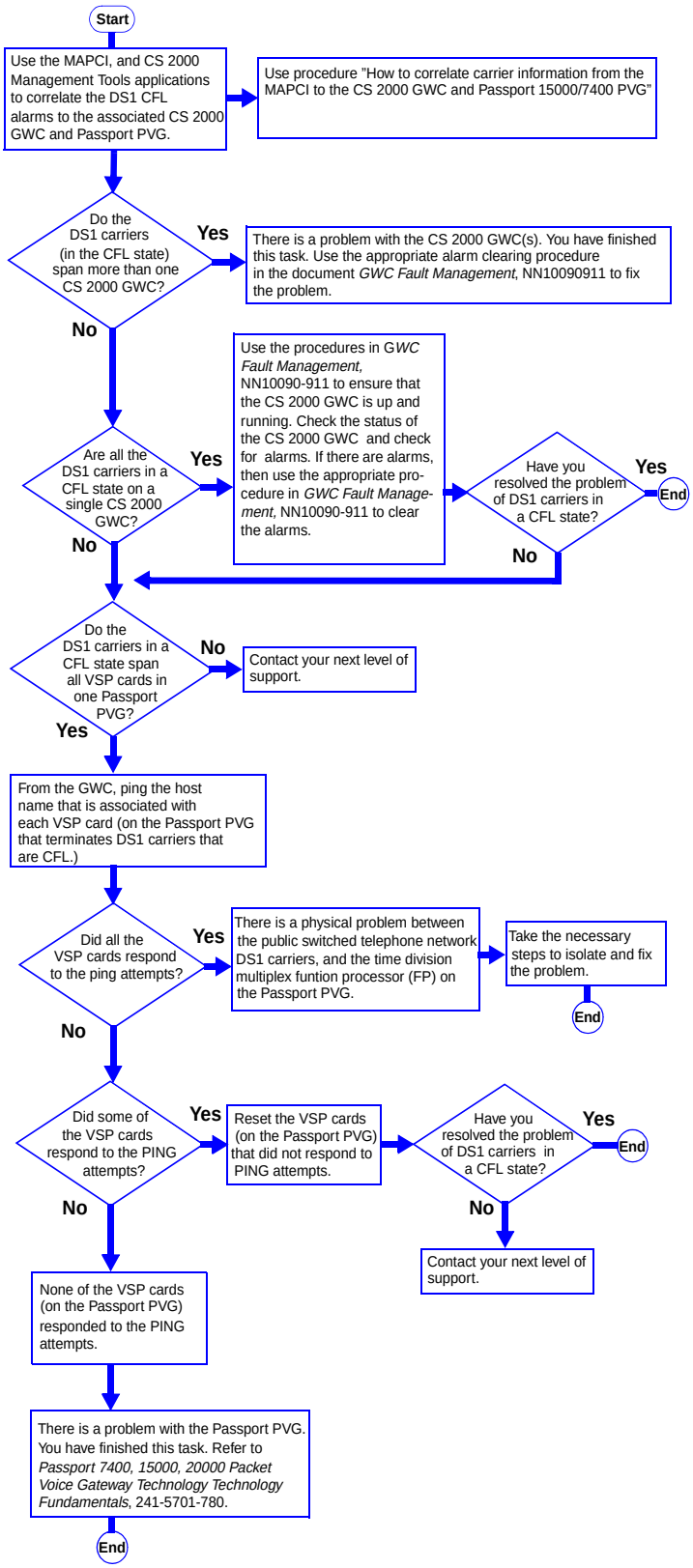
Component	Task	Document	Notes
CS 2000 Core Manager	Check local access	no formal procedure required	
	Check remote access	no formal procedure required	
Nortel Networks Multiservice Switch/ Media Gateway 15000	Replace a cooling unit	Nortel Networks Multiservice Switch 15000/20000 Hardware Installation, Maintenance, and Upgrade, NN10600-130	as required
	Replacing an air filter	Nortel Networks Multiservice Switch 15000/20000 Hardware Installation, Maintenance, and Upgrade, NN10600-130	as required
MG 9000	Replacing an air filter	MG 9000 Fault Management, NN10074-911	as required
XA-Core/ Call Agent	Returning a card, packlet, or assembly to Nortel Networks	XA-Core Maintenance Manual, 297-8991-510	
XA-Core	Delete a volume on an XA-Core disk	XA-Core Maintenance Manual, 297-8991-510	

Troubleshooting

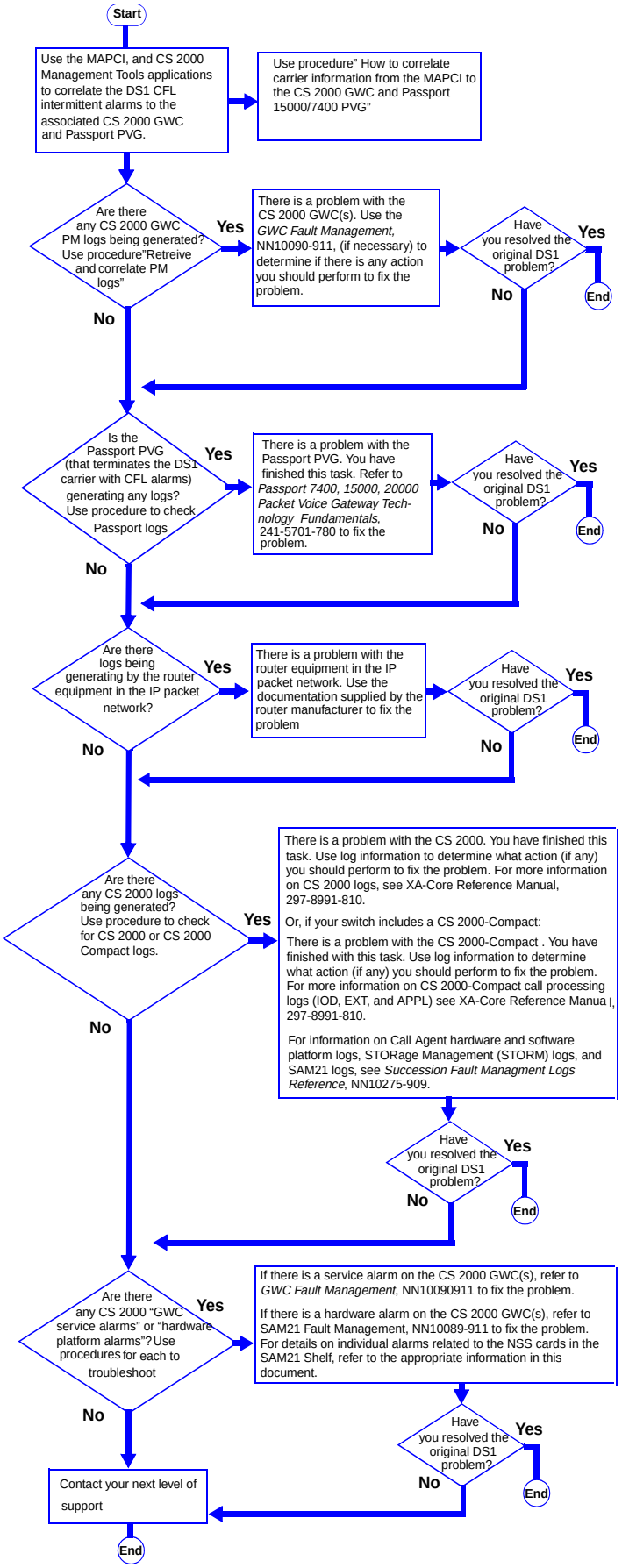
This chapter provides troubleshooting information (**critical** and **major** symptom category) for Carrier VoIP Networks (IP). Multiple tasks are included in a flowchart format. **The procedure associated with each task is listed in quote (”) when referenced within a task being performed. For example ("View media proxy provision data"). The detailed procedure is included at the end of this section.**

CS 2000 problems

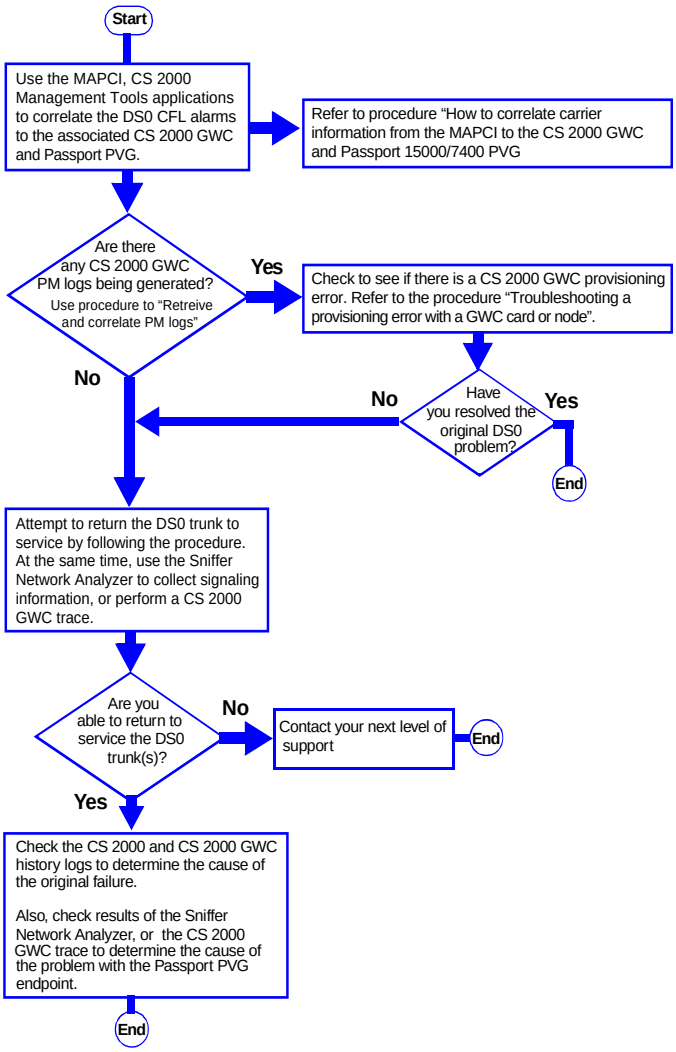
DS1 carriers in a carrier fail loss (CFL)



DS1 carriers in an intermittent CFL



DS0 trunks in CFL



DS0 trunks in permanent manual busy

A GWC is not accessible, with the result that one or more DS0s are in a PMB state. Refer to GWC Fault Management, NN10202-911, to fix the problem. If the problem has not been corrected, contact your next level of support.

DS0 trunks in system busy

The following procedure describes the steps to troubleshoot DS0 trunks in an SB state.

1 There is a status mismatch between the CS 2000 and the GWC. To fix the problem, check logs and alarms for the CS 2000 and GWC, and follow the appropriate procedures for clearing them. Refer to the following documents:

- *Communication Server 2000 Fault Mananagement,* NN10083-911
- *XA-Core Reference Manual,* 297-8991-810
- *Succession Fault Management Logs Reference,* NN10275-909
- *GWC Fault Management,* NN10202-911

2 Determine if you have fixed the problem and are able to return the DS0 links to service. If the problem has not been corrected, contact your next level of support.

DS0 trunks in lock out state (LO)

The following procedure describes the steps to troubleshoot DS0 trunks in an LO state.

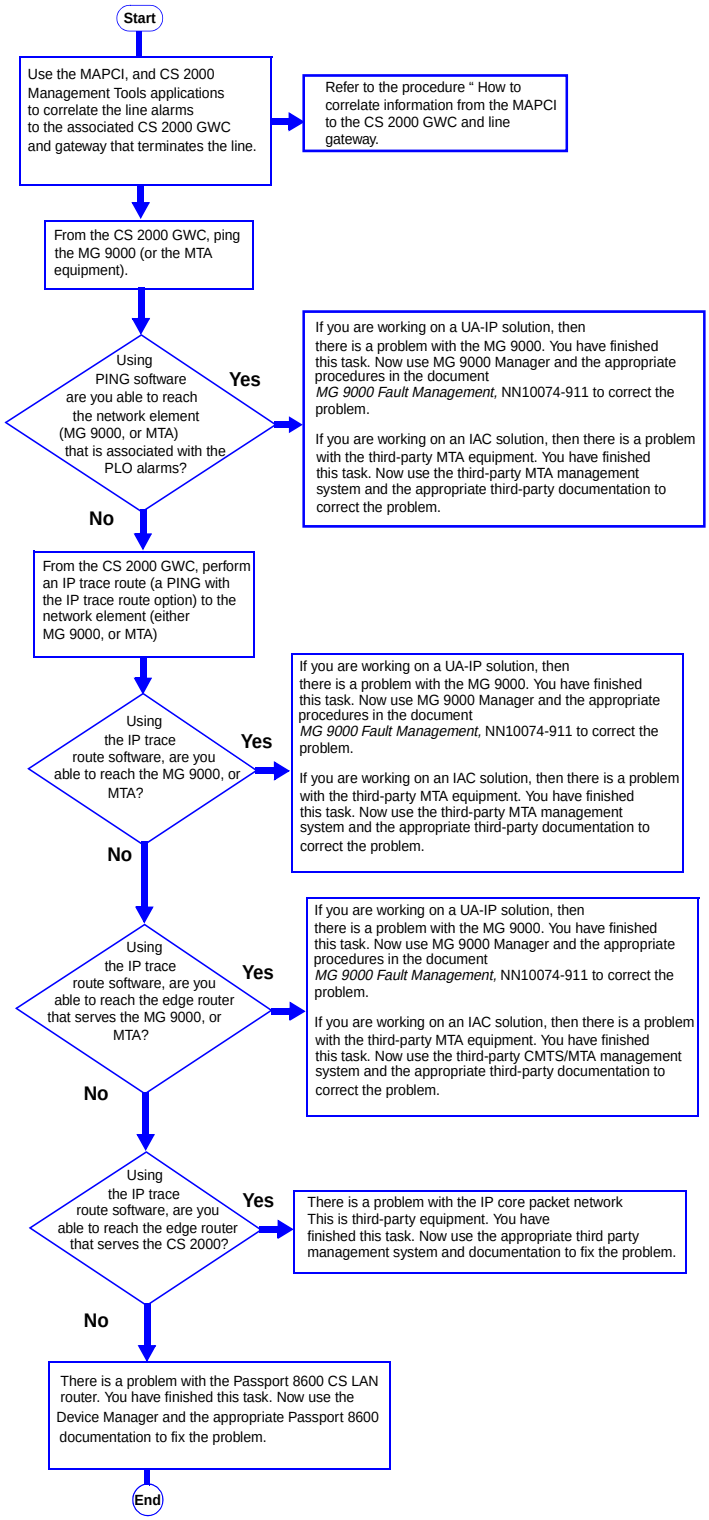
1. There is an SS7 problem. Check for logs and alarms to isolate the problem. Refer to the following documents for more information:
   - *Communication Server 2000 Fault Management,* NN10083-911
   - *XA-Core Reference Manual,* 297-8991-810
   - *Succession Fault Management Logs Reference,* NN10275-909
   - *USP Fault Management,* NN10071-911
2. Determine if you have fixed the SS7 problem and are able to return the DS0 trunks to service. If the problem has not been corrected, contact your next level of support.

DS0 trunks in Remote Manual busy (RMB)

The following procedure describes the steps to troubleshoot DS0 trunks in RMB.

1. The far end public switched telephone network (PSTN) has placed one or more DS0 trunks in a manually busy state. These DS0 trunks must be returned to service at the PSTN site before the DS0 trunk(s) can resume carrying traffic.
2. Return the DS0 trunks to service using the appropriate procedure.

Troubleshooting lines in a permanent lock out state (PLO)



Troubleshooting lines in a manual busy (MB) state

The lines have been manually removed from service. To clear the alarm, manually return the line(s) to service. If the line(s) fail to return to service, use the appropriate maintenance procedure to correct the problem.

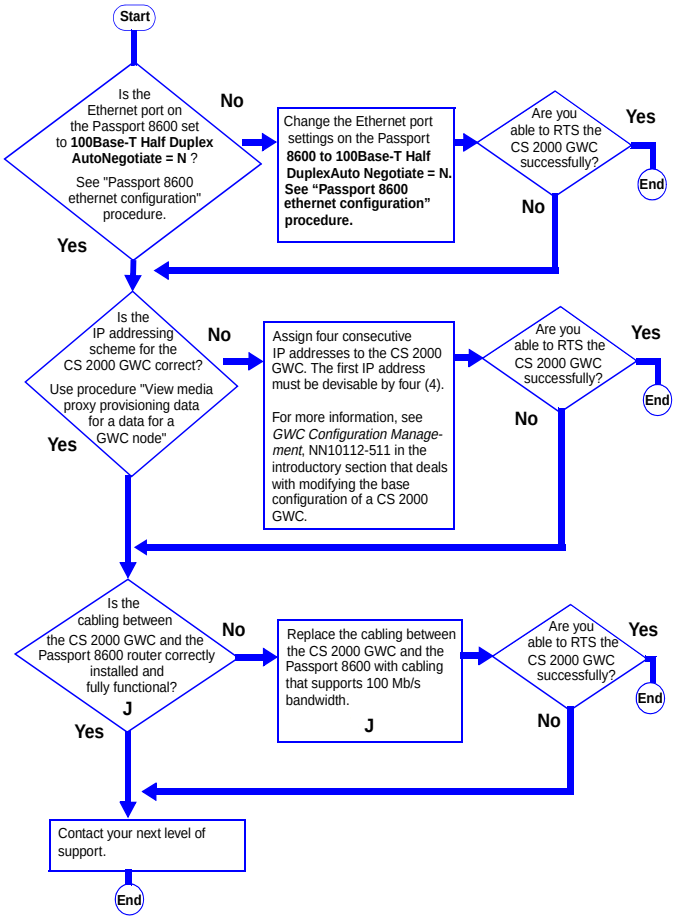
Troubleshooting lines in a system busy (SB) state

If you are working in a UA-IP solution, then there is a problem with the MG 9000. Use the MG 9000 Manager and the appropriate procedures in MG 9000 Fault Management, NN10074-911, to correct the problem.

If you are working on an IAC solution, then there is a problem with the third-party MTA equipment. Use the third-party MTA management system and the appropriate third-party documentation to correct the problem.

GWC troubleshooting

Troubleshooting a GWC that continuously initializes and fails to return to service (RTS)



Troubleshooting a GWC that fails to boot

The following procedure describes the steps to troubleshoot a GWC that fails to boot.

1 There is a problem with the GWC. Diagnose the problems that prevent the GWC from booting.

Refer to" Diagnose problems with a GWC card that does not boot"

2 Determine if you can boot the GWC successfully.

Refer to "Restart or reboot a GWC".

3 If the problem has not been corrected, contact your next level of support.

Troubleshooting a GWC that has poor call completion rate

The following procedure describes the steps to troubleshoot a GWC that has poor call completion rate.

1 Determine the setting of the ethernet port on the Ethernet Routing Switch 8600.

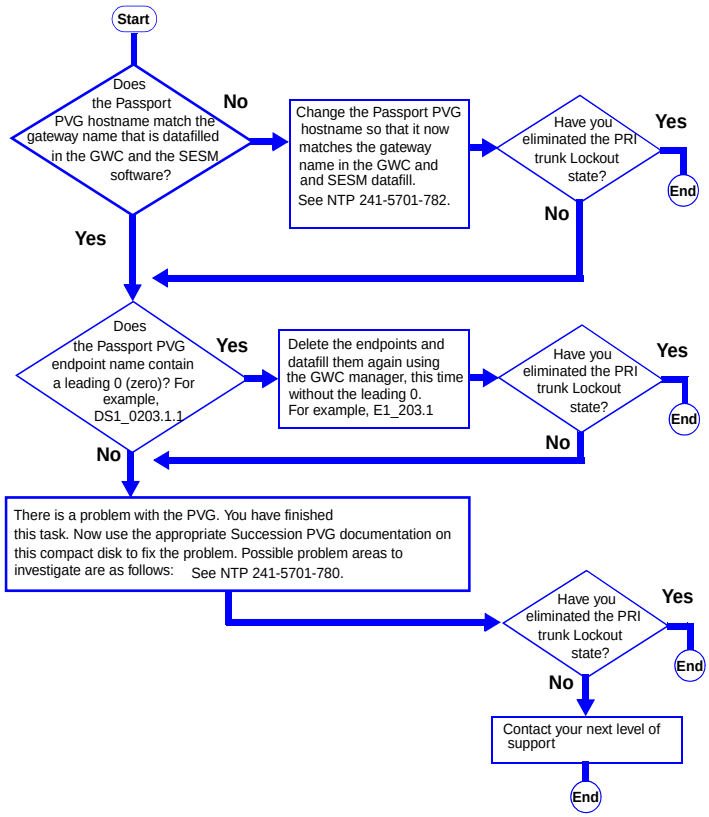
Refer to the procedure" Ethernet Routing Switch 8600 Ethernet port configuration"

2 If the Ethernet Routing Switch 8600 is set to 100Base-T Half Duplex Auto Negotiate = N, change the Ethernet port settings on the Ethernet Routing Switch 8600 to**100Base-T Half Duplex Auto Negotiate = N**.Refer to the procedure" Ethernet Routing Switch 8600 Ethernet port configuration"

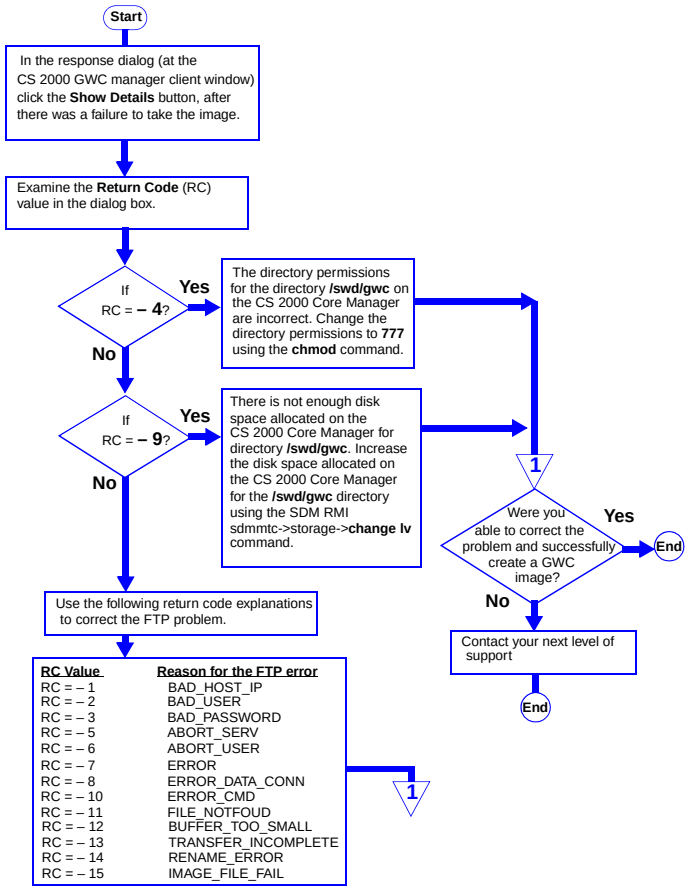
3 Determine if the GWC call completion rate is acceptable.

4 If the call completed rate is unacceptable, contact your next level of support.

Troubleshooting PRI trunks that remain in a lockout state



Troubleshooting a failed attempt to create a GWC image



Troubleshooting alarms generated on the GWC

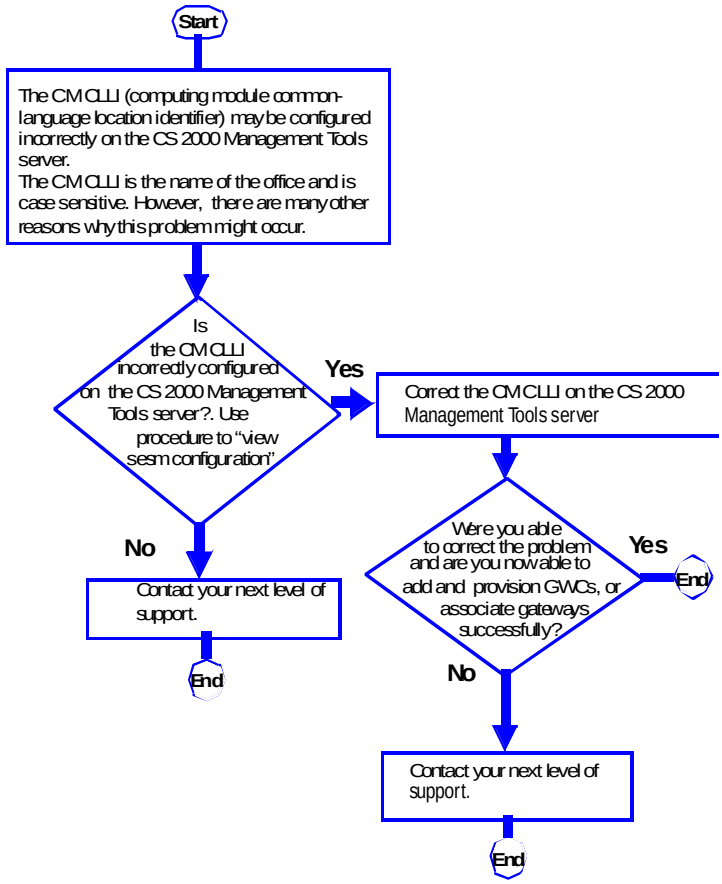
For information on troubleshooting GWC alarms, see the document *GWC Fault Management*, NN10202-911.

Troubleshooting GWC peripheral module log reports

For information on troubleshooting peripheral modules, see the document *GWC Fault Management*, NN10202-911.

CS 2000 Management tools problems

Troubleshooting a failed attempt to add and provision a GWC



Troubleshooting a failure to add or delete a GWC

The following procedure describes steps to troubleshoot a failure to add or delete a GWC.

1 There is a failed attempt to add or delete a GWC. The reason for this failure is that Table SITE does not have an entry with a key of "LG".

2 Using the appropriate procedure, add an entry to table SITE with a key of "LG" using the Table Editor. Then reattempt to add or delete a GWC.

3 Determine if you are now able to add or delete a GWC successfully.

4 If you are unable to add or delete a GWC, contact your next level of support

Troubleshooting when an OSSGate session fails to launch from a PC

The following procedure describes steps to troubleshoot an OSSGate session that fails to launch.

1 The Windows Telnet client sends the username and password character-by-character to the OSSGate application; however, the OSSGate application expects the username and password to be

sent in an entire line. As a result, the OSSGate application displays the following error message.

“Incomplete login information supplied”

To fix this problem, launch the OSSGate session from a Unix Telnet client instead of from a PC Telnet client.

2 Determine if you were able to correctly launch OSSgate.

3 If you are unable launch OSS gate, contact your next level of support.

Troubleshooting a connection failure when adding a GWC node

1 Determine if you received the following message when attempting to add the GWC node:

“An error has been detected while trying to connect to the Server. Please close the current session and restart the client.”

2 If you received this message, there is a communication failure between the SESM server application and the OSSComms system on the CS 2000 Core Manager.

This may be a network-wide problem. Attempt to ping the CS 2000 Core Manager from the CS 2000 Management Tools Server. Refer to "Pinging the CS 2000 Core Manager from the CS 2000 Management tools server".

If	Do
you were able to ping the CS 2000 Core Manager	step 4
you were unable to ping the CS 2000 Core Manager	step 3

3 There is a network wide problem. Check for alarms and logs using the appropriate procedures to fix the network problem.

Then attempt to add the GWC node.

4 If you were unable to add the GWC node, the OSSComms and the OSS and Applications services applications may be in a failed state on the CS 2000 Core Manager.

5 Log in to the CS 2000 Core Manager console and check the state of the OSS Comms Svcs and OSS and Applications Svcs applications.

Refer to "Ensuring that the OSS Comms Svcs and OSS and Application Svcs are in service".

6 Determine if the two applications are in-service.

If the two applications are	Do
in-service	step 8
not in-service	step 7

7 Manually busy, then return to service the OSS Comms Svcs application and the OSS and Application Svcs application.

Then attempt to add the GWC node.

8 If you are unable to add the GWC node, check the status of the DDMS proxy utility that runs on the CS 2000 Management Tools server.

Refer to "Checking the status of the DDMS proxy".

9 If the DDMS proxy is not running, restart the DDMS proxy utility. Else, contact your next level of support.

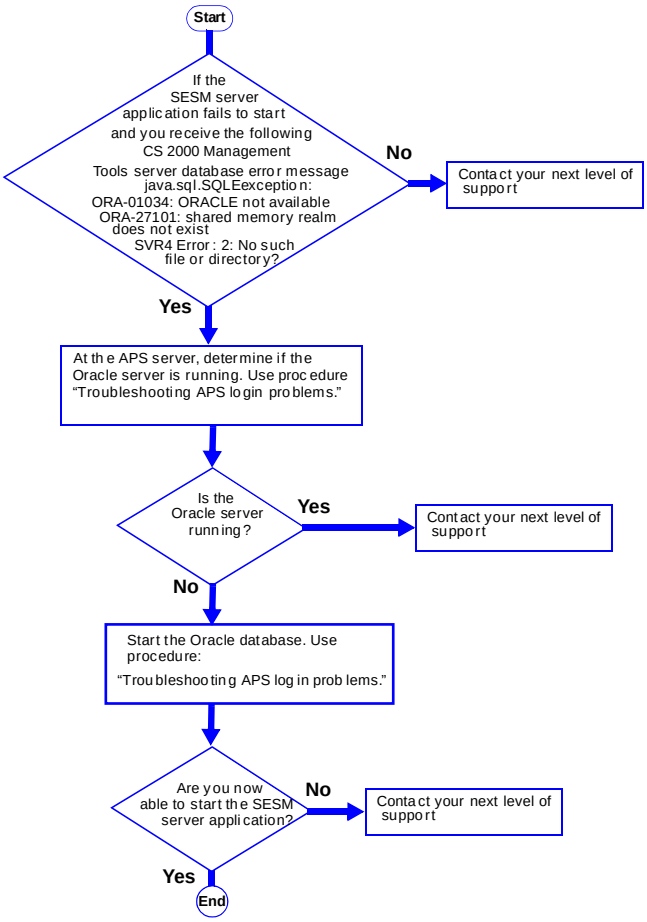
Refer to "Stopping and starting the DDMS proxy".

10 Restart the SESM server application.

Refer to "Starting the SESM application".

11 Determine if the communication problem is fixed and you are able to add a GWC. If the problem is not fixed, contact your next level of support.

Troubleshooting a failure to start the SESM server application



Troubleshooting a failure to RTS a DMS maintenance application (DMA) that is IsTb

Category:

1 If the DMS is IsTb and fails to RTS, ensure that the following DMA500 and SDM303 logs have been generated.

- DMA500 NONE TBL Process Status
  In Service Trouble. DMA is unable to register with DMI.
- SDM303 MINOR TBL SDM Base Maintenance Package:
  SDM_DMA.dma
  Process: mtcapp
  Trouble condition asserted
  Reason: DMA is unable to register with BMI

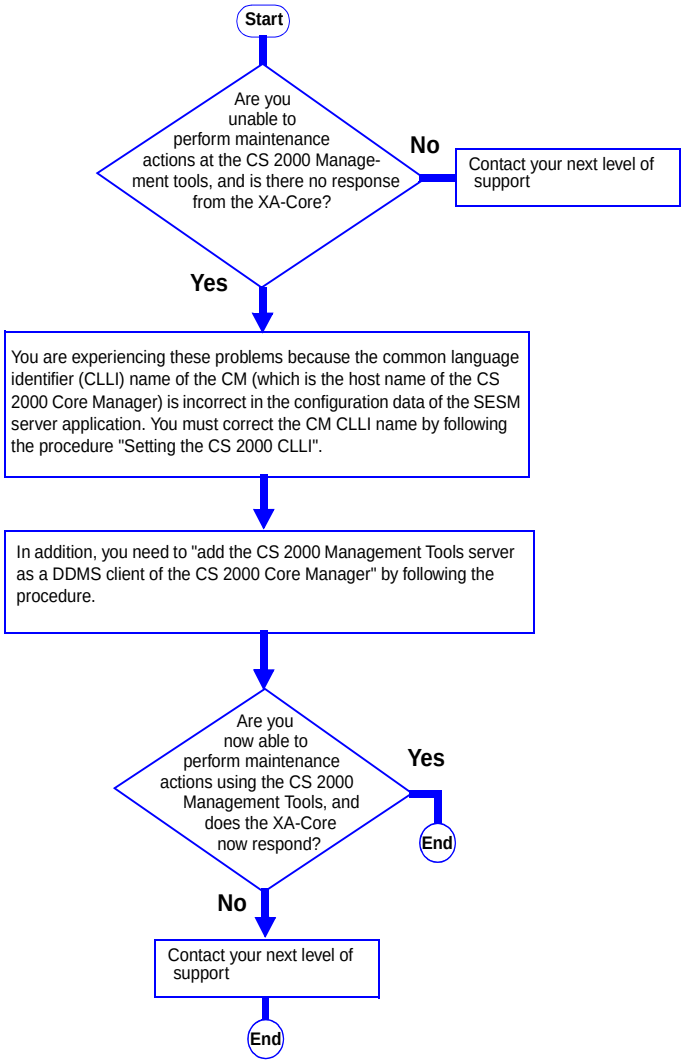
Note 1: You access the DMA500 log in the directory **/var/adm/custlog** on the CS 2000 Core Manager console.

Note 2: You see the SDM303 log by logging in to the CS 2000 Core Manager as a maint or root user, accessing the

sdmmtc;mtc level, and and inputting the **querysdm flt** command.

2 If the problem is not corrected, contact your next level of support.

Troubleshooting a failure to perform maintenance actions while using the CS 2000 Management Tools



Troubleshooting a failure to launch CS 2000 SAM21 manager, CS 2000 Management Tools GUI or Network Patch Manager

The following procedure describes steps to troubleshoot a launch failure for network element managers.

1. Determine if you received one of the following error messages:
   - SAM21EM client must exit
   - SESM is down, unreachable or incorrect version
   - Check Apache server status (/etc/init.d/apache status). Please correct the problem before logging in through SESM
2. If you receive one of the messages in the above step (step 1), restart the Apache Web Server.

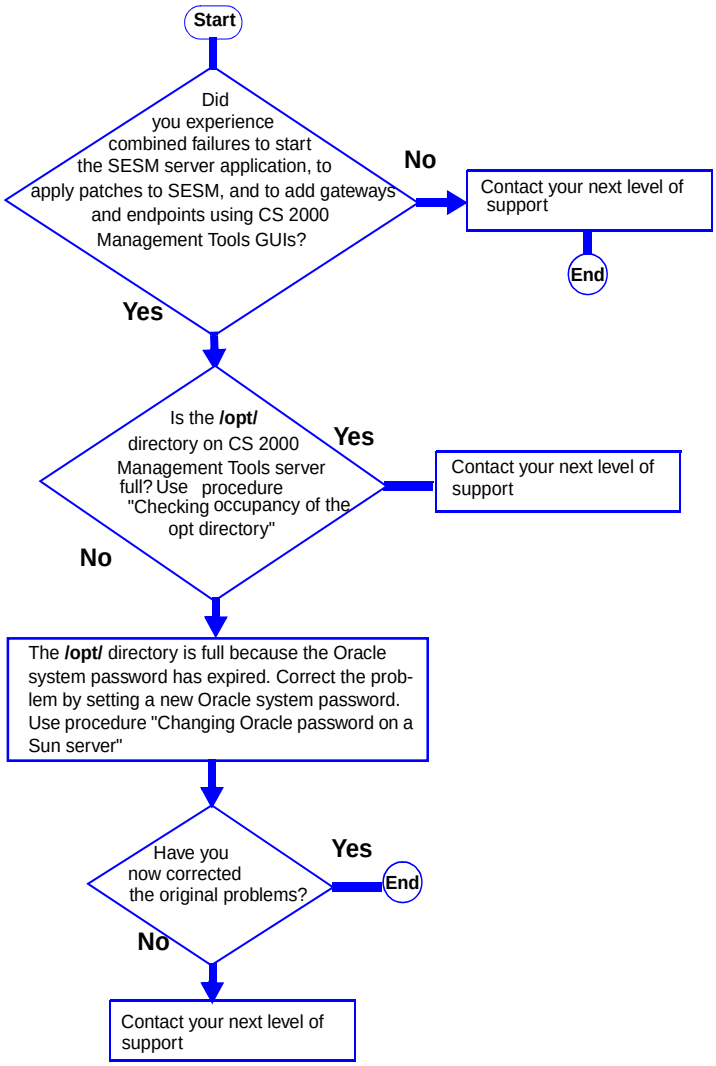
   Refer to procedure "Restarting the Apache web server"
3. Wait a minimum of 10 minutes, and then attempt to re-launch to GUIs.
4. If you are unable to launch the GUIs, contact your next level of support.

Troubleshooting problems arising when an SSL certificate is changed and the CM hostname is new or changed

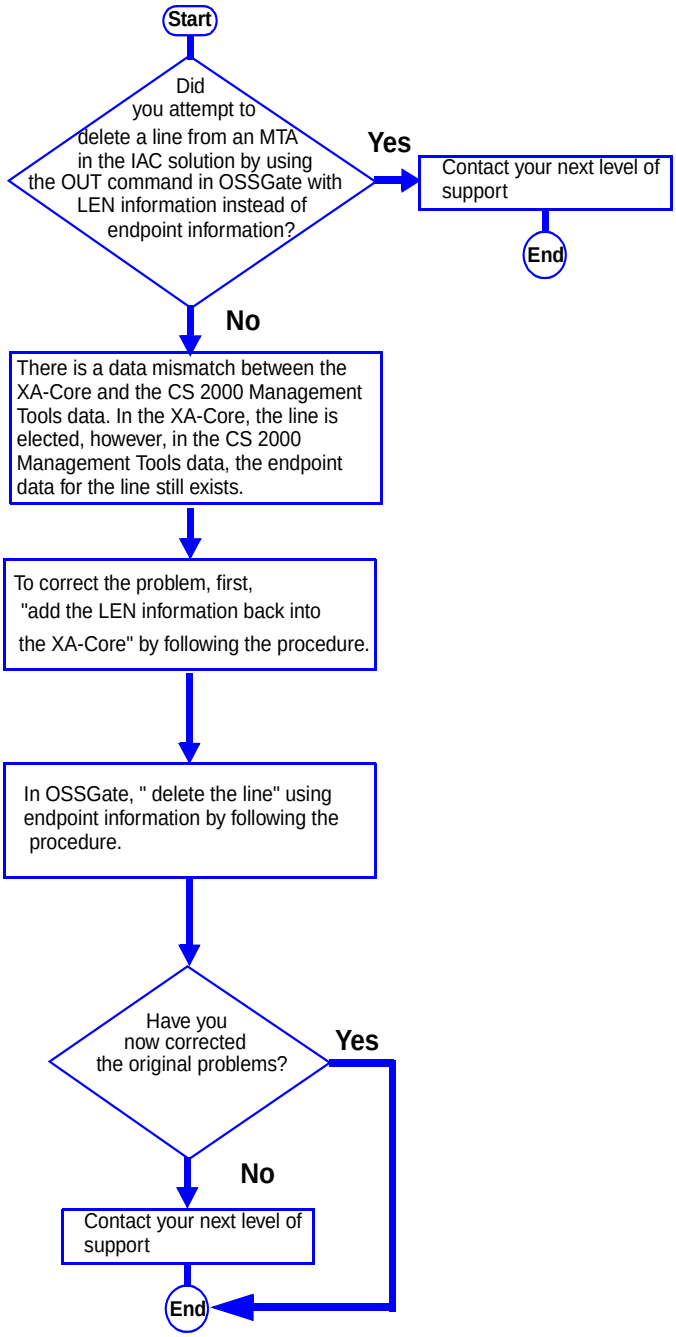
1. This situation may arise when a temporary SSL certificate is installed with an IP address instead of a CM hostname, but the CM hostname is subsequently changed.
2. Configure the SESM server application with the correct CM hostname.

   Refer to "Configuring the SESM server application".
3. Determine if the problem has been solved.
4. If the problem has not been corrected, contact your next level of support.

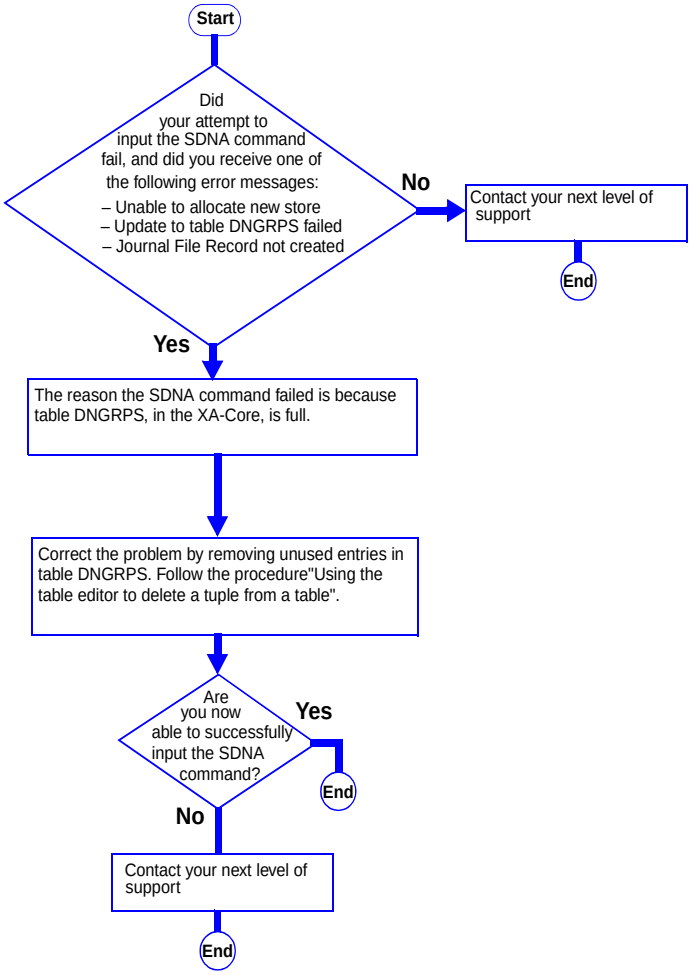
Troubleshooting combined failures to start the SESM server application to apply a patch to SESM and to associate gateways and add endpoints using CS 2000 Management Tools GUIs



Troubleshooting a failure to delete a line from a Media Terminal Adapter (MTA) or Media gateway in the IAC solution



Troubleshooting a failed attempt to input the SDNA command in OSSGate



Troubleshooting a failure to add an endpoint to a GWC during line provisioning of the IAC solution

The following procedure describes steps to troubleshoot a failure to add an endpoint to a GWC.

1 Did your attempt to provision a new line in OSSGate fail and did you receive the error message: **"System:LineProv:Endpoint cannot be added to GWC,"** and in addition the PM181 log was generated. Yes, see step 2.

2 The boolean **xpm_supports_dynamic_sd** in the XA-core is corrupted so that it now contains a value of **false**. This value **"false'** causes the system to block downloads of static data.

3 If you were unable to correct the problem, contact your next level of support.

Procedures

Checking for CS 2000 or CS 2000 compact logs

1 Access the LOGUTIL at the map terminal

> LOGUTIL

2 View the most recent CS 2000 (or CS 2000 compact logs)

> open <log_name>

where <log_name> is a group of logs (XAC, IOD, MS, NET, EXT or APPL).

3 View the entire log buffer of logs of specific type

>dumplogs <log_name>

Retrieve GWC platform alarms

1 At the CS 2000 Manager client, open the card view for the card in an alarm condition (right click the card and select card view)..

2 Select the Alarms tab

3 Refer the SAM21 Fault management NTP NN10089-911 for details on alarms generated on the SAM21 platform. For details on individual alarms related to the NSS cards (including GWC card) in the SAM21 shelf, refer to the SAM21 Shelf controller Fault Management (NN10089-911) for information.

Returning a Trunk Member to service

1 Launch the Trunk Maintenance Manager GUI. Click **MTC by Trunk CLLI.**

2 Enter the trunk CLLI name and optionally a trunk range value (or use the default [0] value for all trunk members, then select **Return Trunks to Service** from the **Maintenance Action** drop down menu and click **GO**.

Ethernet Routing Switch 8600 Ethernet Port configuration and 100Base-T cable replacement

1 For configuring a Ethernet Routing Switch 8600 port, see "Configuring Network Management and Diagnostics", NTP 314723-C.

2 For information on verifying and replacing 100Base-T cabling that connects the CS 2000 GWC to the Ethernet Routing Switch 8600, see "Installing and Maintaining the 8010co chassis and components ", NTP 312746-C.

Viewing SESM configuration settings

1 Telnet to the CS 2000 Management tools server

>telnet <server>

where <server> is the host name or IP address

2 Login and change to the root user by typing

$ su - root

3 When prompted, enter the root password

4 Change directory by typing

cd /opt/nortel/NTsesm/admin/bin

5 Execute the configuration script by typing

./configure

6 Select the "view sesm configuration settings" optiion

7 Note down the CM CLLI. If you need to change it, refer to the procedure in NTP NN10409-500.

8 Exit SESM configuration by typing

select - x

Diagnose problems with a GWC card that does not boot

1 Login to the CS 2000 core manager as the root user

2 Start the CS 2000 core manger maintenance application

#sdmmtc

3 Access the APPL level and verify the BootP loading service and the file transfer service applications are in service by typing

>appl

4 If the applications are not in service first BSY then RTS the applications. If these applications are in service, then check for bootpd and tftpd messages in the var/adm/syslog and var/adm/daemon.log. Refer to the CS 2000 Core Manager Security and Amin document for busying applications and returing them to service.

> ***Note:*** Unless log entries have been generated relating to application problems, no log file exists for dameon.log.

At the SAM21 Frame

5 Verify that the GWC has power by looking for the lighted yellow or green LEDs on its faceplate.

6 Use a VT100 terminal or a PC with terminal application software to connect to the DB9 serial port on the faceplate of GWC card.

> ***Note:*** Use a standard straight through serial cable rather than a null modem cable

7 Configure the PC software to set the PC serial port to 9600 baud, 8 bits, no parity, 1 stop bit.

8 Start the terminal application and select a direct connection from COM1.

9 Press and hold the reset button on the faceplate of the GWC card for 5 seconds.

10 Monitor the boot process on the terminal. If the boot fails, check for the error number and reference it to following list of IDs

0500 TFTP retry timeout. - This could be due to one of the following reasons: excess traffic, Core manager is busy, tftp daemon is not running, load name was entered incorrectly

0600 BOOTP retry timeout. - This could be due to one of the following: excess traffic, Core manager is busy, bootp daemon is not running, the etc/bootptab file is incorrectly configured, 8100 Load file on the CS 2000 core manger has the wrong path or the wrong permissions or the wrong load name was entered.

0020 Message CRC errors - The network could be busy and causing traffic errors.

0017 10baseT link failure - Verify that the ethernet cable is fully seated in the faceplate and the router.

View media proxy provisioning data for a GWC node

1 At the CS 2000 GWC manager tools window click on the *Gateway Controller* folder from the Device Types menu.

2 From the *Contents of: Gateway Controller frame*, select the GWC node that has the media proxy you wish to view.

3 Select the **Provisioning** tab in the GWC node view.

4 Use the **Controller** tab to view general node provisioning information for a selected GWC node.

5 Select the **Media Proxies** tab in the provisioning panel to view information about media proxies associated with the selected GWC node.

Retrieve and correlate GWC syslog logs

1 Access the directory level where the syslog logs reside by typing

>cd /var/log

If you want	Do
view the contents of the whole file	step 2
search for a specific text in syslog file	step 4

2 Review the contents of a syslog file by typing

>cat <log_filename> | more

where <log_filename> is the name of the log file you want to display.

Press the space bar to scroll through the file if its larger than the screen can display.

3 Go to step 5

4 Search for specific text in a syslog file by typing

> cat <log_filename> | grep (search_string)

5 To print the contents of this file, contact your site system administrator for assistance.

Note: The same procedure can be used to " **view customer log files**"

Pinging the CS 2000 Core Manager

At your workstation

1 Telnet to the CS 2000 Management Tools server, by typing

> telnet <server>

where

<server>
is the Internet Protocol (IP) address, or host name of the CS 2000 Management Tools server

2 When prompted, enter your user ID, and password.

3 Determine the IP address of the CS 2000 Core Manager as follows:

a Change to the root user, by typing

$ su – root

and pressing the Enter key.

b When prompted, enter the root password.

c Change directory, by typing

 # cd /bin

and pressing the Enter key.

d Execute the configuration script, by typing

 # ./configure

and pressing the Enter key.

System response

SESM configuration

1 – SESM common configuration (IP addresses, Market, CM CLLI)

2 – SESM database tools

3 – SESM related applications configuration (MG9K, LMM)

4 – SESM provisioning configuration

5 – SESM logging configuration 9syslog, sesm debug log)

6 – view sesm configuration settings

x – exit

select –

e Select option six (view sesm configuration settings), by typing

select – 6

and pressing the Enter key.

Example system response

f Note the IP address of the CS 2000 Core Manager.

g Exit from the SESM Server Application configuration utility, by typing

select – x

and press the Enter key.

4 Ping the CS 2000 Core Manager, by typing

 # ping <ip_address>

and press the Enter key.

where

<ip_address>
is the IP address of CS 2000 Core Manager that you obtained in step 3 substep f.

Example
ping 172.17.40.250

Example system response

172.17.40.250 is alive

5 Note whether there is communication between the CS 2000 Management Tools server and the CS 2000 Core Manager (alive indicates there is communication, dead indicates that there is no communication).

Ensuring that the applications OSS Comms Svcs and OSS and Application Svcs are in-service

At any workstation or console

1 Log in to the CS 2000 Core Manager.

2 Access the Application level by typing

 # sdmmtc appl

Note: Use the up and down commands to scroll through the list of applications.

3 Determine the state of the two applications: OSS Comms Svcs and OSS and Application Svcs.

4 If one or both applications are out of service, busy the out-of-service application by typing

> bsy <application_number>

where

<application_number>
is the number used to identify the application in the list (in the example system display in step 2, the application OSS Comms Svcs is identified by the number 16)

5 If you successfully busied the application, return to service the out-of-service application by typing

> rts <application_number>

where

<application_number>
is the number used to identify the applications in the list (in the example screen in step 2, the application OSS Comms Svcs is identified by the number 16)

6 If you are unable to solve the problem, contact your next level of support.

Checking the status of the DDMS proxy

At your workstation

1 Telnet to the CS 2000 Management Tools server by typing

> telnet <ip_address>

where

<ip_address>
is the Internet Protocol (IP) address of the CS 2000 Management Tools server

2 When prompted, enter your user ID and password.

3 Change to the root user by typing

$ su - root

4 When prompted, enter the root password.

5 Determine if the DDMS proxy is running, by typing

 # /etc/init.d/ddmsproxy status

6 Note whether the DDMS proxy is running or not running.

Restart the Apache Web server

At the local or remote VT100 console

1 Telnet to the CS 2000 Management Tools server by typing

> telnet <server>

where

<server>
is the Internet Protocol (IP) address, or host name of the CS 2000 Management Tools server.

2 When prompted, enter your user ID and password.

3 Change to the root user, by typing

$ su - root

4 When prompted, enter your root password.

5 Restart the Apache Web server by typing

 # /etc/init.d/apache restart

Check the occupancy of the /opt/ directory on the CS 2000 Management tools server

At your workstation

1 Telnet to the CS 2000 Management Tools server by typing

> telnet <server>

and pressing the Enter key.

where

<server>
is the Internet Protocol (IP) address or host name of the CS 2000 Management Tools server.

2 When prompted, enter your user ID and password.

3 Determine the occupancy of the /opt/ directory by typing

$df -k

Example of a screen showing occupancy of the /opt/ directory at 98%

Troubleshooting a failure to start the SESM server application

1 If the SESM server fails to start, determine if you have received the following CS 2000 Management Tools server database error message:

java.sql.SQLEexception:

ORA-01034:ORACLE not available

ORA-27101:shared memory realm does not exist

SVR4 Error 2: No such file or directory

2 If you receive the message, at the APS server, determine if the Oracle server is running.

Refer to procedure "Troubleshooting APS login problems"

3 If the Oracle server is running, Start the Oracle database.

Refer to "Troubleshooting APS login problems".

4 Determine if you are able to start the SESM server application, otherwise contact your next level of support.

Checking for Media gateway logs

1 Media Gateway 15000/7400 alarm logs can be viewed in switch control center 2 (SCC2) format at your operations support system (OSS). The Nortel Networks Multiservice Data Manager software collects alarm and log data from the Media Gateway 15000/7400. This data is, in turn, forwarded to the CS 2000 Core Manager. The CS 2000 Core Manager Log Streamer application converts the Media Gateway logs into SCC2 format. The CS 2000 Core Manager, then transmits the logs to the OSS.

2 Alternatively, you can view Media Gateway alarms by using applications on the Nortel Networks Multiservice Data Manager. For information on viewing Media Gateway alarms on the Nortel Networks Multiservice Data Manager, see *Nortel Networks Multiservice Data Manager Fault Management Tools*, 241-6001-011

Correlating carrier information from MAPCI to GWC, and Media Gateway 15000/7400

Finding carrier provisioning information

1 To obtain carrier provisioning information for Media Gateway 15000/7400, see *Nortel Networks Media Gateway 7480/15000 Technology Fundamentals*, NN10600-780.

2 To obtain general carrier provisioning information for GWC, you can use the Trunk Maintenance Manager (TMM). For additional information on using TMM to view provisioning information, see *ATM/IP Fault Management*, NN10408-900.

3 To obtain carrier provisioning information at the CS 2000 MAPCI, you should begin by accessing table TRKMEM, by typing

> table trkmem

and press the Enter key.

4 Position on the tuple of interest, by typing

pos <clli> <extrknum>

and press the Enter key.

where

<clli>
is the common language location identifier code of the trunk group to which the trunk is a member

<extrknum>
is the external trunk number (0-9999) that is assigned to the trunk

Example
pos 90IPW15ANS 1

5 With the information from step 4, use your customer database to determine the far-end peripheral module, and the near-end Media Gateway that terminate the carrier on which you are working.

6 Access the carrier level of the MAPCI, by typing

>mapci;mtc;trks;carrier

and press the Enter key.

7 Post the carrier you are working on using the far-end information you obtained in step 4, by typing

> post <pm> <pm_number> <carrier_circuit_num>

where

<pm>
is the peripheral module that terminates the far-end trunk

<pm_number>
is the peripheral module number that terminates the far-end trunk

<carrier_circuit_num>
is the circuit number of the carrier

Example
post pdtc 54 4

8 To view GWC and Media Gateway endpoint information from the CS 2000 Management Tools Trunk Maintenance Manager (TMM) perform the following steps:

a From the CS 2000 Management Tools common launch page, launch the Trunk Maintenance Manager by clicking on the appropriate link.

b Select the **Mtc By Trunk CLLI** menu item in the Maintenance action field.

c Enter the CLLI, a Trunk Range value (or use the default value of zero), and select **Post Trunks** from the Maintenance Action drop-down menu, then click on the **Go** button.

d The Trunk Maintenance Manager software displays the GWC, and endpoint information that is associated with the trunk group CLLI that you have specified (see the following figure).

9 You should now have enough information to map carrier information from the MAPCI to a specific trunk endpoint.

Correlating line information from MAPCI to GWC and MG 9000 or MTA

At the MAPCI

1 Use the following table to decide your next step:

If you want	Do
information on a line that terminates on an MTA	step 2
information on a line that terminates on an MG 9000	step 11

2 Access the line test position, by typing

> mapci;mtc;lns;ltp

and press the Enter key.

3 Post one, or more lines based on the line state. For example, post lines that are system busy (sb), by typing

> post s sb

and press the Enter key.

4 If there is more than one line in the posted set, find the MTA line in the posted set, that is of interest to you. Record the LEN.

5 At a PC connected to the local area network, initiate a Telnet session to OSSGate, by typing

```
telnet <ossgate_server_name> <port_number>
```

and press the Enter key.

where

<ossgate_server_name>
is the hostname or the IP address of the server on which OSSGate is running

<port_number>
is the server port used by OSSGate (the default is 10023)

Example
telnet wcn0s5jk 10023

Example of a system response

Trying 47.142.94.80...

Connected to wcn0s5jk.

Escape character is '^]'.

Enter username and password

6 Enter your user name and password, by typing

<username> <password>

and pressing the Enter key.

Example
user1 maint

7 You have connected to OSSGate, and the system is displaying a prompt (the ">" character) in the Telnet window on your screen. Now you must put the telnet session into command interpreter (CI) mode. Proceed as follows:

a Hold down the control key and type B.

Example of a system response:

?

b At the question-mark prompt, enter the command interpreter mode, by typing

mode ci

and pressing the Enter key.

Example of a system response:

Mode is CI.

>

8 Perform a query of the LEN information that you recorded in step 4 by typing

>qlen

where <len> is the line equipment number that you recorded from the LTP level of the MAP in step 4.

9 From the system response to the query LEN command, you can obtain the MTA domain name (including host name), as well as the port number. In addition, the response to the command supplies the GWC node number (109 in the example), and the GWC terminal number.

10 Proceed to step 19.

11 Access the line test position, by typing

> mapci;mtc;lns;ltp

and press the Enter key.

12 Post one or more MG 9000 lines based on the line state. For example, post lines that are system busy (sb), by typing

> post s sb

and press the Enter key.

13 If there is more than one line in the posted set, find the MG 9000 line in the posted set, that is of interest to you. Record the LEN.

14 At a PC connected to the local area network, initiate a Telnet session to OSSGate, by typing

`telnet <ossgate_server_name> <port_number>`

and press the Enter key.

where

<ossgate_server_name>
is the hostname or the IP address of the server on which OSSGate is running

<port_number>
is the server port used by OSSGate (the default is 10023)

Example
telnet wcn0s5jk 10023

Example of a system response

Trying 47.142.94.80...

Connected to wcn0s5jk.

Escape character is '^]'.

Enter username and password

15 Enter your user name and password, by typing

<username> <password>

and pressing the Enter key.

Example
user1 maint

16 You have connected to OSSGate, and the system is displaying a prompt (the ">" character) in the Telnet window on your screen. Now you must put the telnet session into command interpreter (CI) mode. Proceed as follows:

a Hold down the control key and type B.

Example of a system response:

?

b At the question-mark prompt, enter the command interpreter mode, by typing

mode ci

and pressing the Enter key.

Example of a system response:

Mode is CI.

>

17 Perform a query of the LEN information that you recorded in Step13, by typing

```
> qlen <len>
```

where <len> is the MG 9000 line equipment number that you recorded from the LTP level of the MAPCI in step 13.

18 From the system response of the query LEN command, you can obtain site, frame, logical frame, and shelf data for the MG 9000 that terminates the line (see the end point information in the previous figure). The end point field also contains the number of the card and the circuit. In addition, the PM Node Number, and PM terminal number fields in the system output, provide you with the GWC node number and terminal number.

19 Disconnect from OSSGate as follows:

a Hold down the control key and type B.

Example of a system response:

?

b Logout, by typing

logout

and press the Enter key.

Example of a system response:

user1 logged out.

>

20 Terminate the Telnet session as follows:

a Hold down the control key and type B.

Example of a system response:

?

b Clear the connection, by typing

clearconv

and press the Enter key.

Example of a system response:

SESSION TERMINATED.

Connection closed by foreign host.

View and Troubleshoot GWC service Alarms

At the CS 2000 GWC Manager client

1 At the CS 2000 Management Tools window, click the **Fault** menu and select **Alarm Manager** to open the Alarm Manager window.

2 From the Alarm Manager window, review the alarms displayed.

The colors to the left of the alarm display provide a visual indication of alarm severity:

- yellow - warning,
- orange - minor
- red - major and critical

Refer to section "Troubleshooting GWC service alarms" in the "ATM/IP Fault Management" guide for details about the alarm types displayed.

3 Click **Refresh List** to update the alarm list.

4 Click the **Details** button to review specific details about an alarm.

5 To filter the alarm display for specific GWC units by excluding the display of certain alarm types, click the **Advanced Filters** button to filter alarms based on selected alarm categories.

Perform the following steps at the Advanced filters dialog box:

a In the view list, select the GWC units to be excluded (filtered). You can press and hold the <Shift> key to select multiple GWC units.

b Click the **Remove** > button to place the selected GWC units in the Exclude (filtered) list. Click the **Remove All** >> button to place all GWC units in the Exclude (filtered) list.

If necessary, select GWC units in the Exclude list. Then, click the **< Add** button to place the selected GWC units in the View (unfiltered) list. Click the **<< Add All** button to place all GWC units in the View (unfiltered) list.

c De-select the Alarm Category check boxes to exclude (filter) an alarm type for the GWC units in the Exclude list. Any alarm categories that remain selected will be included (will not be filtered) for the GWC units in the Exclude list.

d After you have selected the filter criteria click the **Apply Filters** button.

6 When you are finished with the Alarm Manager, click the **File** menu and select **Close**.

Performing a CS 2000 Data Integrity Audit

At the CS 2000 GWC Manager client

1 At the CS 2000 Management Tools window, select **Maintenance**, and then **Audit System**.

2 At the Audit System dialog box, select **CS2K Data Integrity Audit** from list of audits displayed in the drop-down menu.

3 Select the next step as follows.

If you want	Do
perform a CS 2000 audit and view the results of the audit	step 4 and complete the procedure
view the results of a CS 2000 audit that has finished running and resolve problems	step 6 and complete the procedure

4 Click the **Run Audit** button to start the audit.

During a CS 2000 audit, the system displays the following message:

The audit may take a few minutes to complete. When the audit is successfully completed, the system displays one of two types of messages as follows:

Note: If the audit does not execute successfully, the message "CS2K Data Integrity Audit Failed to Complete" is displayed with an error message indicating the reason. Contact your next level of support to resolve the problem.

5 Click the **Close** button to close the Audit Status pop-up window.

6 To view a CS 2000 audit report, proceed as follows:

a Ensure that you have selected **CS2K Data Integrity Audit** from the Audit field drop-down menu at the top of the Audit System dialog box.

b Select **Report** <date> from the drop-down menu in the Report field at the bottom of the dialog box.

The file name has the following format:

Report-<date>

where
<date> is the date in yyyy-mm-dd format, for example, 2003-02-15.

c Click the **View Report** button.

The system displays the selected report. If no problems were discovered, the report will be empty. Here is an example of a report containing problems:

Note 1: The CS 2000 Management Tools server retains the most recent CS 2000 audit report. When a new audit occurs, the server deletes the previous report.

Note 2: The system places the audit report in the following directory on the CS 2000 Management Tools server: /opt/nortel/ptm/current/MI2/apps/Audit.

Note 3: The CS 2000 GWC Manager does not provide an option to save a CS 2000 data audit report to local disk.

7 Review the results of the audit and select a problem to resolve.

Note: If necessary, resize the entire window to completely view the Problem Description field.

8 Evaluate actions to resolve a problem and take action.

a Click and hold on the Action drop-down menu near the bottom of the screen to assess any possible actions.

b If appropriate, select an action. Read the description of the action and ensure that you observe any recommended steps or cautions.

c Click the **Take Action** button

Note: If you see the message "Correction Failed", please contact your next level of support.

9 Return to step 7 to review another problem.

Troubleshooting APS login problems

At your console

1 Verify that the URL in your browser address window is correct. The URL should be: http://*<hostname or IP address of the APS>*:8080/aps/

If	Do
the URL is correct	step 3
the URL is incorrect	Correct the URL entry in the browser. Go to step 2

2 Try to log in to the APS.

If	Do
you are able to log in to the APS	step 28
you are unable to log in to the APS	step 3

3 Ensure that “Caps Lock” is not enabled on your keyboard.

If	Do
“Caps Lock” is enabled	Press the “Caps Lock” key on your keyboard. Go to step 4
“Caps Lock” is not enabled	step 5

4 Try to log in to the APS.

If	Do
you are able to log in to the APS	step 28
you are unable to log in to the APS	step 5

In a telnet connection to the APS server

5 Open an xterm window and log in using the “maint” login and password.

6 Become the “root” user by entering:

```
su - root
```

7 Determine whether the APS login page is accessible.

If	Do
the APS login page is accessible	step 8
the APS login page is not accessible	step 19

8 Ensure that the Oracle database is online by entering the following command:

```
/opt/servman/bin/servman query -status -g
DATABASE -v
```

The display should indicate that the Oracle processes, listed at the end of the display (that is, entries in the display that begin with “oracle <pid>”), are running.

If	Do
the displayed Oracle processes are not running	step 9
the displayed Oracle processes are running	step 13

9 Restart the Oracle database by entering the following command:

```
/opt/servman/bin/servstart DATABASE
```

10 Kill the APS server process and let the server restart automatically, by entering the following command:

```
/opt/uas/aps/scripts/killDbServer.sh
```

A message eventually displays indicating that the server is restarting.

11 Enter the following command to check the status of the database:

```
/opt/servman/bin/servman query -status -g
DATABASE -v
```

The display should indicate that the Oracle processes, listed at the end of the display (that is, entries in the display that begin with "oracle <pid>"), are running.

If	Do
the displayed Oracle processes are running	step 12
the displayed Oracle processes are not running	step 27

12 Try to log in to the APS.

If	Do
you are able to log in to the APS	step 28
you are unable to log in to the APS	step 13

13 Ensure that you can connect to the Oracle database by entering the following command:

```
sql
```

An "sql" prompt should display.

If	Do
the sql prompt does not display	step 14
the sql prompt does display	step 26

14 Determine whether you already restarted the Oracle database once before during this procedure.

If	Do
you have already restarted the database once before	step 27
you have not already restarted the database once before	step 15

15 Restart the Oracle database by entering the following command:

```
/opt/servman/bin/servstart DATABASE
```

16 Kill the APS server process and let the server restart automatically, by entering the following command:

```
/opt/uas/aps/scripts/killDbServer.sh
```

A message eventually displays indicating that the server is restarting. This may take from 2 to 5 minutes.

17 Enter the following command to check the status of the database:

```
/opt/servman/bin/servman query -status -g
DATABASE -v
```

The display should indicate that the Oracle processes, listed at the end of the display (that is, entries in the display that begin with "oracle <pid>"), are running.

If	Do
the displayed Oracle processes are running	step 18
the displayed Oracle processes are not running	step 27

18 Try to log in to the APS.

If	Do
you are able to log in to the APS	step 28
you are unable to log in to the APS	step 27

19 If the correct IP address of the APS server is entered in the browser address window, but the login page is not accessible, an Application Launch Point page should display.

If	Do
the Application Launch Point page displays	step 21
the Application Launch Point page does not display	step 20

20 Enter the following command to start the Apache server:

```
/opt/servman/bin/servstart WEBSERVICES
```

Messages that indicate the Apache server has started display.

21 Verify that the APS software packages have been installed by entering the following command:

```
pkginfo | grep aps
```

If	Do
a list of the required APS software packages displays	step 22
a list of the required APS software packages does not display	You will need to install the required APS packages. Go to step 27.

22 Enter the following command to check the status of the database:

```
/opt/servman/bin/servman query -status -g
DATABASE -v
```

The display should indicate that the Oracle processes, listed at the end of the display (that is, entries in the display that begin with "oracle <pid>"), are running.

If	Do
the displayed Oracle processes are running	step 26
the displayed Oracle processes are not running	step 23

23 Restart the Oracle database by entering the following command:

```
/opt/servman/bin/servstart DATABASE
```

24 Kill the APS server process and let the server restart automatically, by entering the following command:

```
/opt/uas/aps/scripts/killDbServer.sh
```

A message eventually displays indicating that the server is restarting. This may take from 2 to 5 minutes.

25 Enter the following command to check the status of the database:

```
/opt/servman/bin/servman query -status -g
DATABASE -v
```

The display should indicate that the Oracle processes, listed at the end of the display (that is, entries in the display that begin with "oracle <pid>"), are running.

If	Do
the displayed Oracle processes are running	step 26
the displayed Oracle processes are not running	step 27

26 Try to log in to the APS.

If	Do
you are able to log in to the APS	step 28
you are unable to log in to the APS	It may be necessary to reboot the server. Go to step 27.

27 Contact your next level of support.

28 You have completed this procedure.

Restart or reboot a GWC card

At the CS 2000 Manager client shelf view

1 Right-click on the GWC card you want to reboot and select **Card view** from the context menu.

2 At the card view, select the **States** tab.

3 Click the **lock** button to lock the cars.

Note: The card must be disabled before you can lock it. Refer to the procedure "Busy a GWC node " in the GWC configuration management NTP.

4 Wait until the Administrative state of the card is locked and the history window indicates "Application locked successfully". Then click the **Unlock** button.

Monitor the reboot process. Wait until the Administrative state of the card "unlocked" and the history window indicates "bootloaded successfully".

Configuring the SESM server application

At your workstation (Only perform this procedure if you installed an HTTPS certificate after the CS2M software was installed or upgraded)

1 Telnet to the server by typing

> telnet <server>

and pressing the Enter key.

where

server
is the IP address or host name of the CS 2000 Management Tools 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 Change directory by typing

 # cd /opt/nortel/NTsesm/admin/bin

and pressing the Enter key.

6 Execute the configuration script by typing

#./configure

and pressing the Enter key.

Example response

SESM configuration
1 - SESM common configuration (IP addresses, Market, CM CLLI)
2 - SESM database tools
3 - SESM related applications configuration (MG9K, LMM, CICM)
4 - SESM provisioning configuration
5 - SESM logging configuration (syslog, sesm debug log)
6 - view sesm configuration settings
7 - SESM refresh properties

X - exit

select -

7 Enter the number next to the “SESM common configuration” option in the menu.

8 When prompted, enter the IP address of the CS 2000 Management Tools server, or press the Enter key to accept the default if one is specified.

9 When prompted, enter the number next to the market for which you are configuring the SESM server application.

10 When prompted, enter the CLLI name of the office (CM CLLI), or press the Enter key to accept the default if one is specified.

11 When prompted, enter the IP address of the SDM (CS 2000 Core Manager) associated with the CM CLLI, or press the Enter key to accept the default if one is specified.

The system displays the information you entered for confirmation.

12 When prompted, confirm the information by typing

y

and pressing the Enter key.

The system executes the command, and returns you to the SESM configuration main menu.

13 Exit “SESM configuration” by typing

select - x

and pressing the Enter key.

14 You have completed this procedure.

Setting the CS 2000 CLLI on the Sun server

At your workstation

1 Telnet to the Sun server by typing

> telnet <server>

and pressing the Enter key.

where

server
is the IP address or host name of the Sun server on which you are setting the CS 2000 CLLI

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 Access the command line interface by typing

 # cli

and pressing the Enter key.

Response

Command Line Interface
1 - View

2 - Configuration

3 - Other

X - exit

select -

6 Enter the number that corresponds to the “Configuration” option in the menu.

Example response

```
Configuration
 1 - NTP Configuration
 2 - Apache Proxy Configuration
 3 - DCE Configuration
 4 - OAMP Application Configuration
 5 - CORBA Configuration
 6 - IP Configuration
 7 - DNS Configuration
 8 - Syslog Configuration
 9 - Database Configuration
10 - NFS Configuration
11 - Bootp Configuration
12 - Restricted Shell Configuration
13 - Security Services Configuration
14 - Login Session
15 - Location Configuration
16 - Cluster Configuration

17 - Succession Element Configuration

18 - snmp_poller (SNMP Poller Configuration)


X - exit


Select -
```

7 Enter the number that corresponds to the “OAMP Application Configuration” option in the menu.

Example response

```
OAMP Application Configuration
 1 - sdm_conf (Configure SDM IP Address)
 2 - sdm_unconf (Unconfigure SDM IP Address)
 3 - cmClli_conf (Configure CM_CLLI Address)
 4 - cmClli_unconf (Unconfigure CM_CLLI IP
    Address)
 5 - cm_conf (Configure CM IP Address)
 6 - cm_unconf (Unconfigure CM IP Address)

 X - exit

select -
```

8 Use the following table to determine your next step.

If you are	Do
setting the CS 2000 CLLI on the Sun server	step 9
removing the CS 2000 CLLI from the Sun server	step 10

9 Set the CS 2000 CLLI as follows:

a Enter the number that corresponds to the “cmClli_conf” option in the menu.

Example response

```
===Executing “cmClli_conf”

Enter CM_CLLI:
```

b When prompted, enter the CLLI for the CS 2000.

Example response

```
CM CLLI:     CLLITEST

Enter “ok” to accept current settings

and pressing the Enter key.
```

c When prompted, confirm the setting by typing

ok

Processing values...

CM_CLLI Configured
Please perform a logout and login so your shell will reflect CLLI environment settings

===”cmClli_conf” completed successfully

Proceed to step 11.

10 Remove the CS 2000 CLLI as follows:

a Enter the number that corresponds to the “cmClli_unconf” option in the menu.

Example response

===Executing “cmClli_unconf”

Please perform a logout and login so your shell will no longer contain the CLLI environment settings

===”cmClli_unconf” completed successfully

b When prompted, enter the CLLI for the CS 2000.

Example response

CM CLLI: CLLITEST

Enter “ok” to accept current settings

c When prompted, confirm the setting by typing

ok

and pressing the Enter key.

Example response

CM CLLI: CLLITEST

Enter “ok” to accept current settings

11 Exit each menu level of the command line interface to eventually exit the command line interface, by typing

select - x

and pressing the Enter key.

12 Log out and log back in to the Sun server to reflect the CLLI environment changes.

13 You have completed this procedure.

Stopping and starting the DDMS proxy

At your workstation

1 Telnet to the CS 2000 Management Tools server by typing

> telnet <IP address>

and pressing the Enter key.

where

IP address
is the IP address of the CS 2000 Management Tools 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 Use the following table to determine your next step.

If you want to	Do
stop the DDMS proxy	step 6
start the DDMS proxy	step 7

6 Stop the DDMS proxy by typing

 # /opt/nortel/NTsesm/admin/scripts/ddmsproxy stop

and pressing the Enter key.

7 Start the DDMS proxy by typing

 # /opt/nortel/NTsesm/admin/scripts/ddmsproxy start

and pressing the Enter key.

8 You have completed this procedure.

Increasing the size of a logical volume

DANGER
Increasing the size of a logical volume can limit future software upgrade capability
SDM CS 2000 Core Manager logical volumes are pre-engineered to sizes that are adequate for Nortel Networks customers. Do not increase the size of a logical volume unless absolutely necessary.

At the local VT100 console

1 Log into the SDM CS 2000 Core Manager as the root user.

2 Access the top menu level of the remote maintenance interface (RMI):

 # sdmmtc

3 Access the system (Sys) menu level of the RMI:

> sys

4 Access the storage menu level of the RMI:

>storage

Example response:

```
Volume Group      Status      Free (MB)
rootvg            mirrored    1932
datavg            mirrored    7760

Logical Volume    Location    Size (MB) % full/threshold 1 /
 rootvg       88           11/ 80
2 /usr            rootvg       600          28/ 90
3 /var            rootvg       200           7/ 70
4 /tmp            rootvg        24           5/ 90
5 /home           rootvg       304          11/ 90
6 /sdm            rootvg       504          23/ 90
7 /data           datavg       208           6/ 80
          Logical volumes showing: 1 to 7 of 7
```

Note: The example response only shows part of the information displayed at the storage menu level of the RMI.

5 Determine if there is un-allocated disk space that can be used to increase a logical volume.

If there is	Do
enough disk space	step 6
not enough disk space	step 10

6 Identify the logical volume to increase in size. Record the volume name of the logical volume on the left of the System menu of the RMI.

7

ATTENTION
A logical volume on the CS 2000 Core Manager must never reach 100% full. System behavior cannot be predicted when a logical volume reaches 100% full.

Change the size of the logical volume:

> change lv /*<logical_vol>* *<Mbyte>*

where

<logical_vol>
is the name of the logical volume

<Mbyte>
is the size in Mbytes to be added to the logical volume. The size must be less than the amount of un-allocated disk space.

Example input:

> change lv /home 48

Example response:

Expanding Volume /home
Expanding Volume /home - Command complete

Note: The CS 2000 Core manager can round the new size to the nearest 8-, or 16-Mbyte increment.

8 For a 4 Gbyte disk, add 8- or 16-Mbyte multiples. When the logical volume is created, the operating system determines the multiple that has to be used.

9 If the occupancy level of the specified logical volume has exceeded its alarm threshold, contact your system administrator to assess the current condition of the logical volume.

10 You have completed this procedure.

Enabling and disabling alarms using the NPM

At your workstation

1 Access the NPM CLUI

At the NPM CLUI

2 Enable or disable an alarm by typing

npm> alarm <alarm_name> <alarm_option>

and pressing the Enter key.

where

alarm_name
is the name of the alarm

alarm_option
indicates what is to be done to the alarm (enable, disable, delete, matches)

Example for enabling an alarm:

npm> alarm DEVICE_ONHOLD enable

Example for disabling an alarm:

npm> alarm DEVICE_ONHOLD disable

3 You have completed this procedure.

Using the NPM GUI

At your workstation

1 Access the NPM GUI.

At the NPM GUI

2 On the **System** menu, click **Alarms...**.

The Alarms window opens.

3 Click the **Alarm List** tab to display a list of all defined alarms.

4 Select the alarm you want to enable or disable from the alarm list.

5 Click **Enable** or **Disable**.

6 You have completed this procedure.

Starting the Batch Provisioning tool

At your workstation

1 Telnet to the CS 2000 Management Tools server by typing

> telnet <server>

and pressing the Enter key.

where

server
is the IP address or host name of the CS 2000 Management Tools server

2 When prompted, enter your user ID and password.

3 Start the batch provisioning tool by typing

$ bpt

and pressing the Enter key.

4 When prompted, enter your username and password.

Example response:

```
Login in progress...

You are currently logged in as: rtps!

==========
Main Menu:
==========

    (1) Execute Batch File
    (2) Display Output
    (3) Display Logs
    (4) Delete Output or Log Files
    (h) Help

    (1) Exit

Selection: [1/2/3/4/h/x:1]
```

5 You have completed this procedure.

Viewing Event Details

At the Integrated EMS workstation

1 Refer to the "Launching the Integrated EMS Java Web Start Client" in the *Integrated EMS basics guide*, NN10329-111 to launch the client.

2 Select the **Network Events** panel in the Integrated EMS tree.

3 Select a required event (row) of the table in the **Network Events** panel (or Event Viewer).

4 Double-click any part of the selected event row to view the event property details in event details dialog. Alternatively, the event details window can be displayed using the Details-->View menu command.

The displayed properties and their description are given in the following table.

Property	Description
Index	A unique numeric ID (equivalent to primary key) generated for each event.
Message	Displays any important additional information of the event.
Category	Displays the category, useful for the categorization of alarms.
Source	Displays the information about the source of the event.
Date/Time	Displays the time stamp of event.
Log Number	This property displays the log number of the event.
ComponentID	Displays the name of the component that raised the event.
EventType	Displays the type of event. For example, "FLT" is displayed for fault.

Property	Description
LogName	Displays the log name of the event. The log name is either present in the event sent by component or inserted by Integrated EMS.
EventLabel	Displays the cause of the event.
ProbableCause	Displays the probable cause of the event.
OfficeIdentifier	Displays the office identifier of the component that raised the alarm.
SequenceNumber	Displays the sequence number of the event.
BodyText	Displays the time stamp of the event, component ID, specific problem for cause of the event and description of the event. The text displayed here varies depending on the device.
EquipmentIdentifier	Displays the component name or IP address that raised the event.
Severity	Displays the criticality of the event.

Note: Opening many Event Details windows and closing the lastly opened event details window hides all the other Event Details windows. Other Event Details windows can be viewed by moving the Integrated EMS Client main screen or invoking a new Event Details window. This issue is experienced with the Integrated EMS Client on a Sun Solaris platform.

Viewing event details for an event in the Integrated EMS Web Client:

At Integrated EMS workstation

1. Refer to the "Launching the Integrated EMS Web Client" in the *Integrated EMS basics guide*, NN10329-111 to launch the client
2. Switch to Fault Management tab in Web Client.
3. Select Network Events node in the Module tree (if not selected).
4. In the Events table, click the dater icon) under Status column of the managed object for which the event details is required in the Network Events table.

The properties are listed in the Event Properties page, for description of properties, refer to the description of properties in the events dialog table under "Viewing Event Details" procedure.

Viewing Alarm details

At the Integrated EMS workstation

1. Refer to the "Launching the Integrated EMS Java Web Start Client" in the *Integrated EMS basics guide*, NN10329-111 to launch the client.
2. Select the **Alarms** panel under **Fault Management** node in the Integrated EMS tree.
3. Double-click the required alarm (for which details are required).

   The **Alarm details** window opens as shown in the following figure.

The following table describes the properties displayed in the Alarm details window.

Property	Description
Message	Important additional information about the alarm.
Failure object	The specific entity which has caused the alarm (in the source specified by the Source field of the alarm).
Source	The source of the alarm.
Owner	The name of the owner with which the alarm is associated
Category	The alarm category.
Created	The date and time when the alarm was first created.
Modified	The date and time when the alarm was last modified.
Group	The group to which the alarm belongs.
Severity	The severity of the alarm.

Property	Description
Previous severity	The previous severity of the alarm.
Other alarms in this group	The other alarms present in this group. Double-clicking the displayed data gives the details of the particular alarm

Alarm properties: The Properties button opens a window containing the various user properties specified for the alarm. This window is non-editable and is for information purposes only.

Looking at the alarm history: The View history button provides information on the severity of alarms added, updated, or deleted. Integrated EMS automatically updates, clears, and deletes alarm history.

Merge: The Merge button allows the simultaneously viewing of both alarm annotations and alarm history.

Viewing Alarm details in the Integrated EMS Web Client

At Integrated EMS workstation

1. Refer to the "Launching the Integrated EMS Web Client" in the *Integrated EMS basics guide*, NN10329-111 to launch the client.
2. Click the **Fault Management** tab in the Web Client.
3. Select the **Alarms** view in the Module tree (if not selected).
4. In the alarms table, click the dater icon) under Status column of the managed object for which the event details are required.

   The properties and their values are listed in the Alarm Properties page. For description of properties, refer to the description of properties in Alarm details window table under " Viewing Alarms Details".
5. Click the **Annotation & History** tab to view the annotation and history details of alarm (if any).

Click the Related Alarms tab to view the alarms related to selected alarm.

Clearing an alarm in the Integrated EMS

At the Integrated EMS workstation

1. Refer to the "Launching the Integrated EMS Java Web Start Client" in the *Integrated EMS basics guide*, NN10329-111 to launch the client.
2. Select the **Alarms** panel under Fault Management node in the Integrated EMS tree.
3. Select a required alarm row from the **Alarms** table in the right-hand side.

4 Select the **Edit-->Clear** menu command to change the severity of selected alarm to clear.

Once the alarm severity is changed to clear, the corresponding alarm row is removed from the Alarms panel.

If an alarm is cleared, Integrated EMS changes the severity of that alarm to Clear; updates the Alarms database; generates a event with severity Info and adds it in the Events database.

Resynchronizing alarms in the Topology GUI

At the Integrated EMS workstation

1 Refer to the "Launching the Integrated EMS Java Web Start Client" in the *Integrated EMS basics guide*, NN10329-111 to launch the client.

> ***Note:*** The objects (listed above) that have alarms (in the Integrated EMS database) in sync with the EMS/NE agent do not require re synchronization. Hence those object map symbols do not have the **Resynchronize Alarms** menu item in the popup menu for re synchronization.

2 Select the required panel (Network Elements or Element Managers) under Integrated EMS Topologies node in the Integrated EMS tree.

3 Select the required EMS/NE map symbol in the selected topology panel for which resynchronizing alarms is required.

4 Right-click the map symbol and select the **Resynchronize Alarms** menu item from the popup menu to resynchronize the alarms.

OR

Select the **<Object-specific menu>-->Resynchronize Alarms** command, where the <Object-specific menu> menu indicates the dynamic menu for the selected EMS/NE in the topology.

Resynchronizing alarms in the Inventory GUI

At the Integrated EMS workstation

1 Refer to the "Launching the Integrated EMS Java Web Start Client" in the *Integrated EMS basics guide*, NN10329-111 to launch the client.

> ***Note:*** The objects (listed above) that have alarms (in the Integrated EMS database) in synch with the EMS/NE agent do not require re synchronization. Hence those object map symbols do not have the **Resynchronize Alarms** menu item in the popup menu for re synchronization.

2 Select the Inventory panel in the Integrated EMS tree. You can find the Navigation toolbar in the top part of the Inventory panel in the right-hand side of the Integrated EMS Client.

3 Select a row of required NE in the **Inventory** table for which resynchronizing alarms is required.

4 Right-click any part of the row and select the **Resynchronize Alarms** menu item (refer to the following figure) to resynchronize the alarms

OR

Select the **<Object-specific menu>-->Resynchronize Alarms** menu command, where **<Object-specific menu>** indicates the dynamic menu for the selected EMS/NE row in Inventory table.

Searching and viewing billing records

At any workstation or console

1 Log into the core manager as the root user.

2 Access the billing maintenance level:

 # billmtc

3 Access the tools level:

> tools

4 Access the amadump level:

> amadump <streamname>

where

<streamname> is the name of the billing stream

Example
> amadump ama

5 You can set the search criteria for the dump command, using one or more of the following commands:

Note: Entering each of these commands, provides you with a list of valid parameters for the command.

Command	Purpose
filter	add one or more filters (maximum of 20), which can be used with the dump command to search and display records. Refer to the "CS 2000 Core Manager Accounting, NTP NN10126-811" for guidelines in defining filters. ***Note:*** Use the listfields command to obtain a list of possible field names when you are adding a filtered string.
numblk	set the block number from which to start the search ***Note:*** This applies to DIRP file format only. If the file format is AMADNS, the system ignores this value.
numsrch	set the maximum number of records to search for (1 to 500 000)
numout	set the maximum number of records to display (1 to 500 000)

Note 1: MTX XA-Core systems do not support volumes higher than 175 000 CDRs per hour.

Note 2: When you set numblk, numsrch, and numout, their value is used in subsequent dump commands for the current session. However, if you specify numblk, numsrch, or numout as parameters with the dump command, you override their value.

Note 3: For UCS CDR, you can query and reset the parameters that are currently defined as follows:

Query the search parameters that are currently defined:

AMADUMP>> reinit -q

Reset the search parameters to their default value:

AMADUMP>> reinit -r

6 Display the billing records using the dump command and one or more of its parameters. The dump command syntax is as follows:

AMADUMP>> dump <display_mode> [sum] [numout <numout_value>] [numsrch <numsearch_value>] [numblk <numblock_value>] [filter <filter_string> or <%filter_number>] [fname <filename>] [btime <start_time>] [etime <end_time>]

Note 1: You can use either the filename parameter or the time parameters, but not both.

Note 2: The dump command can take up to a few hours to complete depending on the number of files to be scanned. For this reason, you must be selective when you specify the set of files to dump to prevent any unwanted delays.

Parameter	Description
<display mode> {HEX, DETAILS, NODETAILS, NOSHOW}	HEX displays billing records in their raw (hexadecimal) form

Parameter	Description
Note: This is a required parameter.	DETAILS displays billing records with individual fields and field names preceding the fields ***Note:*** Prior to executing the dump command with the details mode, enter the following command if you want to display more records on the screen: AMADUMP>> set display compact This command enables compact display for the current session. NODETAILS displays billing records with individual fields but no field names preceding the fields NOSHOW displays no billing record information. Often used with the "sum" option to display the number of records in the file.
-s *or* sum	displays a summary of the dump: • filenames • total records in each file • total records matched (or selected) from each file • total of all the records in this specific dump • total records matched in this particular dump, and • search criteria used
-no <numout_value> *or* numout <numout_value>	specifies the maximum number of records to display (1 to 500 000)
-ns <numsearch_value> or numsrch <numsearch_ value>	specifies the maximum number of records to search for (1 to 500 000)
-nb <numblock_value> *or* numblk <numblock_value>	specifies the starting block number for the search ***Note:*** This applies to DIRP file format only. If the file format is AMADNS, the system ignores the value.
-ft <filter_string> *or* -ft <%filter_number> *or* filter <filter_string> *or* filter <%filter_number>	specifies the filter to be used to search and display the records - to define a filter, refer to the "CS 2000 Core Manager Accounting, NTP NN10126-811" for guidelines in defining filters.
-fn <filename> *or* fname <filename>	specifies the file or files to be displayed ***Note:*** o specify multiple files, enter the file list within double quotes and separate each file name with a space.

Parameter	Description
-b <start_time> *or* btime <start_time>	specifies the start date and time of the records to be searched and displayed
-e <end_time> or etime <end_time>	specifies the end date and time of the records to be searched and displayed ***Note 1:*** You can use the start and end time parameters individually, or together. ***Note 2:*** The start and end time parameters are based on the creation date and time of the files, not the date and time contained within the files.

Note 1: For AMADNS file format, you can use either hyphenated or non-hyphenated options, but not a combination of both. For DIRP file format, you can only use non-hyphenated options.

Note 2: You can obtain the filename, and creation date and time of the files using the following command at the core manager prompt:

listfile <streamname>

Note 3: The start time, end time, and filter options are not supported for SMDR record formats.

Note 4: The record count for the AMADUMP “sum” option and listfile commands may not match for SMDR and CDR file formats.

For SMDR, the AMADUMP record count includes all call records and extension records. However, the listfile record count only includes call records.

For UCS CDR in DIRP format, the value of the RECORD_COUNT field in GER is one less than the total number of records (call records and event records) shown by AMADUMP summary.

Note 5: If you want to scroll through all the records, enter “s” when the “more” prompt appears on the screen rather than using the carriage return to see individual records.

Note 6: The filename displayed in the GER record may be different from the filename used in the “dump” command. AMADUMP always displays the filename stored in the GER record as it was created on the core manager (that is, like an active file).

Example:

AMADUMP>> dump details sum fname U020510095947OCC
.....
DIRPFNAME A020510095947OCC

ATM troubleshooting

Call processing failures due to ATM framework problems

Task		Use the section	in document.....
1	Check for alarms on the CS 2000 and isolate the call processing problem.	"Isolating an ATM framework call processing problems"	NN10198-912 *Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Succession Networks Fault management*
2	Check for a Faulty link or network component if you see failure cause codes 27, 35 and 36 in a CVS statistics file.	"Correcting ATM framework call processing problems caused by faulty links or network components"	NN10198-912 *Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Managerin Succession Networks Fault management*
3	Check for address and routing errors if you see failure cause codes 3, 18, 21, and 28.	"Correcting ATM framework call processing problems caused by addressing or routing errors"	NN10198-912 *Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Succession Networks Fault management*

Task		Use the section	in document.....
4	Check for resource exhaustion if you see failure cause codes 37, 45, 47, and 58.	"Correcting ATM framework call processing problems caused by resource exhaustion"	NN10198-912 *Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Succession Networks Fault management*
5	Check for protocol errors if you see failure cause codes 49, 57, 58, 63, 65, 73, 78, 88, 96, 100, 104, and 111.	"Correcting ATM framework call processing problems caused by protocol errors"	NN10198-912 *Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Succession Networks Fault management*

Call quality problems due to ATM framework problems

Task		Use the section	in document.....
1	Trace the call to see if it has been established. If the connection has been established, check for items in tasks 2 and 3. If the connection has not been established, perform task 4.	"Initiating a connection trace"	NN10600-715 *Nortel Networks Multiservice switch 7400/15000/ 20000 ATM Fault and Performance Management*
2	Use the trace outputs (txCellDiscard and rxCellDiscard) to look at the discards along the path.		NN10600-715 *Nortel Networks Multiservice switch 7400/15000/ 20000 ATM Fault and Performance Management*

Task		Use the section	in document.....
3	Try to isolate the cause by identifying and recording any patterns associated with the problem. Note any of the following: • If the problem occurred after a special feature was activated. • If the problem continues to occur on a specific route. • If the problem continues to occur on specific hardware. If the problem continues to occur at a specific time of day. If the problem has occurred several times, do not disconnect the problem call. Call Nortel Networks GNTS using a different line and report the problem. Depending on the pattern you observe, collect as much data as possible from logs, alarms, and SCNs.	"Starting the System Log Display tool" "Data viewer window for replay mode"	241-6001-303 *Nortel Networks Multiservice Data Manager Administrator Guide*
4	Perform a route finder trace to find the address. Check the peer-to-peer connection between MG4000s, the ATM addressing table, and the CS 2000 table filled with ATM addressing information.	"Using the RouteFinder component	

ATM backbone failures and service degradations due to ATM routing problems

Task		Use the section	in document.....
1	Connect to the Nortel Networks Multiservice Data Manager tools	"Connecting to Nortel Networks Multiservice Data Manager tools"	NN10198-912 *Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Succession Networks Fault management*
2	From the Alarm Display tool, launch the Component Information Viewer tool and examine the alarms on the problem Nortel Networks Multiservice Switch 15000.	"Viewing Alarms in the Active Mode" "Starting Component Information Viewer with context"	241-6001-011 *Nortel Networks Multiservice Data Manager Fault Management User Guide*
3	Using the Alarm help and the alarm cause codes, determine the meaning of the alarm, and the status of a connection.	"Viewing Alarm codes from Alarm Display or Component Information Viewer"	241-6001-011 *Nortel Networks Multiservice Data Manager Fault Management User Guide*
		"Cause code reference for call processing"	NN10198-912 Nortel Networks *Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Succession Networks Fault management*
		"Summary of cause codes for ATM PNNI version 1.0"	241-5701-715 *Media Gateway 7400, 15000, 20000 ATM Monitoring and Troubleshooting guide*

Task		Use the section	in document.....
4	If the cause codes suggest a problem with the physical layer, or if you see FP alarms, threshold crossing alarms, or ATM link alarms, examine the physical layer for problems.	"Verifying the status of the link layer"	NN10198-912 *Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Succession Networks Fault management*
	If the cause codes do not suggest a problem or if you do not see these alarms, go to task 5. Note: Carrier VoIP Networks do not support VPCs and VPTs	"Displaying the OSI state of the ATM interface"	NN10600-715 *Nortel Netorks Multiservice Switch 7400/15000/20000 ATM Fault Management andPerformance Management*
		"Examining the buffer usage of ATM function processors"	
		"Displaying the overall connection usage of ATM function processors"	
		"Displaying specialized connection usage of ATM function processor"	
		"Identifying troubled connections at the interface level"	
		"Troubleshooting LRC errors at the ATM interface level"	

Task		Use the section	in document.....
5	If the cause codes suggest a problem with the application layer, or if you see related threshold crossing alarms, examine the application layer. ***Note:*** Carrier VoIP Networks do not support VPC or VPT multi-service debugging. If the cause codes do not suggest a problem or if you do not see these alarms, go to task 6.	"Determining the OSI state of a virtual connection" "Determining the OSI state of the source and destination SPVCs and SPVPs" "Determining the status of a virtual connection" "Viewing ATM connection statistics" "Viewing CTD calculations" "Viewing congestion control activity for connections" "Viewing ATM traffic descriptor parameters"	NN10600-715 *Nortel Networks Multiservice Switch 7400/15000/20000 ATM Fault Management andPerformance Management*
6	If the cause codes suggest a problem with the signalling layer, or if you see signalling-related alarms, examine the signalling layer. ***Note:*** Carrier VoIP Networks do not support IISP. If the cause codes do not suggest a problem or if you do not see these alarms, go to task 7.	"Displaying information on the signaling channel" "Displaying information on ILMI PDUs" "Cause Code Definitions used for call processing troubleshooting"	NN10600-715 *Nortel Networks Multiservice Switch 7400/15000/20000 ATM Fault Management andPerformance Management* NN10198-912 *Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Succession Networks Fault management*

Task		Use the section	in document.....
7	If the cause codes suggest a problem with the routing layer, or if you see alarms related to PNNI connections, examine the routing layer. ***Note:*** Carrier VoIP Networks do not support VPT, VPC, or EBR.	“Port ID information” “Displaying information on the number of calls routed” “Displaying a physical link or a virtual path connection” “Monitoring PNNI networking operational measurements" “Displaying SVCC RCC operational attributes” “Displaying logical link relationships in the PNNI networking hierarchy” “Monitoring PNNI path load balancing” “Using the Route Finder component” “Monitoring PNNI route caching” “Setting RouteFinder component attributes supporting PNNI load balancing and route caching” “Monitoring the topology data base - Displaying ATM service metrics for a horizontal link”	NN10600-715 *Nortel Networks Multiservice Switch 7400/15000/20000 ATM Fault Management andPerformance Management*
		"Cause code definitions used for call processing troubleshooting"	NN10198-912 *Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Succession Networks Fault management*

Task		Use the section	in document.....
8	If the cause codes suggest a problem with the state of the ATM interface, connection admission, or connection mapping, examine the transport layer.	"Displaying the OSI state of the ATM interface" "Identifying troubled connections" "Examining connection admission" "Displaying ATM interface traffic statistics" "Displaying ATM interface operational attributes" "Displaying the last alarmed peak transmit utilization of an ATM link" "Displaying the ConnectionMapping attributes"	NN10600-715 *Nortel Networks Multiservice Switch 7400/15000/20000 ATM Fault Management andPerformance Management*
9	Do this task for service degradation scenarios only. If you see that calls are incrementing under a specific attribute, look up the description of the attribute for additional information.		NN10600-060 *Nortel Networks Multiservice Switch 7400/15000/20000 Components Reference Volumes 2, 5 and 6*

Task		Use the section	in document.....
10	Compare the configured FP values with the recommended values for your Carrier VoIP Network. Compare the configured link values with the recommended values for your Carrier VoIP Network. If the configuration values do not match the recommended values, make required configuration changes. ***Note:*** Consult with Nortel Networks' GNPS before changing your configuration. Provide GNPS with the output of all commands used in this task table.	"Summary of FP configuration" (page 47) "Summary of link configuration" (page 61)	NN10225-512 *Nortel Networks Multiservice Switch 15000 and Media Gateway 15000 in Succession Networks Configuration Attribute Summary*
11	Correct physical layer problems and replace cards as required. ***Note 1:*** If FP resources allow, a faulty port may be reconfigured on a different line pair on the same FP. ***Note 2:*** Consult with Nortel Networks' GNPS before replacing a card.	"Prerequisites for replacing an FP" (page 60) "Replacing a spared or unspared optical FP"	NN10254-913 *Nortel Networks Multiservice Switch 15000 in Succession Networks Replacing an OC3/STM-1 FP*

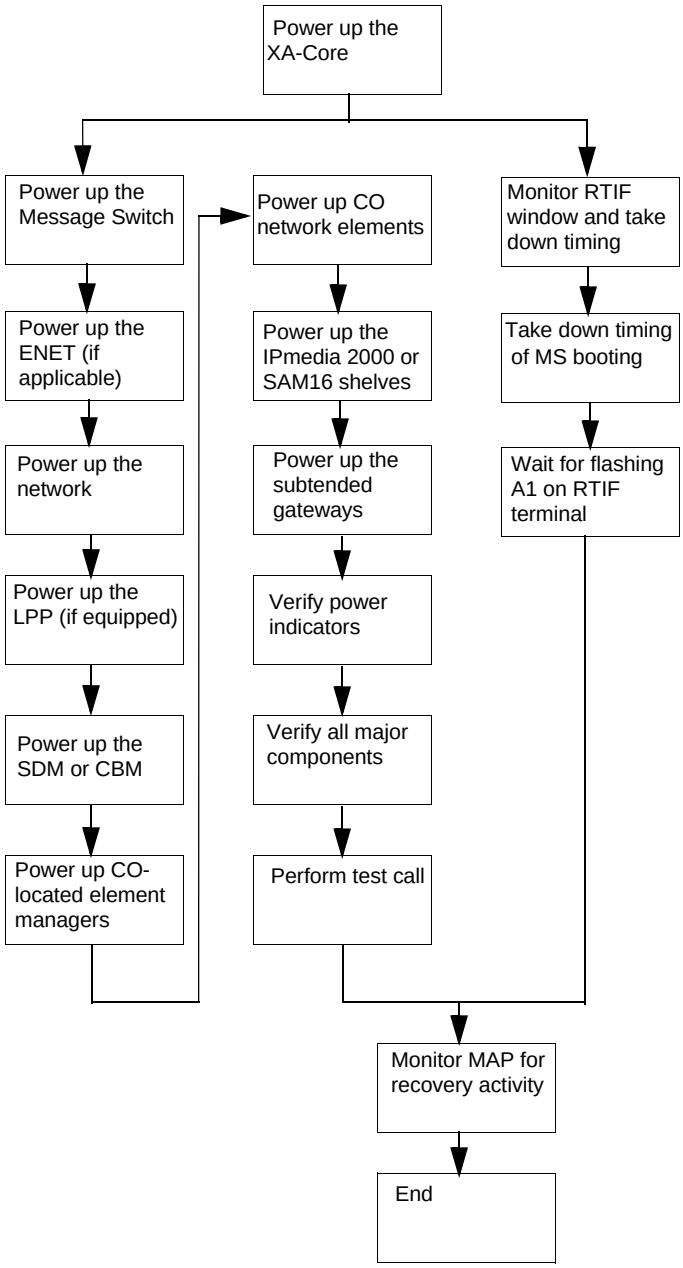
Note: Please refer to NTP NN10198-212, Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager Fault Management guide for hardware troubleshooting information.

Dead Office Recovery

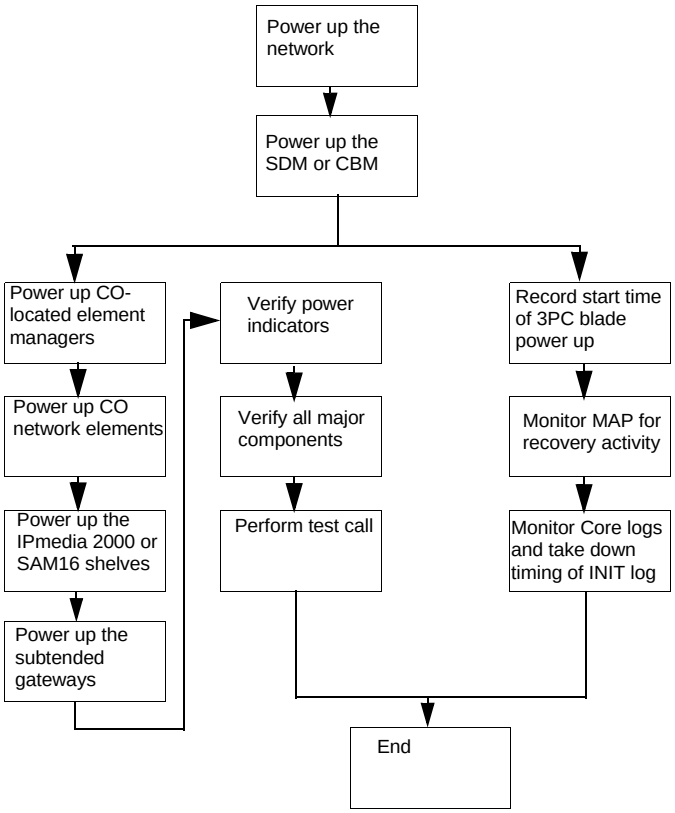
The following flowchart summary is intended as a guide for getting the network in-service. For detailed procedures or steps, refer to the ATM/IP Fault Management Guide NN10408-900.

It is also recommended that data be restored to Network elements. Refer to *ATM/IP Security and Administration,* NN10402-600, for instructions on restoring data to your elements.

Summary of Dead Office Recovery for an XA-Core based office



Summary of Dead Office Recovery for a CS 2000 or CS 2000 Compact based office



DMS troubleshooting information

Calculating node and terminal numbers

		DCM SPANS				
		0	1	2	3	4
CIRCUITS	1	1	31	61	91	2
		32	62	92	3	33
	3	63	93	4	34	64
		94	5	35	65	95
	5	6	36	66	96	7
		37	67	97	8	38
	7	68	98	9	39	69
		99	10	40	70	100
	9	11	41	71	101	12
		42	72	102	13	43
	11	73	103	14	44	74
		104	15	45	75	105
	13	16	46	76	106	17
		47	77	107	18	48
	15	78	108	19	49	79
		109	20	50	80	110
	17	21	51	81	111	22
		52	82	112	23	53
	19	83	113	24	54	84
		114	25	55	85	115
	21	26	56	86	116	27
		57	87	117	28	58
	23	88	118	29	59	89
		119	30	60	90	120

To verify results enter:

>DISPCALL; DISPTID <node #> <TID>

DNs, LENs, Trunks:

Use CONVERT command in PMIST

>CONVERT DN <directory #>

>CONVERT LEN <LEN #>

>CONVERT TRK <CLLI > <Ckt. #>

MPC:

>XPMIST

>NodeNO MPC_NODE MPC<MPC # from Table MPC>

Returns node #. To XPMIST, include TID 0 (mtc. chnl.) & TID 1 (term.#).

IOC 1X67 Card:

>MAPCI;MTC;IOD;IOC <IOC #>;Card <card #>;QUERYTTY <ckt #>

Returns node #. To XPMIST, include TID 0 (mtc. chl.) & TID 1 (term. #).

Attendant Console:

>AC <console CLLI> TIDS shows the DMODEM attached.

DTC:

>PM;Post DTC <DTC #>;QueryPM Provides node number.

[(* 32) + <ckt #> + 1] Provides terminal number.

DCM:

>PM;Post DCM <DCM #>;QueryPM Provides node number.

(See chart below for terminal number)

TOPS IV/MP DMODEM:

>MAPCI;MTC;TRKS;TTP;Post G TOPSPOSDATA <position #>

Provides associated DMODEM.

>Post G DMODEM <DMODEM #>

This shows MTM # (add one to the ckt number to get terminal number).

>PM;Post MTM <MTM #>;QueryPM Provides node number.

TOPS IV/MP Positions:

>MAPCI;MTC;TRKS;TTP;POST G TOPSPOS <Pos. #>

TOPS MPX Position:

>Table TOPSPOS;POS <pos #> Provides TPC number (“63”).

TABLE: TOPSPOS

POS VCCKT VCPD CARD DATAPATH POSAREA NO GRP CODE

_____

100 TMS 0 0 1 NPDGRP DS1SIG TMS MP ASCII 63 0 OPR 2 ALL

>MAPCI;MTC;PM;Post TPC <TPC #>; QueryPM Provides node number and MP number; [<MP #> + 1] — gives terminal number.

ISDN Sets:

>QDN <directory number> Provides LTID.

>QLT <LTID> Provides node and terminal number.

(If QLT only returns a LEN, QLEN will give node and terminal number).

DIP switch settings for 6X21 AD line card

NTP 297-8991-805, Hardware Description Manual

Note: DIP switch settings for the card are dependent on the customer equipment, distance from the office, and cable characteristics.

Note: Default setting from the factory are S1 OFF, S3 ON, S3 & S4 OFF. Relationship of this setting is for a Nortel UDLC line that is Non-loaded, and has a signaling level required for a.14 peak to peak voltage (Vpp) setting.

APPL	D/A Voice (S1)		Balance (S2)		Signaling Level (S3)			
	ON	OFF	ON	OFF	Both ON	Only S4 ON	Only S3 ON	Both OFF
Item #	0 dB	-3.5 dB	NL	9+2	1.3Vpp	.8Vpp	.6Vpp	.14Vpp
*1	X		X		X			
*2	X		X			X		
*3		X		X			X	
*4		X		X				X
*5		X	X					X
*6	X			X			X	
*7		X	X		X			

*1 MSB phone sets with long loops (21-24 dB estimated measured loss (EML))

*2 MSB phone sets with medium loops (17-21 dB EML)

*3 MSB phone sets with medium loops (4-17 db EML)

*4 MSB phone sets with short loops (0-4 dB EML)

*5 Nortel Networks universal digital loop carriers (UDLCs)

*6 Other vendor UDLCs

*7 NT6X21AC equivalent settings

DIP switch settings for 6X50 and 6X85 DS1 cards

NTP 297-8991-505 & NTP 297-YYYY-847

The following equalization/build-out DIP switch settings are for 6X50AA & AB DS1 packs located in the DTC/LGC frames, and 6X85AA & AB DS1 packs located in the SMS/SMU/SMS-R frames. It is important that the DIP switch settings are set properly to prevent SLIPs on the P-side of the carrier system. This can cause customer complaints about problems with FAXing and errors with data transmission, as well as noise if the slips are excessive.

Note:It is important to know the card type (AA, AB etc.), release number on the card, and gauge and length of the DS1 cable from the equipment bay (DTC/LGC etc.) to DSX bay before making any settings.

Note:S1& S2 or S320 & S620 are banks of DIP switches for the even and odd links/ports and are different depending upon the card type.

Note:NTMX81 DS1 Interface Card DIP Switch Settings and the Star Hub Backplane DIP Switch Settings can be found with the Star Remote within this QRG.

6X50AA Cards	
S1 = Even & S2 = Odd Link/Port	
000-300 ft.	Sw 2 & 4 = “On”
301-450 ft.	Sw 3, 6, & 8 = “On”
451-750 ft.	Sw 1, 5, & 7 =”On”

6X50AB Rel 39 and Lower		**6X50AB Rel 40 through 59**	
S1 = Even & S2 = Odd Link/Port		S1 = Even & S2 = Odd Link/Port	
000-300 ft.	Sw 1 = “On”	000-300 ft.	Sw 4 = “On”
301-450 ft.	Sw 2, 5, & 7 = “On”	301-450 ft	Sw 3, 6, & 8 = “On”
451-750 ft.	Sw 3, 6, & 8 =”On”	451-750 ft.	Sw 1, 5, & 7 =”On”

6X50AB Rel 60 & Higher **“22” AWG (Gauge) DS1 Cable**		**6X50AB Rel 60 & Higher** **“24” AWG (Gauge) DS1 Cable**	
S1 = Odd & S2 = Even Link/Port		S1 = Odd & S2 = Even Link/Port	
000-133 ft.	Sw 1 = “On”	000-88.6 ft.	Sw 1 = “On”
134-266 ft	Sw 2 & 3 = “On”	88.7-180.5 ft.	Sw 2 & 3 = “On”
267-399 ft.	Sw 2 = “On”	180.6-269 ft.	Sw 2 = “On”
400-533 ft.	Sw 3 = “On”	270-361 ft.	Sw 3 = “On”
534-655 ft.	All switches to “Off”	362-449.5 ft.	All switches to “Off”

Note: EMI: Electromagnetic Interface Protection

6X85AA Cards Without “EMI” Protection			
S1 Bank = Even Link/Port 0		S2 Bank = Odd Link/Port 1	
000-300 ft.	Sw 4 = “On”	000-300 ft.	Sw 1 = “On”
301-452 ft.	Sw 2, 6, & 8 = “On”	301-452 ft.	Sw 2, 5, & 8 = “On”
453-655 ft.	Sw 1, 5, & 7 = “On”	453-655 ft.	Sw 3, 6, & 7 = “On”

6X85AA Cards With “EMI” Protection			
S1 Bank = Even Link/Port 0		S2 Bank = Odd Link/Port 1	
000-204 ft.	Sw 4 = “On”	000-204 ft.	Sw 1 = “On”
205-514 ft.	Sw 2 = “On”	205-514 ft.	Sw 2 = “On”
515-772 ft.	Sw 1, 5, & 7 = “On”	515-772 ft.	Sw 3, 6, & 7 = “On”

6X85AB/AC **“22” AWG (Gauge) DS1 Cable**		**6X85AB/AC** **“24” AWG (Gauge) DS1 Cable**	
S320 Bank = Even Link/Port 0 S620 Bank = Odd Link/Port 1		S320 Bank = Even Link/Port 0 S620 Bank = Odd Link/Port 1	
000-300 ft.	Sw 2 & 4 = “On”	000-200 ft.	Sw 2 & 4 = “On”
301-452 ft.	Sw 3, 6, & 8 = “On”	201-325 ft	Sw 3, 6, & 8 = “On”
453-655 ft.	Sw 1, 5, & 7 = “On”	326-450 ft.	Sw 1, 5, & 7 = “On”

ISM NTFX44 ILTA and NT2X90 IC/OG test trunk assignments to MLT and other test equipment

FX43 or 0X50 01	POWER 02	0X50 03	0X50 04	0X50 05	FX44 CKT 28 & 29 06	2X90 CKT 26 & 27 07	2X90 CKT 24 & 25 08	2X90 CKT 22 & 23 09	2X90 CKT 20 & 21 10	FX44 CKT 18 & 19 11	2X90 CKT 16 & 17 12	2X90 CKT 14 & 15 13	2X90 CKT 12 & 13 14	2X90 CKT 10 & 11 15	FX44 CKT 8 & 9 16	2X90 CKT 6 & 7 17	2X90 CKT 4 & 5 18	2X90 CKT 2 & 3 19	2X90 CKT 0 & 1 20	FX42 PROC 21
						Odd FX44		Even FX44			Odd FX44		Even FX44			Odd FX44		Even FX44		
						45	01	45	01		45	01	45	01		45	01	45	01	
					NT2X90 SCAN POINT ASSIGNMENTS															

The above is for assignments on the ISM shelf located at position 53 on the frame. The ISM shelf located at position 39 will not have NTFX44 and NT2X90 assignments in shelf slots 6 through 10. Each increment of four NT2X09s and associated NTFX44 is called an “External Loop Test Group.” See the LTDSD, SDGRP and TRKMEM tables in NTP 297-YYYY-350, Translation Guides for signaling distribution assignments.

For further description of the following packs, see the “Circuit Pack Description” within this QRG or see NTP 297-8991-805.

FX44 — Improved Loop Test Accessory (ILTA)

2X90 — IC/OG Test Trunk

RTIF commands and recovery

XA-core Reference Manual, 297-8991-510 and DMS-100 Recovery Procedures, NTP 297-8021-545

This RTIF command is used as an interface to start resets and restarts on the switch. The RTIF display has command entries that start boots, cold restarts, reload restarts and warm restarts on the switch. This section describes the RTIF commands for XA-core.

Note: Refer to the NTP 297-8021-545 for relevant procedures.

RTIF XAC Commands

Perform the following commands at the RTIF terminal.

\BOOT forces a reset which loads an image from a specified SCSI device

\CLEAR clears the display on the screen

\ENABLE enables specified functions of the RTIF

\GET removes the RTIF console from the processor element (PE). This command instructs the RTIF console to run the Input/Output Processor (IOP) firmware command interpreter.

\LOCBAUD sets the baud rate of the local port of the RTIF

\NO provides negative feedback acknowledgement to an approval prompt

\OVERIDE command indicates the beginning of a reset command

\PUT passes the RTIF console back to PE FW or LLM SW

\QUERY command queries the RTIF parameters

\REMBAUD sets the baud rate of the remote RTIF port

\RESET begins a reset for the XA-core

\RESTART begins a restart for the XA-core. Default parameter is warm restart.

\STATUS disables and enables the status window, command window and the response window of the RTIF screen display.

\YES provides positive acknowledgement to an approval prompt

\DISABLE disables a current function of the RTIF

\HELP displays available RTIF commands

\SET sets various parameters to specified values

Supernode loading procedure

Recovery Procedures,NTP 297-8021-545 & 297-9051-545 (International)

To clear/set boot file:

1.List files on SLM from which you want to load (i.e., SLM 0):

>DISKUT;LF s00danyname (Note: s00danyname is an example)

2.To clear boot file:

>CBF S00D CM ALL

>CBF S00D MS ALL

3.Set boot file:

>SBF s00danyname<filename> CM 1 ACTIVE

>SBF s00danyname<filename> MS 1 ACTIVE

To load front end:

From RTIF of inactive side: (Note: if JAM'd, then 'RELEASE JAM' first)

1.**>\BOOT SLM0** %Optional: add "T" to load from SLM tape.

2.Wait for "waiting for activity" prompt.

From RTIF of active side:

3.**>\JAM**

4.**>YES**

Note: If loading active side, first type >\OVERRIDE from its RTIF after loading completes then:

5.Place test calls to ensure that call processing is working.

6.Clear all alarms.

Note: See "RTIF Commands & Recovery' for additional information.

XPM Link configuration

19	15	11	7	3	18 19 14 15 10 11 6 7 2 3	16 17 12 13 8 9 4 5 0 1	UNIT 1 (Shelf 32 & 65)	27 25 19 17 11	31 29 23 21 15
18	14	10	6	2				9 3 1	13 7 5
17	13	9	5	1	18 19 14 15 10 11 6 7 2 3	16 17 12 13 8 9 4 5 0 1	UNIT 0 (Shelf 18 & 51)	26 24 18 16 10	30 28 22 20 14
16	12	8	4	0				8 2 0	12 6 4
01	02	03	04	05	06	07	<— SLOTS —>	22	23
NT6X50 DS1 Interface P-side Links Note: See DIP switch settings for 6X50 in this QRG.					NT6X48 DS30A LCM Links		Unit 0 & 1 Cards	NT6X40 DS30 Network Interface C-side Links	

Note: **P-Side**

- DS1 Links 0,1,4,5,8,9,12,13,16, and 17 are in Unit 0.
- DS1 Links 2,3,6,7,10,11,14,15,18, and 19 are in Unit 1.

Note: See following pages for a DTC (DS1) Network (DS30) port and Channel Mapping table and 6X50 and 6X85 DIP switch settings.

C-Side

- All even-numbered NT6X40 Network Links are Plane 0.
- All odd-numbered NT6X40 Network Links are Plane 1.
- Links 0 and 1 are dedicated to Unit 0 when loading.
- Links 4 and 5 are dedicated to Unit 1 when loading.
- The Message Links for Unit 0 are on the NT6X40 in slot 22 of each unit at Link 0 and Link 1 (Port 0).
- The Message Links for Unit 1 are on the NT6X40 in slot 23 of each unit at Link 4 and Link 5 (Port 2).

NT6X40 DS30 Network Interface Port to Link Assignments			
XPM Port	Network Links	XPM Port	Network Links
0	0 & 1	8	16 & 17
1	2 & 3	9	18 & 19
2	4 & 5	10	20 & 21
3	6 & 7	11	22 & 23
4	8 & 9	12	24 & 25
5	10 & 11	13	26 & 27
6	12 & 13	14	28 & 29
7	14 & 15	15	30 & 31

TIER II Tools

ACDDEBUG

(TAM-1001-001 TAS Nonresidential tool listing)

> ***Note:*** Reference the TAM for a complete list of ACDDEBUG commands and any **CAUTIONS** and **WARNINGS** about their use.

ACDDEBUG tool is used for debugging the ACD system. The ACDDEBUG CI provides facilities for examining and altering ACD data structures in both stationary and dynamic ACD environments. This tool can be used to display the real-time status of ACD/NACD agents, groups, and queues.

Available commands:

>CPIDTOAGT displays LEN and DN for entered cpid, and the CLLI and member # for entered trunk cpid.

>QUERY allows for the display of ACD structures.

Following is an example of a QUERY command and response:

>QUERY NETWORKDATA GROUP NACDD

NACD Group NACDD Network Data

QTHRESH: 0

WTHRESH:0

SRCE_PWF:31

SRCE_RI:0

SRCE_DM:0

BEST_GROUP: NO

TRGT_GRP: 0

NACD_SEL: REM

REM_GRP:NACDP

PWF: 31

GRPS_TALKING: YES

SRCE_RI_LAST_SENT:0

DEST_RI_LAST_RECEIVED:0

DEST_DM:0

CALLTRACK

(TAM-1001-012 CALLTRAK User Guide)

Note: CALLTRAK has a significant REALTIME impact on the switch. If affects every call. Reference the TAM above and see any CAUTIONS and WARNINGS before using any commands.

The CALLTRACK utility is used to trace call processing information.

>CALLTRAKaccesses the CallTrak level (may require password).

>ALLTOOLSuse to enable or disable all available tools.

>DISPLAYuse to show the output.

>MSGTRACEuse to monitor incoming or outgoing messages.

>PGMTRACEuse to trace call processes through portions of the program code.

>QUIT use to leave CallTrak level and return to the CI level.

>REMOVEuse to remove command to deselect originating terminal(s) or agent(s).

>SELECTuse to set origination terminal(s) or agent(s).

>SESSION use to control CallTrak's virtual session capability, that is, users may monitor, create, delete, and move between sessions.

>START use to begin tracing activity originating from the selected terminals.

>STATUS use to display list of selected terminals & tools.

>STOP use to stop call tracing activity.

>TIDTOVID use to map specified terminal identifier (TID) to one or more associated virtual terminal identifiers (VIDs)..

>TIMECALLuse to collect and output call timing information.

>VIDTOTID use to map the specified VID to the corresponding TID and extension byte.

To run CALLTRAK

>**CALLTRAK**
>**PGMTRACE ON**
>**PGMTRACE BUFSIZE 10000**
>**PGMTRACE EXCLUDE PACKAGE SOSBILGE** (Becomes PACKAGE NUCLEUS in TL09)
>**PGMTRACE EXCLUDE MODULE JNETUI**
>**PGMTRACE EXCLUDE MODULE BCLAMAUI**
>**PGMTRACE DISPLAYOPTS SET RETADDR EDITION** (Only if return addresses and edition codes are needed)
>**MSGTRACE ON**
>**MSGTRACE BUFSIZE SHORT 230**
>**MSGTRACE BUFSIZE LONG 65**

You can select a terminal by one of the following:

>**SELECT LEN <the LEN (AA-B-CC-DD) of the agent>**
>**SELECT TID <node and terminal>**
>**SELECT LTID <LTID Grp> <Terminal> [<key>]**
>**SELECT TRK <CLLI and member>**
>**SELECT DN <the Directory Number>**

>**START**
"Make the test call"
>**STOP**
>**RECORD START ONTO <device>**
>**DISPLAY MERGE**
>**RECORD STOP ONTO <device>**

To capture another CALLTRAK without overwriting the first:

>**STATUS** (Note the session #)
>**SESSION NEW** (Note the new session #)
Note: At this point you can do the START command again.
>**SESSION CURRENT <session #>** (toggles to the session)

To send the display output to a file:

>**DISPLAY MERGE NOWAIT <device> FILE <filename>**

XPMIST

(*PMIST User Guide, TAM-1001-007)*

Note: Reference the above TAM for a complete list of XPMIST commands and any **CAUTIONS** and **WARNINGS** about their use.

To set up XPMIST:

>**XPMIST**
>**SELECT ON**
>**ASSOCIATE ENA**
>**ASSOCIATE ON**
>**INCLUDE <node #> <terminal #> <node #> <terminal #>. . .***
>**INTERCEPT BOTH MON**
>**RECORD OPEN <device> <filename>**

***** Include up to eight node/terminal number combinations.

Place test calls. When finished:

>**RECORD CLOSE**
>**DISPLAY <filename>**

For longer files you can extract by time, callid, or terminal number:

>**EXTRACT OPEN <filename>**
>**EXTRACT FROM <hour> <min> <sec> TO <hour> <min> <sec>**

—or—

>**EXTRACT CALLID <callid>**

—or—

>**EXTRACT TID <node> <terminal #>**
>**EXTRACT CLOSE**

Note: You may need to type TERMINATE in XPMIST prior to setup if the file does not seem to be collecting data.

XPMIST call processing messages

(*PMIST User Guide,TAM-1001-007*)

ABANDON_MSG	Trunk exited during digit collection.
ANI_MSG	Reports results of ANI identification on party line.
ANSWER_MSG	Terminal answered the call.
ATD_RESULT_MSG	Reports results from an audio tone detector.
CALL_ABANDONED_MSG	Line exited during digit collection.
CALL_FAILURE_MSG	Terminal detected call failure.
CHANNEL_BLOCKING_ MESSAGE	Call blocked in XPM (no P-side channel).
CLEAR_BACK_MSG	Outgoing trunk exited.
CLEAR_FORWARD_MSG	Incoming trunk exited.
COIN_MSG	Reports results of a coin control function on a coin line.
CONF_AVAILABLE	Conference circuit now available (after queueing).
CONFUSION_MSG	Terminal detected a supervision error.
CPOS_AVAILABLE	CAMA position now available.
CPWAKEUPMSG	Reports time-out from the CP wakeup utility.
DGT_RECEPTION_ERR_MSG	Error detected during DTMF digit collection.
DIGITS_MSG	Reports dialed digits; collection continuing.
DIGITS_SENT_MSG	Outgoing trunk has finished outpulsing.
DM_REPORT_MSG	Reports key hits from TOPS, AOSS, IBN AC.
DP_RECEPTINO_ERR_MSG	Error detected during DP digit collection.
EXIT_MSG	Line exited.
FEATURE_MSG	Requests invocation of an FPE feature.
FLASH_MSG	Terminal flashed.
GLARE_MSG	Glare detected on a trunk.
INTEG_FOUND_MSG	Terminal found integrity.
INTEG_LOST_MSG	Terminal lost integrity.
INTRA_BLOCKING_MSG	XPM couldn't intraswitch; reroute through NMs.
LAST_DIGITS_MSG	Reports dialled digits; collection stopped.

LOCKOUT_MSG	Terminal failed to idle properly.
OPERATOR_CONTROL_MSG	Winks detected on an operator trunk.
ORIG_DIGITS_MSG	Trunk wishes to originate a call; digits collected.
ORIG_KEY_MSG	PPhone wishes to originate a call on non-DN key.
ORIGINATION_MSG	Terminal wishes to originate a call.
PREEMPT_CLEAR_MSG	Autovon trunk exited due to other-end preempt.
PREEMPT_INTERNAL_MSG	From preempting call to preempted call.
PREEMPT_REUSE_MSG	Release Autovon trunk for use by a new call.
RCVR_AVAILABLE	RCVR now available (after queueing).
RCVR_ERROR_MSG	Error detected during digit reception.
RELEASE_CALL_MSG	Terminal is to be force released.
REMOTE_BUSY_MSG	Line is to be force released.
REMOTE_DATABASE_ CP_NOTICE_MSG	Response received from DCP (US Sprint).
RINGING_TROUBLE_MSG	Error detected during ringing of line.
ROUTING_MSG	Causes setup processor to invoke router.
SA_MSG	Reports results to service analysis system.
SEIZED_MSG	Outgoing trunk seized successfully.
SVCT_AVAILABLE	Sender now available (after queueing).
TREATMENT_MSG	Causes setup processor to apply treatment.
UTR_DENIED	XPM could not obtain receiver for digit collection.
WINK_MSG	Wink detected on a CAMA trunk.
XPM1_CC_FEATURE_MSG	Feature message requested from XPM, 0-63.
XPM2_CC_FEATURE_MSG	Feature message requested from XPM, 64-127.

XPMIST Breakdown for Attendant Console

Note: The following examples contain abbreviations and may not appear exactly as a printout.

XPMIST Example:

INCOMING 13:51:05.3 NODE TYPE= TM_NODE DM_REPORT_MSG

NN= 0031 TN= 0007 MSGTAG= 01 ROUTE= 4080 ERR= 00 LENGHT= 13 AGENT= DMODEM 22

5F 00 00 07 01 14 12 0F 15 6C 1C

CALLID= 925734

digits dialed: 5306

key hit message 1 + 4 -> 5

1 + 2 -> 3

0 + F -> 0

1 +5 -> 6

XPMIST Example:

INCOMING 13:51:05.3 NODE TYPE= TM_NODEDM_REPORT_MSG

NN= 0046 TN= 000F MSGTAG= 01 ROUTE= 4000 ERR= 00 LENGTH= 0F

AGENT= DMODEM 10

5F 00 00 03 01 3C 1C

CALLID= 689675

key number from “Internal to Physical Key Mapping” diagram: 3C -> key 29 in Table FNMAP

key hit message

XPMIST Example:

0038CALLXEC C3 **A U T H : I N P U T**

0242CDTB 1D 30 90 97 07 41 55 54 48 3A 20 49 4E 50 55 54 20 20 20

20 20 87 00 00 C0 00 96 10 0C

display message — ASCII characters

XPMIST Example: lamp messages

0038CALLXEC C3

0242CDTB0B 30 90 82 02 82 7B 88 00 0C 00 00

02 -> 0000 0010: lamp 0 — 120 IPM

7B -> 0111 1011: lamp F — on

lamp states: state

000 = off lamp

001 = 60 IPM

010 = 120 IPM

011 = on

111 = 20 IPM

lamp numbers (from CI):

>AC <console CLLI> DISPL LAMPS

Decimal to HEX to Binary Chart

Decimal	HEX	Binary
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
10	A	1010
11	B	1011
12	C	1100
13	D	1101
14	E	1110
15	F	1111

XPMTRAK

(TAM-1001-004 PMDEBUG Technical Assitance Manual)

> ***Note:*** Reference the TAM for a complete list of XPMTRAK commands and any CAUTIONS and WARNINGS about their use.

The XPMTRAK is a common utility interface to the PMDEBUG tools. PMDEBUG XPMTRAK can gather a trmtrace, msgtrace, and pgmtrace all at once.

To set up XPMTRAK:

>PMDEBUG <xpm> <#> <unit>

>XPM

>TR ON %% trmtrace

>MS ON %% msgtrace

>PG ON %% pgmtrace

>SE <nn> <tn> %% external node & terminal number

>STAT

>STAR

********** Make test call now **********

>STO

>ALL DISPLAY FULL

>A C%% clears all buffers

>R <nn> <tn> %% exits out of XPMTRAK level

>***** %% exits out of XPMTRAK level

>QUIT

TERMTRACE Setup

TERMTRACE utility traces procedure calls on the XPM. It is accessed from the PMDEBUG level. To use TERMTRACE:

1. Find the NN and TN.

2. **>PMDEBUG <pm type> <pm #>**

Ex: **>PMDEBUG DTC 0**%%BY NOT SPECIFYING THE UNIT #,THE ACTIVE UNIT WILL AUTOMATICALLY BE SELECTED

3. >CP

4. >E <nn> <tn>%% NOTE DOWN THE INTERNAL TERMINAL #

5. >* %% GO UP ONE LEVEL

6. >TR %% GO INTO TERMTRACE

7. >I %% should terminals/event data survive restarts?

8. >N

9. Enter <starting term> <ending term> range %% INTERNAL TERMINAL #

10. <cr> for max physical buffers

11. >A <starting term> <ending term> %% ASSIGN THE INTERNAL TERMINAL #

12. >L 3 %% Always use level 3

13. >E %% Enable termtrace

****************** Make test call now ***********************

14. >D %% Disable the tracing

15. >P %% Go to printout level

16. >D <starting term> <ending term> %% Dump the termtrace data

17. >* %% Go up one level

18. >U %% Unassign the internal number

19. >K %% De-allocates the buffers

20. >** %% Up 2 levels

21. >QUIT %% Quit out of PMDEBUG

REMLOGIN Command

This allows users on the central node (CM node) to login to other SOS based nodes and execute CI commands there. While in REMLOGIN, other tools such as LOGUTIL, FOOTPRT, and DEBUG can be used. An SOS109 log is generated each time REMLOGIN is entered and exited.

Note: Read the WARNING notice after inputting the command.

>**REMLOGIN <QUERY or <node name>> [<infile>] [<outdev> <outfile>**]

>**QUERY**	displays current remote CI session information.
>**QUERY ALL**	displays all users with remlogin sessions currently active on any node.
>**STORE ALL USAGE**	displays data and program store amounts.
>**SWNODE**	used to switch between CI and remote sessions.
>**IMAGENAME**	displays load image name information of node.
>**REMLOGOUT**	used to logout of REMLOGIN.

ISDN BRI Troubleshooting PM180 and PM189 Logs

Scenario: The following PM180 has just occurred from LTC 3:

* PM180 JAN1 19:12:49 1300 TBL PM SW EXCEPTION REPORT
LTC 3 Unit 0: Act
TASKID: 000E000E MPAUDTK, TIME: 19:12:48.99, COMID: FF NILCID
TEXT: transssb 00 01 1B 64 00 15 00 00

Additional information on PM180s and PM189s can be obtained from the PMDEBUG Swerr level. Use the following procedures:

STEP 1. Determine the SETTID of the SWERRing set:

SETTID information can sometimes be derived from the text of the PM180/189. In this case, the PM180 text is: 00 01 1B 64 00 15 00 00. ISDN BRI terminal numbers (settids) range from 6700 to 7055 (#1A2C to #1B8F). Using PMDEBUG, the decimal settid can be used to determine which ISDN line is responsible for the PM SWERR. In this case, our SET-TID = #1B64.

STEP 2. Determine the DN of the SWERRing SETTID:

First convert #1B64 to decimal number 7012. Next go into PMDEBUG and go to the ISdncp (Bradntbl level) and do a ONEDUMP on 7012. This will give you the DN. Use the following commands:

>**PMDEBUG LTC 3 2**
>**ISDNCP**
>**BRADNTBL**
>**ONEDUMP 7012**

Pool idx: 7 Lidx: 0

Index	next	AF	AM	AS	Frmt	num_calls	Key	digits
22	23	0	0	0	DN	3	1	4074844040

Index	next	AF	AM	AS	Frmt	vidtype	Key
23	0	1	0	0	VID	GIC	5
NIL	255						
NIL	255						
NIL	255						

SPM PRI Q931 Message Tracing tool (MSGTRAC)

Warning: Anyone using the following tool messages should be familiar with use of REMLOGIN. The PRI message tracing tool is available at the root directory level in the DLC RM for the SPM.

Note: The active CEM and DLC will be needed for REMLOGIN. The can be obtained after POSTing the SPM at the MAPCI;MTC;PM level.

The following is an example for using the tool:

CI:> **remlogin spm <spm #><active CEM unit #>**
dSH8:> **remlogin -s<active dlc slot #>**
dSH12:> **cd msgtrc**
dSH12:> **ls** (use ls command if you want to see list of msgtrac commands)
dSH12:> **alloc [12/13]<nmblks>** (layer 2 = 12; layer 3 = 13; nmblks = 10 to 1000 buffers)
dSH12:> **enable [12, 13][in, out, both]**

For Q931 message monitoring on a specific D-Channel use commands:

dSH12:> **dchdump** (Mapping of the D-Channel ckt # timeslot to its logical Dchnl # and 13Suld is obtained)
dSH12:> **selectdch <LogDCHnum>** (Note: By default, ALL the PRI D-Channels on the SPM are selected for layer 2 and/or layer 3 message tracing. This is done so that the SPM message tracing tool behavior is similar to the one on the DTCI XPM.)

To dump out all the captured Q931 layer 2 or 3 or both messages to the

screen use:

dSH12:> **display [12, 12, both]**

Note: When finished, use the **DISABLE** command to turn off tracing, the **DEALLOC** command to deallocate the buffers for layer 2 or layer 3, or both, and the **CLEAR** command to clear the D-Channel captured msgs.

ISDN Q931 Procedures for Traces on BRI and PRI

Note: For BRI Q931, see NTP 297-2401-501 *DMS-100F ISDN BRI Maintenance Guide* and the chapter on “Protocol Analysis” using PMDEBUG.

TABLE: TRKSGRP
>**pos pri2w 0**
PRI2W 0 DS1SIG ISDN 10 20 87Q931 2 N STAND USER
PT_PT USER N UNEQ 30 N DEFAULT DTCI 0 **11 24** 64K
HDLC $ **%%%% 11 is span number needed for pmdebug**
>**pmdebug dtci 0**
PMDEBUG MODE - CONNECTING TO DTCI 0 UNIT 0
WARNING: You now have access to PM monitor....proceed with caution
LTCUP>**isdncp**
UP:ISdncp>
<Isprottbl, Lterm,Trmtype,Sidx, Ccbcs, ISLT_unprot, ISCall_unpr, IS_c_te_unp, IS_T_te_unp, IS_Loop_unp, DUmp_smb, HEX_smb, ISOptns, SSb, FSBMon, Hsg, Bradntbl, LLmsim, ISLoop, FSB,Eventsim, CCSim, SCp_x_gen>

UP:ISdncp>**hsg**

Pridump,Dchdump.
UP:Hsg>**pridump**

		PSIDE	TIMESLOT	CSIDE			
HSG	SERVICE	PORT	CHNL	CHNL	PORT	CHNL	SIDX
---	-------	----	----	----	----	----	----
31	PRA	0	24	31	2	30	3968
30	PRA	1	24	31	3	30	3840
29	PRA	** 11 **	24	31	11	30	**3712**
							%%% 3712 sidx needed
28	UNA	**%%% is span 11 %%%**					
27	UNA						
26	UNA						
25	UNA						
24	UNA						
23	UNA						
22	UNA						
21	UNA						

Continue Quit

UP:Dump>***** (**note: *asterisk = leave 1 level)**

UP:Hsg>*****

UP:ISdncp>
<Isprottbl, Lterm,Trmtype,Sidx, Ccbcs,ISLT_unprot, ISCall_unpr, IS_c_te_unp, IS_T_te_unp, IS_Loop_unp,DUmp_smb, HEX_smb,ISOptns, SSb,FSBMon, Hsg, Bradntbl, LLmsim,ISLoop, FSB, Eventsim, CCSim, SCp_x_gen>

UP:ISdncp>**sidx 3712**

Searching the TERM_PROT_TBL...

355 356 357 358 359 360 361 362 363 364
365 366 367 368 369 370 371 372 373 374
375 376 377 378 7052 **%%%% index for llsim option select tid**
Done searching.

UP:ISdncp>**llmsim**

<Mon, MOFf, Options_llm>

UP:LLmsim>**opt**

<ININT, INMon, INOff, OUTINT, OUTMon, OUTOff, Alloff, Hex, Verbose, SYNC, Stid, Ltid, Etid, Ramfile, SCreen, Jdm, JTd, OPt-dump, SElect, REmove, Dlselect, DLRemove>

UP:Options_llm>**select 7052**

7052 has been added to the select list.

Enter Set TID to select:

UP:SElect>

The following Set TIDs are in the select list:

7052

UP:Options_llm>*****

UP:LLmsim>

<Mon, MOFf, Options_llm>

UP:LLmsim>
>**disp off** (optional)
>**mon**

Incoming monitor is now on.

OUT=Off; IN=Mon; Options=[verbose,stid,ltid,etid,spa,ramfile,screen]

Outgoing monitor is now on.

<== Q931: SETUP: from S[7052] L[1,378,0] E[41,377,0] SPA[----]
CR: 0,01
BC: speech
64 kbit/s
circuit mode
mu-law speech
CID: 0
Channel Type: B - Channel Units (3).
Number Map: Channel is indicated by the number following.
Slot Map/CH#: 01
CGN: private_numbering_plan **%%%% calltype from ltcalls that needed datefilled %%%% as pvt. Only pub was datafilled**.
unknown
user_provided_not_screened
presentation_allowed
3103332
CDN: private_numbering_plan
unknown
2440063

==> Q931: REL COM: to S[7052] L[1,378,0] E[41,377,0] SPA[----]
CR: 1,00 01
CSE: user
incoming_calls_barred

<== Q931: SETUP: from S[7052] L[1,378,0] E[41,377,0] SPA[----]
CR: 0,01
BC: speech
64 kbit/s
circuit mode
mu-law speech
CID: 0
Channel Type: B - Channel Units (3).
Number Map: Channel is indicated by the number following.
Slot Map/CH#: 01
CGN: private_numbering_plan
unknown
user_provided_not_screened
presentation_allowed
3103332
CDN: private_numbering_plan
unknown
2440064

==> Q931: REL COM: to S[7052] L[1,378,0] E[41,377,0] SPA[----]
CR: 1,00 01
CSE: user

incoming_calls_barred

UP:LLmsim>
>**moff**
Incoming monitor is now off.

OUT=Mon; IN=Off; Options=[verbose,stid,ltid,etid,spa,ramfile,screen]

Outgoing monitor is now off.

UP:LLmsim>
>**disp on** (optional)
>**quit**

CCS7 Test Utility (C7TU)

(TAM-1001-015, C7TU User Guide)

Before using the C7TU commands below, see the TAM above and review the **Danger**, **Warning**, and **Caution** messages.

C7TU Commands:

>**C7TULINK** access the C7TULINK test environment. Use Q or HELP C7TULINK to get list of optional commands.
>**C7TUREC** record unformatted C7TU reports to a file on the specified device. Use HELP C7TUREC for commands
>**C7TUPRT** formats and prints C7TU reports.
>**DPC {REPORT <on/off>, QUERY <routeset name>** turn on/off routeset status change report. Query a DPC status.
>**MSGCODE** list C7TU message codes and descriptions.
Note: See ISUP messages codes on the next page.
>**QUIT** exit C7TU.

Monitoring CCS7 Messages:

>**C7TUREC START <device name> <file name>**
>**C7TULINK**

Monitor all routes using specified linkset:

>**MON LINK <linkset name> <member in linkset> <direction {IN, OUT,+BOTH}> ANSI ALL <msg code> DATA**

Monitoring linkset specifying route:

>**MON LINK <linkset name> <member in linkset> <direction {IN, OUT,+BOTH}> ANSI LABEL ALL <network indicator {INTL, INTLSP,+NATL, NATLSP, ALL}> <priority {0 to 4}(4=all)> <DPC*>+<OPC*> <SLS {0 to 32}(32=all)> <msg code> DATA**
*__Note:__ DPC/OPC format is **<member> <cluster> <network>**

Selecting PM for monitor (sends MONITOR to PM):

>**SELECT <PM {MSB7 or LIU7}> <PM #> ON**

Restoring all monitor intercept/intercept request following a restart:

>**RESTORE**

Removing Monitors/Printing Results:

>**REMOVE MATCH <item {0 to 7 or ALL}>**
>**SELECT <PM {MSB7 or LIU7}> <PM #> OFF**
>**C7TUREC STOP**
List device (i.e., >**LISTVOL <volume>**), then print records —
>**C7TUPRT <filename>**

Match and Mask Commands:

Use the MATCH command to indicate which bytes of data to be matched during the monitor.
>**MATCH <item #> <byte offset> <match bytes>**
Ex: >**MATCH 0 14 01** **Note:** '01' is message code for an IAM

Note: Use the MASK command to mask out bytes during the monitor. The mask bytes are not used to compare for matching messages.
>**MASK <item #> <byte offset> <mask bytes>** Ex: >**MASK 0 14 FF**

Note: Concerned node can be assigned using the MATCH and MASK commands or by using "parms" option of the MONITOR command.

Table entry for ISUP messages

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Internal Use				SIO	DPC			OPC			SLS	CIC		H1/H0	Spare

5 - Member - 8 6 - Cluster - 9 7 - Network - 10

Note: CIC and spare (data) can be assigned using MATCH and MASK commands or using “parms” option in the MONITOR command.

Table entry for non-ISUP messages

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Internal Use				SIO	DPC			OPC			SLS	H1/H0	Spare		

5 - Member - 8 6 - Cluster - 9 7 - Network - 10

Note: Spare (data) can only be assigned using the MATCH and MASK commands.

Table entry for Signal Network Message (SNM) messages

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Internal Use				SIO	DPC			OPC			SLS	H1/H0	Concerned Node		

5 - Member - 8 6 - Cluster - 9 7 - Network - 10

ISUP MSG Codes as listed with C7TU Msgcode

MSG CODE	DESCRIPTION	‘	DI	SI	H1H0
MTC	ST Maintenance		01	X	XX
LDR	ST Loader		02	X	XX
MON	ST Monitor		03	X	XX
EXT	C7 External (NO MATCH ALLOWED)		04	X	XX
. ISUP	ISDN User Part		.	05	XX
. . . IAM	Initial Address Message		.	-	01
. . . SAM	Subsequent Address		.	-	02
. . . INR	Information Request		.	-	03
. . . INF	Information		.	-	04
. . . COT	Continuity		.	-	05
. . . ACM	Address Complete		.	-	06
. . . CON	Connect Message		.	-	07
. . . FOT	Forward Transfer		.	-	08
. . . ANM	Answer		.	-	09
. . . UBM	Unsuccessful Back Set-Up		.	-	0A
. . . REL	Release		.	-	0C
. . . SUS	Suspend		.	-	0D
. . . RES	Resume		.	-	0E
. . . RLSD	Released		.	-	0F
. . . RLC	Release Complete		.	-	10
. . . CCR	Continuity Check Request		.	-	11
. . . RSC	Reset Circuit		.	-	12
. . . BLO	Blocking		.	-	13
. . . UBL	Unblocking		.	-	14
. . . BLA	Blocking Ack		.	-	15
. . . UBA	Unblocking Ack		.	-	16
. . . GRS	Reset Circuit Group		.	-	17
. . . CGB	Circuit Group Blocking		.	-	18
. . . CGBA	Circuit Group Blocking Ack		.	-	1A
. . . CGU	Circuit Group Unblock		.	-	19
. . . CGUA	Circuit Group Unblock Ack		.	-	1B
. . . CMR	Call Modification Request		.	-	1C
. . . CMC	Call Modification Complete		.	-	1D
. . . RCM	Reject Connect Modify		.	-	1E
. . . FAR	Facility Request		.	-	1F
. . . FAA	Facility Accepted		.	-	20
. . . FRJ	Facility Reject		.	-	21
. . . FAD	Facility Deactivated		.	-	22
. . . FAI	Facility Information		.	-	23
. . . LPA	Link Loop-around Ack		.	-	24
. . . CSVR	Select & Validate Request		.	-	25
. . . CSVS	Select & Validate Response		.	-	26
. . . DRS	Delayed Release		.	-	27

. . . PAM	Pass Along	.	-	28
. . . GRA	Reset Circuit Group Ack	.	-	29
. . . CQM	Japan Circuit Query	.	-	2A
. . . CQU	Circuit Query	.	-	2A
. . . CQR	Circuit Query Reply	.	-	2B
. . . CPG	Call progress message	.	-	2C
. . . USR	User to User Info.	.	-	2D
. . . UCIC	Unequipped CIC	.	-	2E
. . . CFN	Confusion	.	-	2F
. . . CRG2	Charge information	.	-	31
. . . FAC	Facility	.	-	33
. . . UPT	User Part Test	.	-	34
. . . UPA	User Part Available	.	-	35
. . . IDR	Identification Request	.	-	36
. . . IRS	Identification Response	.	-	37
. . . SGM	Segmentation	.	-	38
. . . APM	Application Transport	.	-	41
. . . PRI	Pre-Release Information	.	-	42
. . . CRA	Circuit reservation ack	.	-	E9
. . . CRM	Circuit reservation message	.	-	EA
. . . CVR	Circuit validation response	.	-	EB
. . . CVT	Circuit validation test	.	-	EC
. . . EXM	Exit message	.	-	ED
. . . A7REL	Austrian Release	.	-	0B
. . . A7LPA	Austrian Loop Back Ack	.	-	EF
. . . FVBF	Fangen Vorb Freig	.	-	FB
. . . ALT	Japan Alerting	.	-	FC
. . . FVB	Fangen Vorbereiten	.	-	FC
. . . PRG	Japan Progress	.	-	FD
. . . FANG	Fangen	.	-	FD
. . . CHG	Japan Charge	.	-	FE
. . . EIN	Einhaengen	.	-	FE
. . . AUF	Aufschalten	.	-	FF

Quick reference information for major network functions and features

Nortel Networks Multiservice Switch/Media Gateway commands

Nortel Networks Multiservice Switch/Media Gateway Command quick reference

The following table provides a Nortel Networks Multiservice Switch/Media Gateway command quick reference. For details on command options, refer to 241-5701-050 Nortel Networks Multiservice Switch 7400, 15000, 20000 Commands. Each description below also specifies what mode, (P) for provisioning or (O) for operational, you can be in to use the command. Many of the commands listed in this table have options associated with them.

Command	Abbreviation	Description
add <component>	a	Adds a new component to the edit view. (P)
delete <component>		Removes a component (and its subcomponents) from the edit view. (P)
list <component>	l	Lists subcomponents of a component or all instances of a type of component. See the other side of this card for command options. (P, O)
display <component>	d	Displays all the attributes of a particular component in a particular view. (P, O)
find <component>	f	Finds all the available components that can be linked to a given component or component class. (P, O)
set <component> <attr> <value>	s	Changes the value of an attribute for a particular component. (P, O)
help <component>	h	Provides information about commands, components and attributes. See the other side of this card for command options. (P, O)
lock <component>		Prevents additional use of a component, such that eventually the component will not be in use operationally. (P, O)
unlock <component>		Changes the operational use of a component. It is normally used after the lock command. After unlock has been issued, the component is ready to provide service. (P, O)
start prov	st prov	Starts provisioning mode. Only one provisioning session is allowed at a time. (O)
end prov		Exits provisioning mode. (P)
clear prov		Deletes all non-permanent components from the edit view. (P)
copy prov		Copies components from a specified view (current view or edit view) into the edit view.(P)
check prov		Invokes semantic checking of components in the edit view. (P)
activate prov		Copies the edit view into current view, thus making this the actual configuration of the node. This involves modifying the running configuration and/or software on the node. (P)

Nortel Networks Multiservice Switch/Media Gateway Command quick reference		
confirm prov		**Ensures that connectivity to the operator is maintained after activation. If the operator cannot confirm, then the node will roll back to the committed view after 20 minutes. (P)**
commit prov		**Sets the current view of the provisioning data as the committed view. (P)**
load prov		**Loads provisioning data stored on disk into the edit view. (P)**
tidy prov		**Deletes provisioning data from the disk. Note: Do not use file system commands to delete provisioning files. (P, O)**
save prov		**Saves the provisioning data from a particular view on the disk. (P)**
stop prov		**Stops a running check, apply, load, or save command as soon as possible. (P)**
apply prov		**Applies a previously stored set of changes (on the disk) to the edit view. (P)**
logout, quit	**logoff, exit**	**Ends your operator session. (P, O)**
switchover lp		**Allows you to manually switch control between the active and standby processor cards of an LP. Note: Do not perform a CP switchover more than once every 10 minutes.(P, O)**

Using this summary card

This card is a quick summary to assist you in using Passport common operator commands. It provides definitions of operating modes and gives a brief description of common commands.

For additional information on commands, see 241-5701-050 <Italic>Passport 7400, 15000, 20000 Commands.

Operating modes and common commands

When and how you use Passport commands depends on your current operating mode. At any given time, you will either be in operational mode or provisioning mode. The following are the four types of commands:

- **Common commands used in operational mode** — used outside of provisioning mode. These commands may be applied to almost all Passport components. This group of commands includes display, list, set, help, lock, and unlock.
- **Common commands used in provisioning mode** — common to all components. These commands may be applied to almost all Passport components. This group of commands includes add, delete, display, list, set, and help.
- **Provisioning system commands** — specific to the ProvisioningSystem component. These include start prov, end prov, clear prov, copy prov, check prov, activate prov, confirm prov, commit prov, load prov, tidy prov, save prov, stop prov, and apply prov.
- **Component-specific commands** — unique to individual Passport subsystems. Most component-specific commands are operational commands. Refer to 241-5701-060 <Italic>Passport 7400, 15000, 20000 Components, for component-specific commands.

For a brief description of common commands, refer to the other side of this card.

The current view and the edit view

Within Passport, you work mainly with two views of data:

- **Current view** — represents the actual running configuration of the node. This view contains both operational and provisioned components and their operational and provisioned data.You may not directly modify the provisioned data contained in this view.
- **Edit view** — represents a potential next configuration of the node. This view contains only provisioned components and their provisioned data.

You may edit this view through the use of provisioning system or common provisioning operator commands. When you are in provisioning mode, the edit view is the default view for most commands.

Wildcarding

The list, display and find commands support Wildcarding. Substituting an asterisk (*) wildcard or wildcard pattern for the last component type or an instance will give you multiple components. You can substitute many instances with a wildcard, but you cannot combine type and instance wildcarding.

Using the list command

The list (l) command is used to display the subcomponents of a particular component in a particular view (edit or current). Here are some examples:

l	Lists all the top-level components of the node.
l sw	Lists all software subcomponents.
l lp/*	Lists all existing logical processors.
l lp/* DS1/*	Lists all existing DS1 ports.
l trm	Lists links to all neighboring nodes.

Options:

-c specifies the current view. If this option is not specified, the view selected is the edit view if you are in provisioning mode, or the current view if you are in operational mode.

-p specifies provisioned subcomponents.

-o specifies operational subcomponents.

If neither -o nor -p is specified, the type of components displayed are provisioned subcomponents if you are in provisioning mode, or both provisioned and operational subcomponents if you are in operational mode.

Using the help command

The help (h) command is used to view information about commands, components, and attributes. where <component> can be any component and <attribute> can be any attribute of a particular component.

Options:

-s used to display the full component class hierarchy.

-vdisplays a verb's full name and abbreviation, its impact, and a list of available options.

h	Displays command usage, the node name, top-level components, and verbs.
h -verb(verb) <component>	Both the impact and the possible options for the verb appear. For example, h -v (sync) fs displays impact and options for the sync command.
h <component>	Provides specific properties of a component. For example, these properties could be a list of attributes for the component, a list of verbs that can be applied, and a list of allowed subcomponents. Other properties may be displayed depending on the specific component.
h <component> <attribute>	For information about a particular attribute.

Using the display command

To display information about your node, use the display (d) command. Here are some examples of the command in operational mode:

d -p mod	Displays provisioned module information, including the node ID, and node name.
d -p sw	Displays provisioned software, including versions.
d -p lp/<n>	Displays provisioned cards of a logical processor. <n> = 0 - 15.
d -p lp/*	Displays attributes for all provisioned logical processors.
d lp/<n>	Displays a logical processor's status. <n> = 0 - 15.
d lp/* <attribute>	Displays an attribute for all logical processors. <attribute> = a specific attribute name.
d fs	Displays the volume name of the file system, the active disk, synchronization status, capacity and free space available.
d fs disk/<n>	Displays all operational attributes of the disk, including disk volume name, disk capacity and available free space. <n> is the control processor slot number.
d shelf bus/<n>	Displays the status of a bus. <n> = X or Y.
d trm link/<n>	Displays the operational attributes of a link, including throughput and delay. <n> = 1 - 1023.
d rtg dpn	Displays CSRM RIDs available. If the response is empty, routing is not working.
d lp/<n> <port>/<m>	Displays the attributes of a port on a logical processor interface. <n> = 1 - 15; <port> = port type, for example, DS1, E3, V35, or Enet; and <m> = port number (where required).
d trk/<n>	Displays the attributes of a trunk application.

Options:

-c specifies the current view. If this option is not specified, the view selected is the edit view if you are in provisioning mode, or the current view if you are in operational mode.

-p specifies provisioning data.

-o specifies operational data.

If neither -o nor -p is specified, the type of data displayed is provisioned data if you are in provisioning mode, or operational data if you are in operational mode.

DMS Quick Reference

ACD MIS quick references

ACD Maintenance Guide, NTP 297-2041-500
ACD Planning and Engineering Guide, *NTP 297-2041-011*
ACD Translations Guide, NTP 297-2041-350
ACD MIS Interface Specifications (Version 9.1), *NTP NIS-Q209-2*

Base ACD tables
ACDGRP, ACDRTE, ACDSGRP, ACDMISPL, ACDMISSP, ACDLOGIN, DNROUTE, DNATTRS, MPC, MPCLINK.

> ***Note:*** For a detailed list of ACD tables, refer to *NTP 297-YYYY-350, Translations Guide, Volume 3*.

Logs
ACD, IOD, MPC, NOP, RO, AUD545, DIFL151, LINE205, LMAN, RMAN, MIS, SLNK, MSRT, TCAP

OM Groups
ACDMISPL, ACDGRP, EXT, FCS, FTQR, NACDGRP1, NACDGRP2, MPCLINK2, MPCLINK3, ROAPPL, ROMISC, VFGIWUSE

> ***Note:*** For a detailed list of ACD related LOGS and ACD OM groups and their registers, refer to *NTP 297-2041-500, ACD Maintenance Guide*.

ACDRTD real time display command

From the CI level, the ACDRTD command will dump an ACD Real Time report to a specified device. For example, to generate a report every 20 seconds for all ACD groups:

>ACDRTD STARTDEV <device name> INTERVAL 20 ALL

Sample output:

```
TIME OF DAYACDGRPPRIMEDNCQCCWMANBSYIDLNRMSB
98/11/02 17:21:12ACDGRP144371048343632046
98/11/02 17:21:13ACDGRP244333340000004
```

This report gives the following information for ACDGRP1:

- eight calls in queue
- next call to be answered has been waiting 34 seconds
- 36 agents currently logged in
- 32 agents active on ACD calls
- no idle agents
- four agents logged in but unavailable for ACD calls
- six agents currently in Make Set Busy mode

To stop the report, type:

>ACDRTD STOPDEV

ACD commands

A CI level command that allows the user to display general information and current status of all or specific ACD pools.

ACDQSTAT command

>ACDQSTAT <ACD group>

PRIME DNCALLSAGNTSWAIT

8566666000

ACDDEBUG command

Non-resident tool used to format and display real-time status of ACD agents, groups, and queues. See ACDDEBUG under Tier II Support Tools.

ACDSHOW commands

>HELP displays available commands

>QUIT quits from ACDSHOW environment

>ACDDNS displays list of directory numbers

>ADMINGROUP displays admin groups and assoc. senior supervisors

>AGTPOS displays list of agent positions

>AUDIOGROUP displays name of audio group used to give recorded message to callers

>CLRROUTE displays the clearing route to which queued ACD calls are optionally routed while the specified ACD group is in the night service mode. The route can be displayed for all or specified ACD groups.

>COUNTS displays current statistics of ACD group(s)

>GROUPINFO displays ACD group information

>GROUPNAME displays grp name, DN type, and priority for given DN

>LOGINID displays information relating to a particular login id

>MODE sets default display mode (brief/full)

>NSROUTE displays night service route(s)

>OVFLROUTE displays overflow route(s)

>PASSWORD displays password of login identifications

>STATUS displays current status of ACD group(s)

>SUPERVISOR displays a list of ACD supervisors

>TABENTRY displays routing information

>THRESHOLD displays threshold limits

>THROUTE displays threshold route(s)

>VALIDAUDIO displays valid audio groups

>VALIDROUTES displays valid routes for groups

>NSAUDGRP displays name of audio grp used for night service annc

>FIAUDGRP display name of audio grp used for forced INC annc

>FOAUDGRP display name of audio grp used for forced OG annc

ACD OM Groups

ACDGRP registers ACD traffic
EXT registers Extension Block use
FTRQ registers Feature Queue Block use
NACDGRP1 registers Immediate and Time Delayed Overflow Traffic
NACDGRP2 registers TCAP message traffic

LOADMGMT III commands

> ***Note:*** The ACDSHOW command must be entered before entering LOADMGMT. The following list contains all the available load management commands. Not all of the commands are available with only the ACD - Load Management III feature package. Other feature packages may be required.

>ADD ACDDISP associates a new name to an ACDDN datafilled in table DNATTRS

>CHANGE ACDDISP alters the display message of the ACD called name/called number that appears on the agent's telephone set

>CHANGE ACDDNPRI alters the priority of the ACDDN assigned to an ACD group

>CHANGE ACTIVATEenables a supervisor/administrator to activate and deactivate a single login ID or a range of login IDs. This command can be entered from a MAP position or from an ACDMIS. This command is applicable only to login IDs stored in table ACDENLOG.

>CHANGE AUDIO alters the recorded announcement presented when callers join the incoming call queue for an ACD group by referencing one of the audio groups in table AUDIO

>CHANGE CIFROUTE alters the route calls take when the Interflow key is activated

>CHANGE CLRROUTE alters the clearing route to which queued ACD calls are optionally routed while specified ACD group is in the night service mode

>CHANGE CPKRTMR alters the call park recall timer value for an ACD group.The recall timer is used to recall a parked call that is not answered within a specified time.

>CHANGE CTQSIZE alters the number of calls that can be queued in the call transfer queue

>CHANGE CTRTMR alters the call transfer recall timer for an ACD group. The call transfer recall timer is used to recall a transferred call that is not answered within a specified time.

>CHANGE DEFLOB alters default line of business code for ACD grp

>CHANGE FIAUDGRP changes the audio group to be used for all incoming calls that are presented to an agent or queued in the incoming call queue

>CHANGE FOAUDGRP changes audio group to be used for all calls that are rerouted due to overflow condition

>CHANGE MAXCQSIZE alters the maximum number of calls that can be queued in the incoming call queue for an ACD group

>CHANGE MAXVQSIZE alters the maximum size of the overflow queue for an ACD group

>CHANGE MAXWAIT alters the maximum time a call can wait in an incoming call queue before being presented to an agent position

>CHANGE MSQSTYPE changes the type of multistage queue status (MSQS) display. The MSQS display types are WAIT (for the wait time of the call at the head of the incoming call queue) and CALLQ (for the size of the incoming call queue).

>CHANGE NSAUDGRP alters the audio group of the announcement to which incoming ACD calls are given prior to being rerouted to the night service route

>CHANGE NSROUTE alters the route to which calls for an inactive ACD group are directed. Calls can be routed to the following destinations:

•another ACD group

•a Uniform Call Distribution (UCD) group

•a station within the switch

an outgoing trunk group

•a recorded announcement

>CHANGE OFLTYPE changes the use of time delay overflow to priority 0 calls only or to all priority calls. This command also determines when the time delay overflow timer starts.

>CHANGE ORGANN changes the announcement heard by callers following overflow treatment to or from the original ACD group

>CHANGE OVFLROUTE alters the list of routes (ACD groups) to which overflow calls for an ACD group can be routed. Routes can be adjusted by:

•replacing one group with a new group

•swapping two groups within the list

•adding a group

•deleting a group

>CHANGE PAQSIZE alters the personal agent queue size for an ACD agent

>CHANGE PRIOPRO alters the priority promotion time interval

>CHANGE QTHRESHOLD alters the MSQS thresholds that allow supervisors to monitor the statuses of incoming call queues

>CHANGE RANTH alters length of time a caller hears ringing before being presented with a recorded announcement

>CHANGE RI alters the resource index (RI) value of the destination ACD group if it is not a DMS switch

>CHANGE SERVICE alters the type of calls to be serviced first: incoming overflow, priority 0, or oldest

>CHANGE THROUTE alters the route to which calls for an ACD group are eventually directed if they cannot be queued

>CHANGE TMDELOFL alters time delay overflow time-out value

>CHANGE TMDTHRTE alters the time delay threshold route

>CHANGE TMDTHTIME alters the wait time for a call before it is sent to the time delay threshold route

>CHANGE WRPTIME alters the wrap-up time for an individual agent or an ACD group

>DELETE ACDDISP deletes the ACD group name associated with a DN in table DNATTRS

>HELP displays general information on the syntax of load management commands

>QUIT exits load management environment and returns the system to the ACDSHOW environment

>REASSIGN (ACDDN) reassigns an supplementary ACDDN to a new ACD group

>REASSIGN (AGENT) reassigns up to five agent positions to a specified subgroup or supervisor in the same ACD group or in another ACD group

>SET PROMPT determines whether the system prompts are displayed after each command entry

AIN quick reference

AIN Essentials Services Implementation Guide, NTP 297-5161 021
AIN Service Enablers Services Implementation Guide, NTP 297-5161 022
AIN/LRN-LNP Maintenance Guide, NTP 297-5161-510

AIN tables

Trigger Tables	**Announcement Tables**	**Response Tables**
TRIGINFO	AINANNS	RCNAME
TRIGDIG		RTECHAR
TRIGGRP	**Subscription Tables**	XLAMAP
TRIGESC	TRKAIN	PXLAMAP
	OFCVAR	NCOS
		CUSTHEAD

Logs
AIN, AUD, AUDT, CCS, TCAP, LINE, TRK, TRAP, SWERR

OM Groups
AIN, AINACG, AINOGOFF, AINOGSUB, AINICOFF, AINICSUB, AINNCR, C7LINK2, C7SCCP, CPUSTAT, EXT, FTROM, ISUPSUAG, TCAPERRS, TCAPUSAG, TRK, TRMTCM, TRMTFR2, TFRAIND, TRFAINF

AIN RESPONSE TRAVER examples

Analyze Route Response (AR) with Called Party Number (CDN):

>traver l 6783422 n cdn na 6196783420 ainres r01 ar b

Note: na = Nature of Number

AR with CDN and Carrier information/Transit Network Selection (TNS):

>traver l 6783422 n cdn na 2016783422 tns na cic 222 ainres r01 ar b

>traver tr tasdc7t2 n cdn na 2016783422 tns na unk 222 ainres r01 ar b

Note: We use ‘unk’ for most trunk originators and ‘cic’ for line originators, IBN trunk originators, and PRI trunk originators.

Continue Response (CONT):

>traver l 6783422 96783420 ainres r01 cont b

AR with CDN, TNS, and operator information (OSA):

>traver l 6783422 n cdn na 2016783422 tns na cic 222 osa puba ainres r01 ar b

Note: Puba = Operator System Access.

Forward Call (FC) with CDN:

>traver l 6783419 n cdn na 6196783421 ainres r01 rc b

Note: Originator for TRAVER is the agent with TERMATTEMPT trigger.

AINTRACE Command

To run AINTRACE type:

>AINTRACE

>SELECT <parameter>
The SELECT command selects a terminal for tracing. *Parameter definitions:*

<AC> attendant console CLLI for the terminal
<TID> terminal ID for the terminal
<LTID> logical terminal ID for the terminal
<DN> directory number for the terminal
<LEN> line equipment number for the terminal
<TRI> trunk CLLI for the terminal

>START

“Make test call”

>STOP

>BACKALL (displays data)

Message Types

E1 Unidirectional (Error)
E2 Query with Permission
E4 Response
E5 Conversation with Permission
E6 Abort

Attendant console quick reference

MDC Services Attendant Console OA&M, *NTP 297-2031-100, Translations Guides*, *NTP 297-YYYY-350*

Logs
IBN, PM, TRK

OMs
ACSYSTR, ACRTS, ACTRBL, ACTAKEDN, IBNAC, IBNSGLDN

Posting Consoles and associated lines

>MAPCI;MTC;LNS;LTP;Level IBNCON

>Select C <console CLLI>
(Shows DMODEM attached; BSY, DIAG, and RTS)

>MAPCI;IBNMEAS;ACMON;Select C <console clli>
(Best place to observe console. See Table FNMAP for console CLLIs).

AC command (CI level)

>HELP AC
Displays optional parameters for using the command.

Example: >AC <console CLLI> DISPL LAMPS

MT command (CI level)

Displays key hits from console via dmodem to CC

.>MT <operation>{START, DISPL, STOP, RESET}
<console number> {From IBNCON level of MAP}

QQ command (CI level)

Queries incoming call queues for ICIs and subgroups.

>QQ <customer-name> STRING <subgroup#:> {0-7} <option:> {CALLQ, ICIQ [<icicode:> {0-254}]}

Trouble key assignment:

1.Add a trouble key in Table FNMAP:

```
TABLE: FNMAP

CONSNCSU 41      SPECL     TRBL
```

2.Add trouble codes in Table TRBLCODE:

CODE	MESSAGE	ALARM
2	TRUNK_TROUBLE	MJ
3	KEY_TROUBLE	MJ
7	CNF_DIS	CONSMINR
24	BOMB_THREAT_CALL	CR

3.Accessing the trouble key:

a.Press the TROUBLE key*. The TROUBLE lamp goes on and the system displays a prompt for the trouble code.

Response: `TROUBLE: INPUT`

Note: To cancel the feature, press the RELEASE DEST key before step 3c.

b.Enter the appropriate two-digit numeric code. To display trouble codes, press * or # to activate the query mode. The system displays all codes and their descriptions.

c.Press the TROUBLE key. THE TROUBLE lamp goes off, and the system generates an IBN109 log and alarm. The IBN109 log identifies the parties associated with the call, the console, and other information about the state of the active loop at the time the problem occurred.

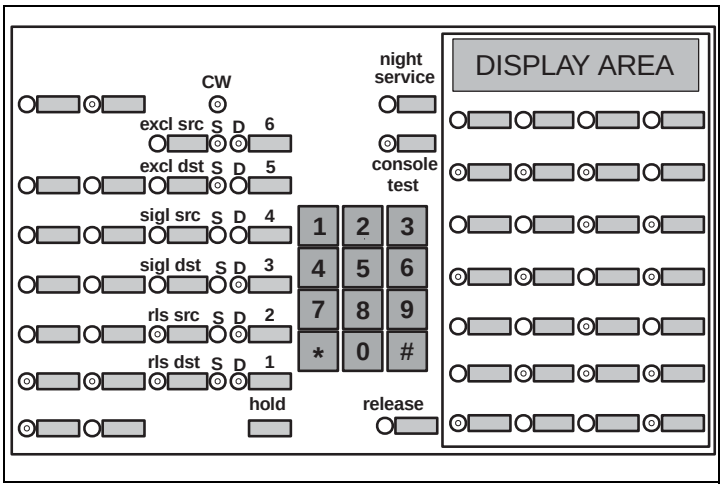
XPMIST the attendant console

To XPMIST the console, use the node and terminal number of the DMODEM. Information on breaking down Attendant Console XPMIST can be found in module ACUTILI.

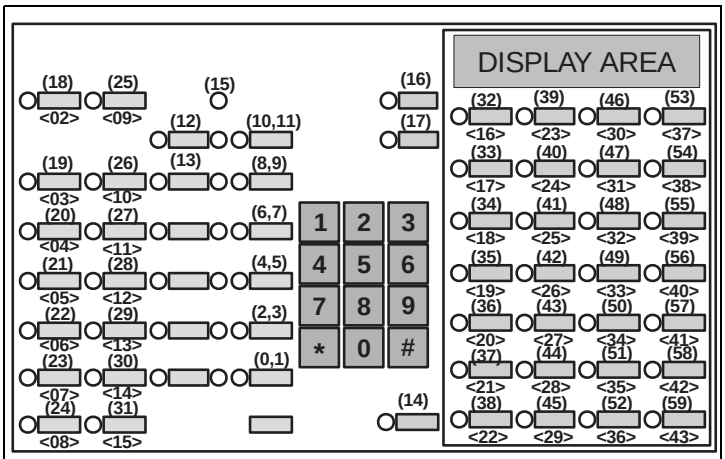
Table references

CUSTCONS lists customer group consoles
SUBGRP lists DN to reach consoles ext.
ATTCONS lists console names and LENs
CONF3PR contains the 3-port conference circuits
DMODEM contains the Dmodem cards
FNMAP datafill for all console keys
ICIDATA lists console ICI keys
TRBLCODE trouble code messages
WCKCODES lists data for wild keys
SVRCKT contains NT3X68AB DTMF Senders
ACEES AC End-to-End Signaling Feature

Attendant console lamp keyboard layout



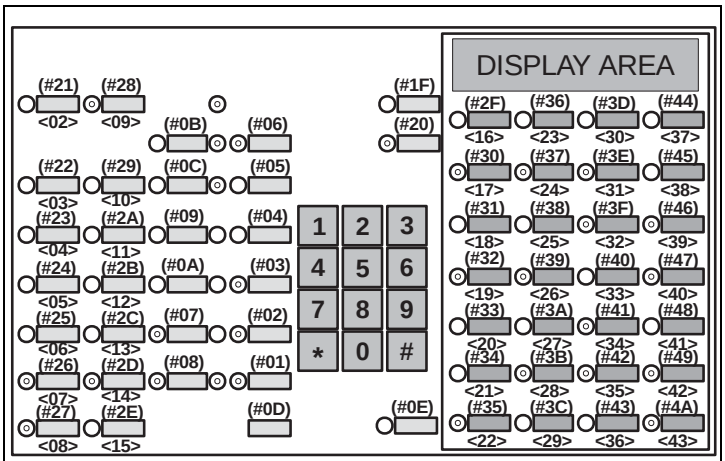
Attendant console lamp to physical key mapping



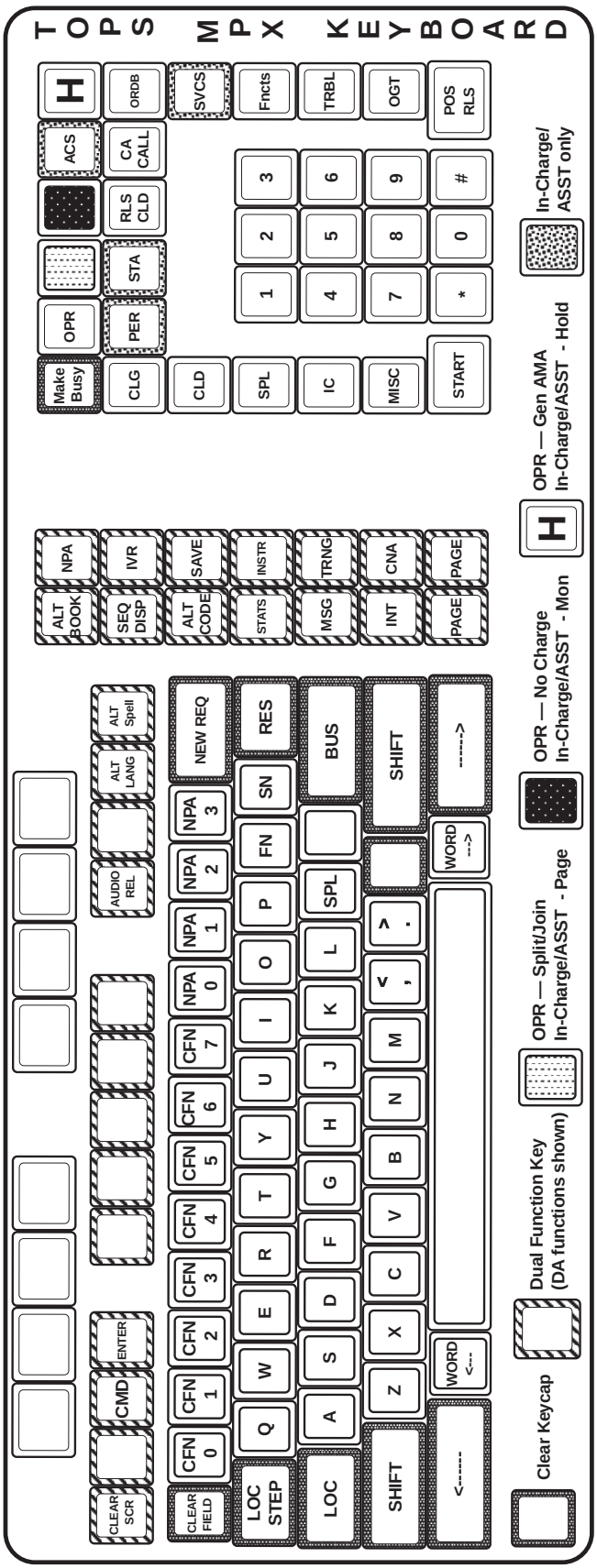
(XX) = external lamp number
<YY> = physical key number (found in table FNMAP)

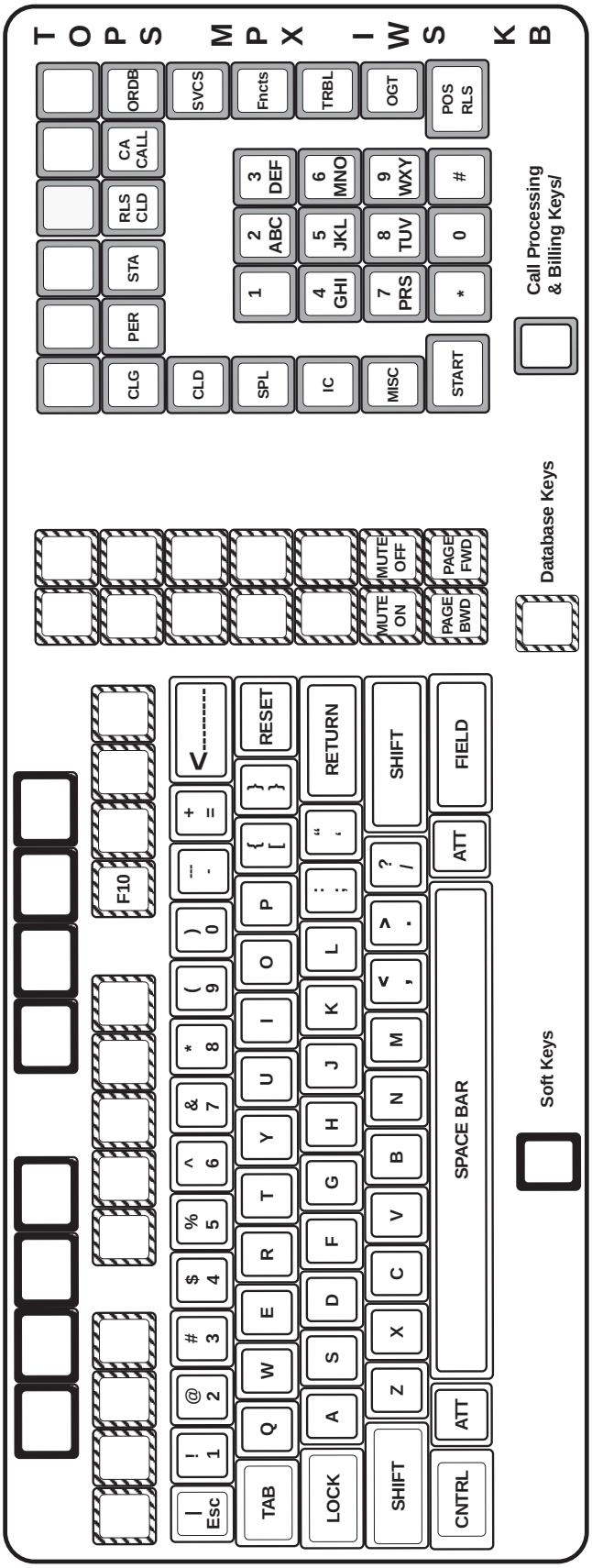
To calculate the PMIST lamp and group number:
Lamp number = external lamp number MOD 16
Group number = extermanl lamp number / 16

Attendant console internal to physical key mapping



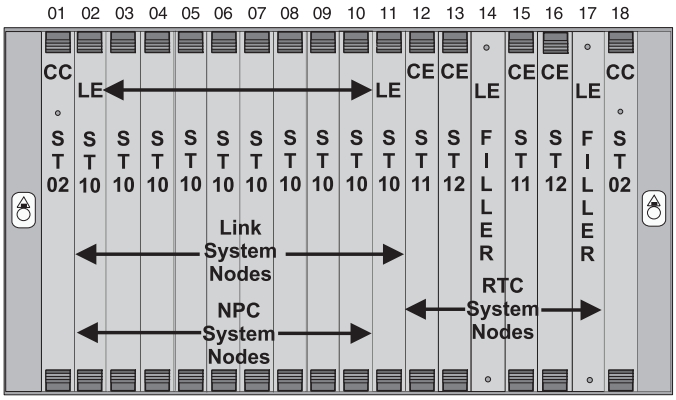
(XX) = internal key number (in table PMIST)
<YY> = physical key number (in table FNMAP)


TOPS MPX KEYBOARD
Make Busy
OPR
ACS
CLG
PER
STA
RLS CLD
CA CALL
ORDB
CLD
SVCS
SPL
Fncts
IC
TRBL
MISC
OGT
START
POS RLS
1
2
3
4
5
6
7
8
9
*
0
#
ALT BOOK
NPA
SEQ DISP
IVR
ALT CODE
SAVE
STATS
INSTR
MSG
TRNG
INT
CNA
PAGE
PAGE
CLEAR SCR
CMD
ENTER
AUDIO REL
ALT LANG
ALT Spell
CLEAR FIELD
CFN 0
CFN 1
CFN 2
CFN 3
CFN 4
CFN 5
CFN 6
CFN 7
NPA 0
NPA 1
NPA 2
NPA 3
NEW REQ
LOC STEP
Q
W
E
R
T
Y
U
I
O
P
FN
SN
RES
LOC
A
S
D
F
G
H
J
K
L
SPL
BUS
SHIFT
Z
X
C
V
B
N
M
< ,
> .
SHIFT
<------
WORD <---
WORD --->
------>
Clear Keycap
Dual Function Key (DA functions shown)
OPR — Split/Join In-Charge/ASST - Page
OPR — No Charge In-Charge/ASST - Mon
OPR — Gen AMA In-Charge/ASST - Hold
In-Charge/ ASST only

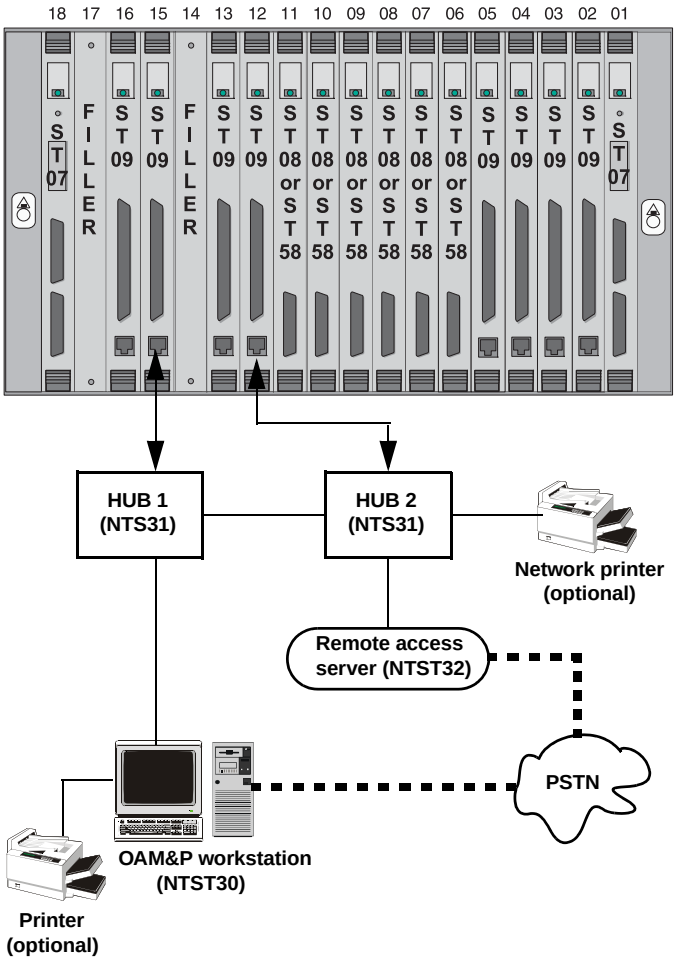

TOPS MPX IWS KB
ORDB
CA CALL
RLS CLD
STA
PER
CLG
SVCS
CLD
Fncts
SPL
TRBL
IC
OGT
MISC
POS RLS
START
3 DEF
6 MNO
9 WXY
#
2 ABC
5 JKL
8 TUV
0
1
4 GHI
7 PRS
*
Call Processing & Billing Keys/
MUTE OFF
PAGE FWD
MUTE ON
PAGE BWD
Database Keys
F10
RESET
RETURN
SHIFT
FIELD
ATT
SPACE BAR
ATT
SHIFT
CNTRL
Soft Keys

Broadband STP quick reference

Broadband STP control CAM: front shelf



Broadband STP-control CAM: rear shelf with number portability controller (NPC) mission cards in slots 2 - 5



Note 1: Slots 13, 14, 16 and 17 can support double-slot SCSI disk cards.
Note 2: NTST31 = 10Base-T/10Base-2 Ethernet hub

CAM shelf component PECs

NTST00 — Control or extension CAM shelf
NTST01 — Fan Unit
NTST02 — Single or dual-shelf CAM Controller (CC) mission card
NTST07 — OC-3 Transition Module (TM)
NTST08 — DS0A Transition Module (TM)
NTST09 — Power/SCSI/Ethernet (PSE) Transition Module (TM)
NTST10 — Link Engine (LE) Mission Card
NTST11 — Single or dual-shelf Real-time Controller (RTC) Mission CP
NTST12 — Single or two-slot SCSI Disk Card
NTST13 — Filler Card
NTST34 — 19-inch Frame
NTST35 —Air Filter
NTST58 — V.35 Transition Module (TM).

Broadband STP OAM&P workstation and networks equipment configuration

Item	Sample	Customer-defined
Workstation network configuration (TCP/IP Properties)		
IP Address (Workstation-1)	192.168.1.50	
Subnet Mask	255.255.255.0	
Gateway (Remote Access Server)	192.168.1.1	
Remote Access Server (RAS) configuration options		
RAS general:		
Name	FIELD	FIELD
Password	SERVICE	SERVICE
RAS IP general:		
RAS IP Address	192.168.1.1	
Subnet Mask	255.255.255.0	
Default Router (Same as RAS)	192.168.1.1	
RAS IP addresses (if using PPP connections):		
Port 1	192.168.1.101	
Port 2	192.168.1.102	
Optional LAN printer		
IP Address	192.168.1.20	
Subnet Mask	255.255.255.0	
IP Gateway (Same as RAS)	192.168.1.1	
Real-Time Controller (RTC) IP addresses		
RTC_NODE_12	192.168.1.12	
RTC_NODE_15	192.168.1.15	
RTC ethernet ID hardware addresses (examples only*):		
Slot 12	11:22:33:44:55:66*	
Slot 15	11:22:33:44:55:67*	
Spare	11:22:33:44:55:68*	
BOOTP server network configuration		
Network Address: (Subnet)	192.168.1.0	
Default Gateway: (Same as RAS)	192.168.1.1	
Subnet Mask	255.255.255.0	
ICCM addresses		
ICCM 01 Address	10.0.0.1	10.0.0.1
ICCM 02 Address	10.0.0.2	10.0.0.2
ICCM Subnet Mask	255.0.0.0	255.0.0.0

Item	Sample	Customer-defined
Default Gateway	192.168.1.1	
Ethernet Subnet Mask	255.255.255.0	255.255.255.0
ICCM 01 Ethernet IP Address	192.168.1	
ICCM 02 Ethernet IP Address	192.168.2	

CAM shelf LED state notes:

Note 1: Filler cards do not have active LEDs.

Note 2: Unlit LED(s) on the front shelf do not always indicate a problem.

SCSI Disk cards always display a dark LED on the front CAM shelf.

Real-time Controller (RTC), CAM Controller (CC), or Application System Nodes LED are not lit when in the off-line state.

Card guides contain Filler Cards.

Card guides contain SCSI Disk Cards

Note 3: Other than the cards above, a dark LED indicate the card is not functioning properly.

Note 4: Flashing green LED(s) indicate the associated card(s) are operational, but are not currently available for use.

Note 5: Flashing green LED(s) on the front of a CAM shelf indicate that the associated mission cards are enabled, but locked.

CCS7 quick reference

Translations Guides, NTP 297-YYYY-350

CCS7 terminology

ACM — The Address Complete Message indicates that the switch would like to setup a call on a given CIC. This message includes calling and called line ID parameters.

ANM — The Answer Message indicates that the call has been answered by the receiving end. This message tells the switch to complete the voice path setup.

Associated route — direct route between signaling points; route where DPC of routeset equals DPC of linkset

Con — The Connection Message indicates that all address digits have been received and the call has been answered and the circuit connected.

Connectionless — signaling type for all signaling that is not associated with set-up or take-down (E800 database query, maintenance, etc.)

Connection-oriented — signaling type used for setup and take-down of calls (i.e., ISUP)

Connection-oriented — signaling type used for setup and take-down of calls (i.e., ISUP)

IAM —The Initial Address Message indicates that the switch would like to setup a call on a given CIC. This message includes calling and called line ID parameters.

Link — communication channel between two adjacent signaling points

Linkset — a group of signaling links connecting two signaling points

Point code — every node in the network has its own unique point code used to direct messages. Nine-digit point code format equals:
<network #> <cluster #> <member #>
OPC (Origination Point Code)
DPC (Destination Point Code)

Quasi-associated — indirect signaling route through an STP

Route — a signaling path in the signaling network; this path may consist of one or more linksets to a destination.

Routeset — a logical grouping of routes towards a destination

REL — The Release Message indicates that the call should be released.

RLC — The Release Complete Message is an acknowledgement to the release message and indicates that sending switch has released the circuit.

SCP —Service Control Point provides network access to transaction services (database queries).

SP — Signaling Point is a node in the network that provides trunk signaling only.

SSP — Service Switching Point is a node in the network that originates and terminates CCS7 messages (connectionless and connection-oriented).

SL — signaling Links interconnect adjacent nodes in the network:

- **A-link** — access links connect SPs, SSPs, and SCPs to STPs
- **B-link** — bridge links connect mated STP pairs to other mated STP pairs
- **C-link** — cross links connect two STPs creating mated a pair (primary to secondary STPs)
- **E-link** — extended links connect SPs, SSPs, or SCPs to an STP in a different region
- **F-link** — fully associated links interconnect SPs, SSPs, and SCPs using associated signaling

SLTM — Signalling Link Test Message

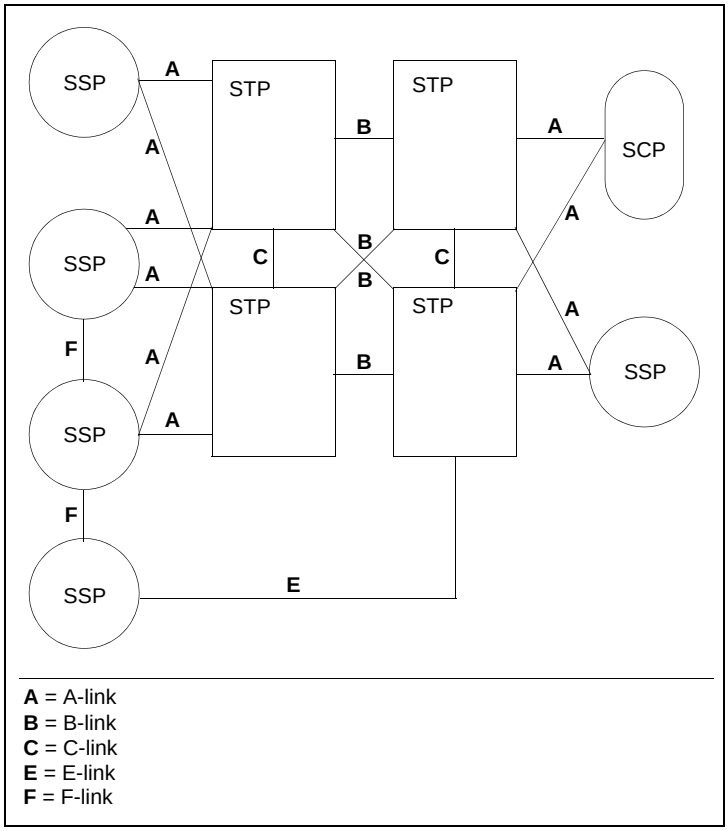
SLTA — Signalling Link Test Acknowledge

TFA — Transfer Allow Message.

TFP — Transfer Prohibit Message.

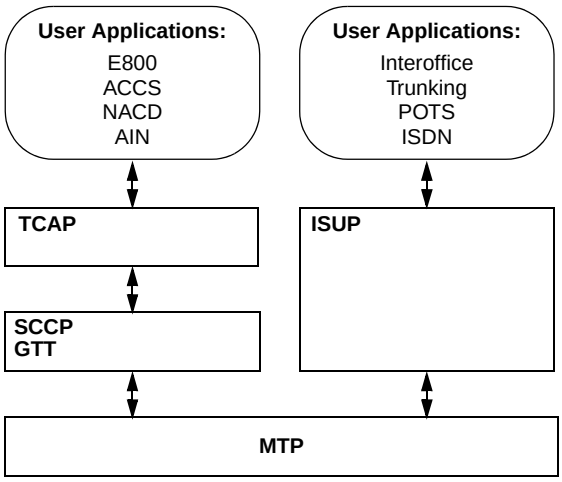
TFR — Transfer Restrict Message.

CCS7 linksets



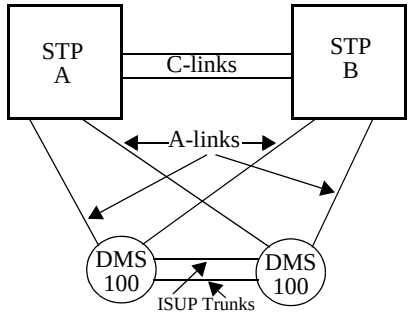
A = A-link
B = B-link
C = C-link
E = E-link
F = F-link

CCS7 protocol components



GTT = Global Title Translation
ISUP = Integrated Services Digital Network User Part
SCCP = Signaling Connection Control Part
TCAP = Transaction Capabilities Applications Part

ISUP Trunk Selection



STDPRT	Incoming digits; initial path determined
OFRT	Get CLLI
TRKGRP	Associate CLLI with signalling data
TRKSGRP	Determine trunk type (SS7)
C7TRKMEM	Circuit identification code (CIC) Associated with CLLI
ISUPDEST	Associate Routeset with Trunk Group
C7RTESET	Obtain DPC; determine linkset to be used
C7NETWRK	Obtain OPC
C7LKSET	Determine link within the linkset
C7LINK	Associate hardware with the links
TRKMEM	
ADJNODE	Identifies all switches that have an ISUP signaling relationship to the originating node. This table points to a field in the TRKSGRP table that defines the signalling type.

Note: You can use the C7RENAME command to change the name of a Linkset, Routeset, or a Network.

Note: Please refer to the "Troubleshooting" chapter for information on the "CCS7 Test Utility (CCS7TU) to monitor CCS7 messages.

CC MIS quick reference

CC MIS Supervisor's Quick Reference Guide, *NTP 297-2671-050*
CC MIS System Description, *NTP 297-2671-150*
CC MIS Getting Started Guide, *NTP 297-2671-175*
CC MIS Release Notes, *NTP 297-2671-211*
CC MIS Supervisor's Guide, NTP 297-2671-340
CC MIS System Administrator User's Guide, *NTP 297-2671-345*
CC MIS Maintenance and Administration Guide, *NTP 297-2671-545*

CC MIS remote login

1. Dialup via modem (VT220 terminal emulation)
2. At the login prompt type **> maint**
3. At the password prompt type **> password** (must be obtained from the end user).
4. The system displays the maintenance menu, from which you are able to perform various system functions and observe logs.

Examples of menu functions:

Run State Utilities
Update Switch Configuration (download ACD info. from switch
Partition Startup and Shutdown
Shutdown (Start) the CC MIS System
Power Down

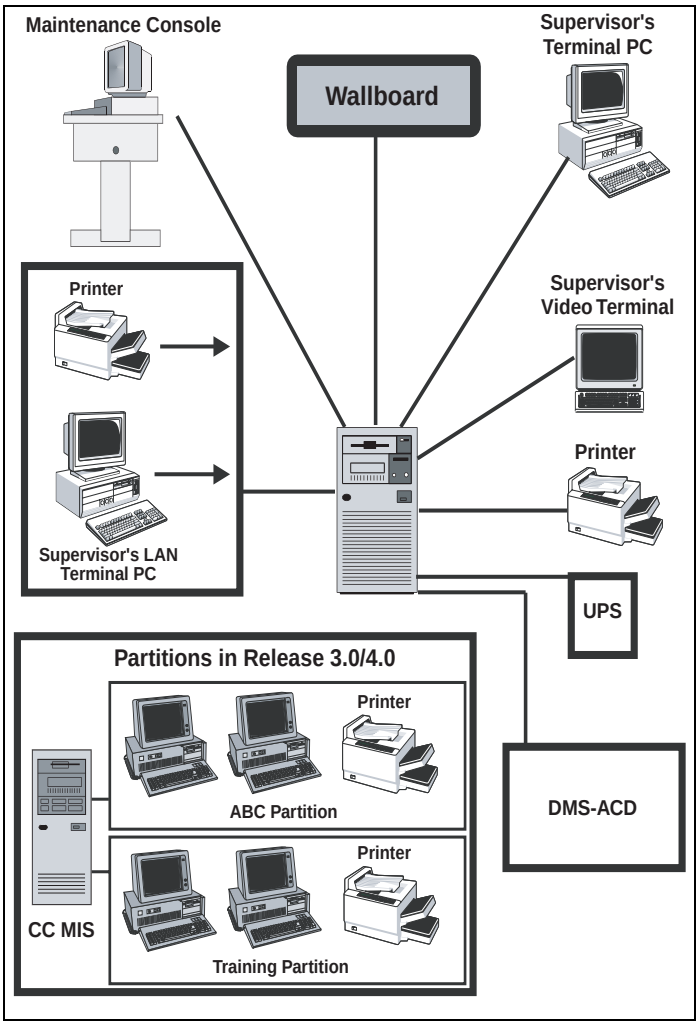
Backup and Restore Utilities
Backup
Restore
Diagnostics
Logs
Reset modem port
X.25 diagnostics
View system monitor
Configuration
System configuration
Switch link configuration
Partition configuration

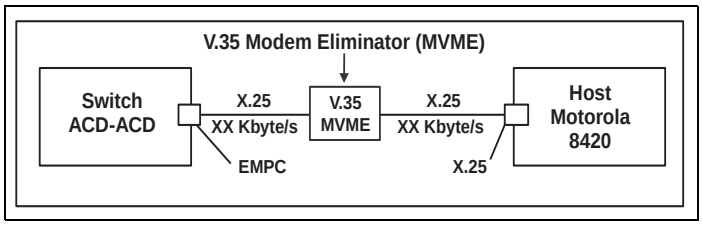
CC MIS system reports

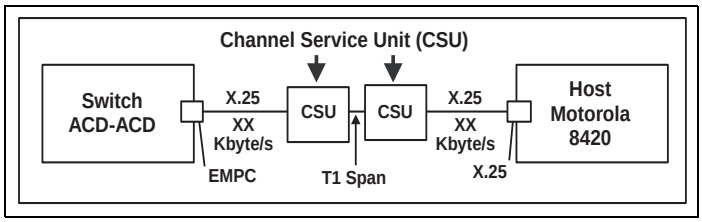
The CC MIS System Reports correspond to the system administration data built through the Parameter Administration menu. These reports are not customizable and do not require the definition of report parameters to determine the data to extract from the database. The reports are available through the System Reports menu.

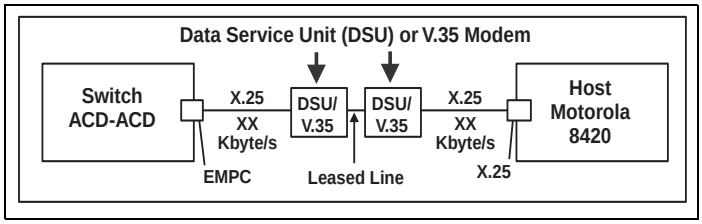
Report	Description
Configuration	Contains configuration data for all positions, groups, and ACD parameters as received from the ACD switch in the download information
Supervisor	Lists profile information for all supervisors
Privilege level	Contains privilege level information which has been entered through Parameter Administration, Privilege Level Definition
Scope	Contains scope information which has been entered through Parm. Adm., Scope Definition
Shift	Contains shift information which has been entered through Parm. Adm., Times Frames Definition
Period	Contains period information which has been entered through Parm. Adm., Times Frames Def.
Threshold	Lists the thresholds defined in the database
ACD group	Lists the ACD groups defined in the database that have been entered through Parameter Administration, ACD Group Definition
ACD-DN	Contains ACD-DN information which has been entered through Parm. Adm., ACD-DN Def.
Alarm definition	Lists all alarm definitions that have been defined through the Alarm Definition mode
Agent	Lists agents defined in the database
Logical group	Lists the groups sorted by the logical group
LOB code	Lists the LOB (line of business) codes defined in the database
Schedule definition	Lists the schedules defined in the database
Walkaway code	Lists the walkaway codes defined in the database

CC MIS hardware block diagram









Link requirements when switch and host are co-located less than 100 ca. ft. If the switch and the Motorola 8420 are not co-located, one of the following two options is required:

- *Option 1*: two XX Kbyte/s Channel Service Unit (CSU) connections to a T1 channel
- *Option 2:* two Data Service Units (DSU) or two V.35 modems set to XX Kbyte/s and attached to a conditioned leased line.

CLASS quick reference

Subscriber Services Maintenance Guide, NTP 297-1421-503
Translation Guides, *NTP 297-YYYY-350*

Tables
XLANAME, CUSTENG, DIGCOL, CUSTHEAD, NCOS, IBNXLA, CUSTSTN, IBNTREAT, CUSTNTWK, RESOFC, DNREGION, DNREVXLA, LINEATTR, TCAPTRID

Logs
BCLID, SLE, TCAP

OM groups
ACB, ACRJ, ANN, AR, BCLID, BCLIDNL, BCLIDO, CALLOG, CFRA, CNAB, CNAMD, CND, CNDB, CNDXPM, COT, DRCW, DSCWID, FTRQ, MWTCAR, MWTCAR2, NETMSG, SACB, SCA, SCF, SCRJ, SLVPOPT, SPPIN, C7SCCPCO, TCAPERRS

Engineering parameters

TCAPNM_BLK_QUERY_PRIVS_DNS

CNDB_ON_POTS

TCAPNM_INTERLATA_QUERY

RES_SO_SIMPLIFICATION

VSLE_PRESENT

FTRQAGENTS

AR_BLOCK_PRIVATE_RES AR_BLOCK_PRIVATE_TOLL_METHOD

AR_BLOCK_PRIVATE_CTX

SLE_TRANSACTION_THRESHOLD

SLE_TCAP_RESPONSE_TIME

SLE_ITEMS_IN_SEGMENT

SLE_LANGUAGE

SLE_MAX_PROGRAMMERS

SLE_MAX_SEGMENT_COUNT

SLE_WAKEUP_TIME

REVXLVER CI level command

This is a datafill verification utility that simulates reverse translations from a specified origination to a specified destination.

Note: If no netname is specified, then the default of public is used.

REVXLER command and variables

>REVXLVER <SUB> {AR <DN> STRING

<DIGITS> STRING

<TRACE> {T, NT, B}

[<NETNAME> STRING]

[<COMPARE> STRING],

ACB <DN> STRING

<DIGITS> STRING

<TRACE> {T, NT,B}

[<COMPARE> STRING],

DDN <DN> STRING

<DIGITS> STRING

<TRACE> {T, NT, B}

[<NETNAME> STRING]

[<INTL> STRING],

R <DIGITS> STRING

<RXLANAME> STRING,

RLT <DN> STRING

Example of REVXLER command:

>REVXLVER AR 6750009 9196752034 B

TABLE IBNLINES

HOST 00 0 02 17 0 DT STN IBN 6750009 EBS01 0 0 360 (ACB) (AR)$

TABLE CUSTNTWK

EBS01 PUBLIC 24 (PUBLIC MDCAR 10) (CLID OFFNET)

TABLE DNREVXLA

MDCAR 919 919 (LOCAL 3 9 N)

TABLE DNREGION

LOCAL 919675 919675 (Digits used to call 9196752034 from 6750009)

TESTAME CI level command

Test Analog Display Services Interface (ADSI) support command.

>TESTAME <Application> <Function> <Directory Number>

MAKERES Utility

This command converts POTS lines to RES lines over a given range of LENs. Subcommands are CONVERT, DELOPT, COPY, and CHECKCM.

CLOG utility and subcommands

This command displays the contents of a call logging subscriber's incoming callers list for a given DN. Subcommands are STATUS, RESET, DEQ, and QUEUE.

>CLOG

CLOG: <subcommand> <requestee dn>

QBCLID CI: level command

This command displays every line in the office that belongs to a BCLID group.

SERVORD CNAMDACG command

This command displays the internally stored list of active CNAMDACG six-digit acg code controls, including associated gap interval, duration interval, and time remaining for the code control.

SERVORD CHL command

SERVORD command used to change SLE list information.

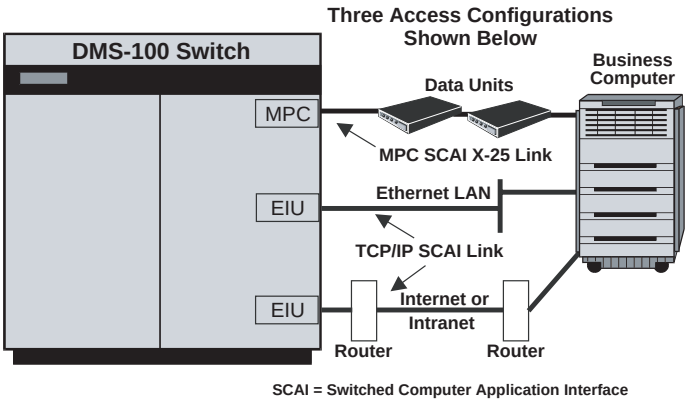
CompuCall quick reference

CompuCALL is the Nortel product name for Switch-to-Computer Application Interface (SCAI). CompuCALL is the interactive link between a DMS-100 and the customer's general purpose business computer making it possible for a company to coordinate database information with incoming and outgoing calls. Uses for CompuCALL include telemarketing, order

entry, message desk, help desk, and emergency services. It provides such service functions as:

•coordinated voice and data
•call routing
•third party call control
•resource status
•third party agent control

CompuCall hardware diagram



Note 1: MPC = NT1X89 Multi-Protocol Controller Card located on the IOC shelf

Note 2: EIU = Ethernet Interface Unit.

CompuCALL References

CompuCALL Tables:

MPC; MPCLINK; SCAICOMS; BGDATA; SCAIGRP; SCAISSRV; SCAIPROF; CUSTNTWK; and table ACDGRP (option SCAIREDIR) if "Call Redirection" is used.

CompuCALL LOGS: SCAI and MPC

CompuCALL OM Groups:

SCAISERV, SCAISRV2, SCAITRAN, MPCBASE, MPCLINK2, MPCLINK3, and MPCFASTA

CompuCALL Documentation:

CompuCALL Interface Specification, NTP NIS-Q218
NTP 297-YYYY-350, *Translation Guides*
NTP 297-YYYY-550, *Maintenance Guide*
NTP 297-YYYY-544, *Trouble Locating and Clearing*
NTP 297-YYYY-545,*Recovery Procedures*
NTP 297-YYYY-814, *Operational Measurement Reference Guide*

DMS 250/500 quick reference

UCS DMS-250 Customer Data Schema Ref. Manual, NTP 297-2621-851
UCS DMS-250 CSP Translations Reference Manual,NTP 297-2621-860
UCS DMS-250 Operational Measurements Ref. Manual, NTP 297-2621-814
UCS DMS-250 Commands Reference Manual , NTP 297-2621-819

Tables

ANISCRNU, ANISCUSP, ACSCRN2, AUTHDIN, AUTHCODU, COSSCRN,MULTIPIN, MULTICOS, PARTOSTS, PARTRANO, PATRRAN3, PARTRANS, STSTOPAR, STSTRANO, STSTRAN3, STSRANS, TRKGRP1, TRKCOS, UNRESDAT, UNRESDAY, UNRESTIM

Trunk group types

DAL Direct Access Line (PBX)
EANT Equal Access Network Trunk (Feature Group D)
EDAL Electronic Tandem network Dedicated Access Line
IMT Inter-Machine Trks (Connect DMS-500 to other DMS 250/500)

ONAL Off-Network Access Line (Feature Group A)
ONAT Off-Network Access Trunk (Feature Group B and C)
PRA250 Primary Rate Interface (ISDN)

QACCT commands

The Query Account (QACCT) command manages information located in the account code screening (ACSCRN2) table. QACCT replaces the ACDQUERY command.

>QACCT HELP <topic>
>QACCT IDX <index number>
>QACCT DUMP <with entries or datafilled only>
>QACCT LIST <index number>
>QACCT COPY <from index to index>
>QACCT DELETE <index number with entries prompt>
>QACCT FIND <account code digits>

AUTHTEST command

The ACCTTEST (ACCT Code Test) command:

•validates the following account code types:
- authcode (AUTHACCT)
- authcode and a speed number (AUTHSNAC)
- automatic number identification (ANI)
- travel card number (TCN)

•translates an authcode-associated private speed number (AUTHSPEE) to the destination number stored in the service control point (SCP)

>ACCTTEST AUTHACCT <adin authcode auth_acct timeout
>ACCTTEST AUTHSPEE <adin authcode speed_no timeout>
>ACCTTEST AUTHSNAC <adin authcode speed_no authacct timeout>
>ACCTTEST ANI <ani_no ani_acct timeout>
>ACCTTEST TCN <tcn_no tcn_acct timeout>

ACCSVER command

The ACCSVER command is used to check the SCP database for ACCS numbers through the SS7 network without making an actual call. The parameters are:

<INTL> <CLGNUM> <CLDNUM> <BILLNUM> [<PIN>] [<CCITT>] [<VAL14DIG>] [<GTNAME>]

An example ACCSVER usage is:

"accsver y 2012201111 2012201234 201220000"

where: y = <INTL> , 2012201111 = <CLGNUM>, 2012201234 = <CLDNUM>, 2012200000 = <BILLNUM>

Here is an example of CCITT ACCSVER usage:

"accsver n 6093201234 2012201212 8919999920122023232 7890 y n"

where: n = <INTL>, 6093201234 = <CLG>, 2012201212 = <CLD>, 8919999920122023232 = <CCITT card number, including LUHN digit (2 at end)>, 7890 = <PIN>, y = <CCITT card y/n>, n = <VAL14DIG>

Rules for ACCSVER parameters are:

- If a Y is entered for INTL

- indicates the call is an international (overseas) call

Else, if an N is entered for INTL

- the call is not considered an overseas call

- CLGNUM must be entered

- CLDNUM must be entered

- BILLNUM must be entered

- If PIN is included,

- a CCV QUERY is launched

Else

- a BNS QUERY is launched

- a Y for CCITT

- indicates the card is a CCITT card

Anything else for CCITT

- indicates the card is a 14 digit card

If CCITT

- A Y for VAL14DIG (CCITT calling card that

is validated as a 14 digit card)

- Or N for a CCITT calling card (CCITT calling

that is validated as a CCITT calling card)

- If the GTNAME is entered

- the specified GTNAME is used in the query

Else,

- the default GTNAME is used in the query

Travel Card Number Test (TCNTEST) command

The Travel Card Number Test (TCNTEST) command verifies the integrity of the travel card number (TCN) subsystem by validating calling card numbers located at remote database location(s).

Restrictions

•Each TCN subsystem must be in service.

•The remote database must be operational.

•The number of simultaneous users for the TCNTEST command is limited to the number of users specified by office parameter TESTSS_MAX_USERS (table OFCVAR).

•Datafill must be located in the following tables:

C7GTT
C7GTTYPE
C7LKSET
C7LINK
C7LOCSSN
C7NETWRK
C7RTESET

Examples of DMS-250 TRAVERs and responses:

TRAVER of DAL trunk

>UTVSTS 611

DMS250 TV STS SET TO: 611

>traver tr dal237twdtls 2133603789 b

STS USED FOR TRAVER IS: 611

TABLE STSTOPAR

611 00 11

TABLE TRKGRP

DAL237TWD TLS DAL 127 NPDGP NCON 0 2W DAL MIDL 16 7 16 16 S

10 NIL DL 7 5 111 MANUAL 214 0 NOAUTHS RTE8 0 VOICE_DATA Y 1

N Y NONE 00 (QHQ) (ACPROMPT)$

TABLE STDPRTCT

DAL (1)(0)0

SUBTABLE STDPRT

WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE BILLING.

CALL TYPE DEFAULT IS NP. PLEASE REFER TO DOCUMENTATION.

. 21 21 CT OFFNET 8 10 0

WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE BILLING.

CALL TYPE DEFAULT IS NP. PLEASE REFER TO DOCUMENTATION.

TABLE HNPACONT

611 991 10 (195) (1) (0) (0) 1

. SUBTABLE HNPACODE

.213 216 HNPA 0

.630 630 LRTE 630

.SUBTABLE RTEREF

.630 S D EAN630TWMFWK

.EXIT TABLE RTEREF

EXIT TABLE HNPACONT

+++TRAVER: SUCCESSFUL CALL TRACE+++

STS USED FOR TRAVER IS: 611

DIGIT TRANSLATION ROUTES

1 EAN630TWMFWK 2136306789 ST

1 DIGITS_003

+++TRAVER: SUCCESSFUL CALL TRACE+++

TRAVER of EANT trunk

>UTVSTS 414

DMS250 TV STS SET TO: 414

>traver tr eant_2w_c7loopbk 4145442175 b

STS USED FOR TRAVER IS: 414

TABLE STSTOPAR

414 00 7

TABLE TRKGRP

EANT_2W_C7LOOPBK EANT 0 TLD NCTC 0 2W P250 MIDL 15 15 15 15 EAPT 7 7 414

UCS2EAEO NIL 407 7 NONE 0 NONE 0 0 SPEECH 160 (CASUALU) (ANIDIGS)

(TMANIDLV ALWAYS) $

TABLE STDPRTCT

P250 (1) (65021) 6

. SUBTABLE STDPRT

WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE

BILLING. CALL TYPE DEFAULT IS NP. PLEASE REFER TO

DOCUMENTATION.

. KEY NOT FOUND

. DEFAULT VALUE IS: N NP 0 NA

. SUBTABLE AMAPRT

. KEY NOT FOUND

. DEFAULT VALUE IS: NONE OVRNONE N

TABLE HNPACONT

414 Y 131 8 (27) (1) (0) (0) 0

. SUBTABLE HNPACODE

. 414 414 FRTE 131

Originator is not an AIN agent, therefore AIN info is not processed.

. SUBTABLE RTEREF

. 131 N D EANT_2W_C7LOOPBK 0 N N.

EXIT TABLE RTEREF

EXIT TABLE HNPACONT

LNP Info: Called DN is resident.

LNP Info: Called DN has native NPANXX.

LNP Info: HNPA results are used.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

STS USED FOR TRAVER IS: 414

DIGIT TRANSLATION ROUTES

1 EANT_2W_C7LOOPBK 4145442175 ST

+++ TRAVER: SUCCESSFUL CALL TRACE +++

ISDN quick references

ISDN BRI Maintenance Guide, *NTP 297-2401-501*

Note 1: See ISDN BRI Troubleshooting for PM180 and PM189 logs and ISDN Q931 Procedures for Traces on BRI and PRI in this QRG.

Note 2: See “TRAVER Commands” within this QRG for ISDN TRAVER information and examples.

ISDN query commands

>QLT queries a logical terminal.

>QDCH displays D-channel handler (DCH) connections or ISDN service group (ISG) information. The following connection types are supported:

•**LTID** specifies the number of LTIDs on a DCH

•**BRA** specifies connection information for BRA channels

•**Bd** specifies Bd channels connection information

>QBB displays all relevant information associated with ISDN B-channel connections

>QLOOP an LTPISDN level command that displays all LTIDs, DNs, and TEIs associated with a posted ISDN line. For B-channel packet terminals, the specific B channel is displayed rather than the TEI.

>QCOUNTS displays and resets Layer 2 and Layer 3 protocol and protocol abnormality counts for a particular X.25 LTID or X.75 interface. The command provides an instantaneous snap-shot of protocol performance associated with a logical terminal, X.75 trunk, or specific XSG.

>QIT displays packet provisioning information for terminals on the DPN packet handler (LTIDs in PHINFO). QIT is the primary command for packet-switched service with the DPN PH. Use the QLT command for circuit-switched service.

>QPHF displays information about XSGs, channels, DNs, PVCs, and X.75 links

>QSCONN displays information on special connections for ISDN XPMs. With the DMS packet handler, QSCONN can also be used to identify special connections associated with a specific XSG, and to display all special connections through the network.

>QX75 displays information for the specified XSG that is associated with the X75 special connections to the DMS packet handler

ISDN OM groups

BCAPCG provides registers to count the number of unsuccessful call attempts for IBN and ISDN lines due to bearer capability incompatibility for a particular customer group

BCAPOF same as OM group above, except counts for the whole office. It also measures synonym directory number activity

ISGBRA provides registers to count the number of frames transmitted and received, number of frames discarded, and number of frames with CRC errors on a BRI DCH channel basis

ISGBD provides registers to count the number of frames transmitted and received, number of frames discarded, and number of frames with CRC errors for Bd channels on a per-channel basis. Useful with Packet Service.

ISGCPU provides registers to measure the ISG CPU occupancy on a per-DCH basis

ISGOVLD provides registers to measure the degree to which an ISG is overloaded on a per-DCH basis

CPICG provides registers to count call progress activity events

LMD can be very useful in finding out whether an ISDN PM is under provisioned with DS30-A links to the LCME. It is recommend that you use ORIGBLK and TERMBLK OM registers.

XPMLMK records one-way and two-way link blockage and usage for all XPMs with switched lines. Use PSLBLK and CSLBLK.

ISDN Office Engineering (OFCENG) table parameters

Used by Bearer Capability Routing:

NUM_RC_EXT_BLKS

DEFAULT_BEARER_CAPABILITY(recommend set to SPEECH)

BC_CHECKING_SCOPE

Used by Flexible calling:

MAX_NO_OF_3_PORTS_IN_CHAIN

MAX_NO_MEDIUM_FTR_DATA_BLKS

Other OFCENG Table ISDN related Parameters:

ISDN_DPN_PH_GENERIC

ISDN_NET_1A_INTERWORKING

ISGBDOM_BLKSIZE

LAYER2_PEGS_THRESHOLD_LEVEL

LCDI_SYNC_BURST

LCDI_SYNC_DELAY

PHINFO_AUDIT_TIME

T108ISDN_TIMEOUT_IN_MINUTES

OFCOPT Table ISDN related Parameters:

ISDN_INFO_EXT_REC

MAX_BRA_LINES

MAX_PRI_LINKS

OFCVAR Table ISDN related parameters

QISDN_LOSS_OF_SYNC_WORD_ALARM

QISDN_LOSS_OF_SIG_DGASP_ALARM

QISDN_NT1_TEST_MODE_ALARM

QISDN_T_SYNC_LOST_ALARM

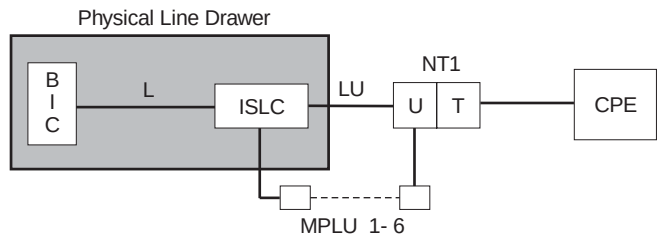
QISDN_PERFORMANCE_M0N_ALARM

ISDN_LOSS_OF_SIG_N0_DGASP_ALARM

Configuring a BRAFS ISDN set with SPID

The Service Profile Identifier (SPID) is a number which associates a terminal to its subscribed services. A SPID must be datafilled in the physical terminal for Layer 3 ISDN connectivity. For National ISDN-1 (NI-1), a 2-digit user-definable number terminal ID (TID) must be included in the SPID configuration. The TID is not datafilled in the DMS-100.

ISDN loopback reference



Note: Loopback testing can be done at one of the following interfaces:

T - loopback at T interface of the NT1 towards the DMS
LU - network side of the line card
MPLU - loop extenders between the ISLC and the NT
L - CC side of the line card

Loopback points can be set at the LTPDATA level using the LOOPBK command and B1 (B-channel 1), B2 (b-channel 2), or BBD (all channels).

Protocol Version Control 1 SPID = NPA + 7-digit DN + spid-suffix (if datafilled in the switch)

Protocol Version Control 2 SPID = NPA + 7-digit DN + spid-suffix (if datafilled in the switch) + TID spid-suffix =one- to two-digit identifier for EKTS-based services, e.g. MADN; MUST match spid-suffix datafilled in the switch.

Note: A spid-suffix is not required for non-EKTS ISDN sets.

Reserving a Spare DCH

Nortel recommends reserving one D-channel handler (DCH) per XPM as a hot spare. For example if you have two DCHs in table DCHINV, only datafill one ISG in table ISGDEF. The second DCH becomes a hot spare.

Table DCHINV

DCHNO PMTYPE PMNO DCHPEC LOAD PORT

_____

2	LTC	3	BX02BA	EDH05BC	17
3	LTC	3	BX02BA	EDH05BC	19

Table ISGDEF

ISGNO PMTYPE PMNO SERVICE CHNLTAB

_____

1 LTC 3 (BRA) (PD) $ (0 RESERVED) (1 BRA) (2 BRA) (3 BRA) (4 BRA) (5 BRA) (6 BRA) (7 BRA) (8 BRA) (9 BRA) (10 BRA) (11 BRA)

(12 BRA) (13 BRA) (14 BRA) (15 BRA) (16 BRA) (17 BRA) (18 BRA)

(19 BRA) (20 BRA) (21 BRA) (22 BRA) (23 BRA) (24 BRA) (25 BRA)

(26 BRA) (27 BRA) (28 BD) (29 BD) (30 BD) (31 BD) $

Note: Bd (D-channel packet service) channels start at DCH port 31 and are datafilled backwards: 31, 30, 29, etc. BRA channels are datafilled from DCH port 1 forward.

PRI Trunk AMI vs. B8ZS capability datafill

In this example, trunk FRS (DTCI 0, span 16) is datafilled for SF (SuperFrame) and ZCS (AMI) capability. This trunk allows 56Kbps transmission speed. Trunk PRAWBA (DTCI 0, span 0) is datafilled for ESF (Extended SuperFrame) B8ZS signaling and uses the card NT6X50AB. This datafill allows 64K clear- channel signaling capability for trunk PRAWBA.

Table TRKMEM

CLLI EXTRKNM SGRP MEMVAR

_____

FRS 1 0 DTCI 0 16 1

PRAWBA 1 0 DTCI 0 0 1

Table LTCPSINV:

LTCNAME PSLNKTAB

_____

DTCI 0 N (0 DS1PRA ESF N 0 NIL) (1 DS1PRA ESF N 0 NIL)

(2 DS1PRA ESF N 0 NIL) (3 DS1PRA ESF N 0 NIL)

(4 DS1PRA ESF N 0 NIL) (5 DS1PRA ESF N 0 NIL)

(6 DS1PRA ESF N 0 NIL) (7 DS1PRA ESF N 0 NIL)

(8 DS1PRA ESF N 0 NIL) (9 DS1PRA ESF N 0 NIL)

(10 DS1PRA ESF N 0 NIL) (11 DS1PRA ESF N 0 NIL) (12 NILTYPE)

(13 DS1PRA DEFAULT N 0 NIL) (14 DS1PRA DEFAULT N 0 NIL)

(15 DS1PRA DEFAULT N 0 NIL) (16 DS1 FRS N)

(17 DS1PRA DEFAULT N 0 NIL) (18 DS1PRA DEFAULT N 0 NIL)

(19 DS1PRA DEFAULT N 1 NIL) $

Table CARRMTC:

CSPMTYPE TMPLTNM RTSML RTSOL ATTR

_____

DTCI FRS 255 255 DS1 NT6X50AA MU_LAW SF ZCS BPV NILDL N 250 1000 50 50

150 1000 3 6 864 100 17 511 4 255

DTCI ESF 255 255 DS1 NT6X50AB MU_LAW ESF B8ZS BPV NILDL N 250 1000 50 50 150 1000 3 6 864 100 17 511 4 255

Assignment of P-Side links to ISDN peripherals

For DS1/DCH interface card port assignments, a maximum of 10 cards can be placed in the LGC/LTC. The port assignment begins with PORT 0 and increases sequentially.

The DS30A ports are assigned starting at the highest port number not used by the DCH and decreases sequentially.

The DCH cards (NORTEL recommends leaving one DCH as a spare pack) are datafilled starting at PORT 19 and decrease with the odd-numbered ports.

Table LTCPSINV

LTCNAME PSLNKTAB

_____

LTC 3 N (0 DS1 64K N) (1 DS1 DEFAULT N) (2 NILTYPE) (3NILTYPE)

(4 NILTYPE) (5 NILTYPE) (6 DS30A) (7 DS30A) (8 DS30A) (9 DS30A)

(10 DS1PRA 64K N 0 NIL) (11 DS1PRA 64K N 0 NIL) (12 DS30A) (13 DS30A) (14 DS30A) (15 DS30A) (16 DS30A) (17 DCH) (18 DS30A) (19 DCH) $

PRI Datafill of Interface IDentifier (IID)

To bring a new PRI trunk into service, especially if this trunk interfaces an SL-1 PBX, follow the following guidelines in the corresponding XPM entry in Table LTCPSINV:

• The span of the PRIMARY DCH must have an IID of "0".

• The span of the BACKUP DCH must have an IID of "1".

• For any additional spans in the trunk group:

- For an MSL-100, if a backup DCH is not datafilled, the IID of "1" should not be used.

- The IID's of the additional spans should ascend sequentially, though not necessarily consecutively.

TABLE LTCPSINV

LTCNAME PSLNKTAB

_____

DTCI 0 N (0 DS1PRA ESF N 0 NIL) (1 DS1PRA ESF N 1 NIL)

(2 DS1PRA ESF N 2 NIL) (3 DS1PRA ESF N 3 NIL)

(4 DS1PRA ESF N 0 NIL) (5 DS1PRA ESF N 0 NIL)

(6 DS1PRA ESF N 0 NIL) (7 DS1PRA ESF N 0 NIL)

(8 DS1PRA ESF N 1 NIL) (9 DS1PRA ESF N 0 NIL)

(10 DS1PRA ESF N 0 NIL) (11 DS1PRA ESF N 0 NIL) (12 NILTYPE)

(13 DS1PRA DEFAULT N 0 NIL) (14 DS1PRA DEFAULT N 0 NIL)

(15 DS1PRA DEFAULT N 0 NIL) (16 DS1 FRS N)

(17 DS1PRA DEFAULT N 0 NIL) (18 DS1PRA DEFAULT N 0 NIL)

(19 DS1PRA DEFAULT N 0 NIL) $

Local Number Portability (LNP) quick reference

LRN - LNP Service Implementation Guide, *NTP 297-8981-021*

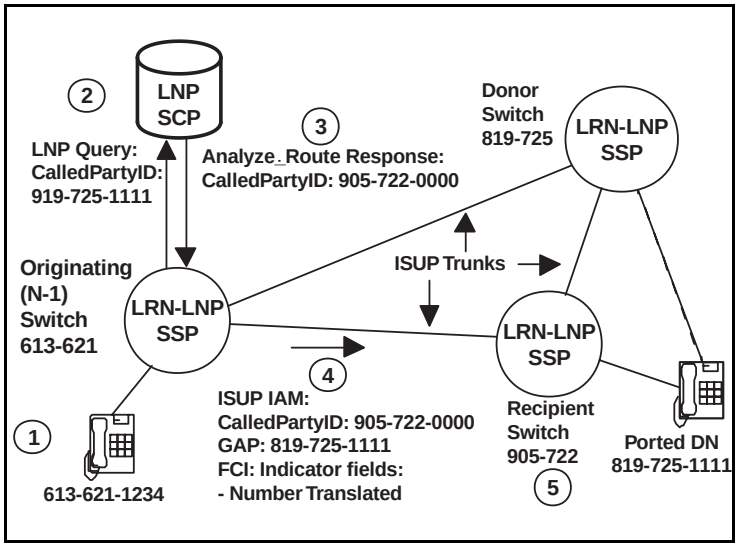
LNP tables
TOFCNAME, HOMELRN, FNPA7DIG, TRIGDIG, TRIGGRP, OFCVAR, LNPOPTS, LNPCODE, LNPRTE (see patches LNP01, LNP02, and LNP03), VII06RTE (see patches VII05 and VII06), ARSSTS (see patches LNP30, LNP31, and LNP32)

Logs
LNP (also see AIN LOGS)

OM groups
LNP (also see AIN OM Groups)

Call to Ported DN

Note: TRAVER examples below support this diagram.



Examples of LNP TRAVER:

Processing Analyze_Route from LNP SCP (see #3 from diagram above):

-CalledPartyID from response = LRN = 905-722-0000

-dialed DN = 819-725-1111

>traver l 6211234 n cdn na 9057220000 ainres r01 lnpar 8197251111 b

Processing Analyze_Route from LNP SCP:

-CalledPartyID from response = dialed DN = 4164671001

>traver l 6255000 n cdn na 4164671001 ainres r01 lnpar n b

Incoming LNP call to a DN which has ported to this switch (see #5 from diagram above):

-incoming ISUP

-LNP query occurred on a previous switch

-LRN=905-722-0000

-GAP=819-725-1111

>traver tr isupitic 9057220000 tcni 8197251111 b

Incoming LNP call to a non-ported portable DN on this switch:

-incoming ISUP

-LNP query occurred on a previous switch

-dialed DN = 6136631001

>traver tr isupitic 6136631001 tcni n b

Post Release Software Manager (PRSM) quick references

Post-Release Software Manager (PRSM) Reference, NTP 297-8991-540 Guide
PRSM Basic Commands, Syntax, and Examples (with PATCHER Command Comparison), NTP 297-8991-541

PRSM Quick Reference Guide, *NTP 297-8991-542*

Post-Release Software Updates (PRSU) statuses

Note: Patches are called PRSUs.

PRSM assigns a status to each PRSU on every DEST (destination). There are five different PRSU statuses.

NV Needs Validating (a PRSU needs validating in the DEST)
VA Validated for Application (the PRSU can apply in the DEST)
A Applied (the PRSU is currently applied in the DEST)
R Removed (the PRSU has been removed from the DEST)
NN Not Needed (the PRSU is not needed in a DEST)

Note: A valid SPM non-permanent PRSU will have an NN status against an SPMLOAD destination with the same loadname.

PRSU extensionsformat: AAANNTaa

AAANN baseid
AAA alpha
NN numeric
T Processor Type
B BRISC
C SUPERNODE
P POWERPC
I ISN
X XPM
S SPM
aa = Patch Release
aa = alphanumeric)

Which PRSU files to keep or erase

CM, XACM and ISN (Intelligent Service Node) PRSU files, once applied, are not required in order to remove the PRSU from the device. All of these device types are capable of being imaged manually or automatically with all the patches applied so re-applying PRSUs after reloading is not required. Therefore, these files can be erased after being imaged to clean up disk space and also reduce the time taken by the nightly file audit. The one exception to this is ISN PRSUs during an office upgrade. The ISN DESTs are loaded with the new release load and patched before the XACM or CM is upgraded. It is recommended to keep these ISN PRSU files on disk until after the XACM or CM has been upgraded to the new load and the new PRSM has validated the PRSU files. The files can then be removed since the new PRSM will now have captured the information needed from the PRSU files. If retaining the ISN PRSU files is desired, it is recommended that the files be placed in a volume not datafilled in table PADNDEV.

XPM and SPM PRSU files need to be kept on disk for as long as the PRSU is at applied status. This is because the PRSU file is always required in order to remove the PRSU from a DEST, and to automatically re-apply the PRSU following a reload or RTS of the device. Any applied XPM or SPM PRSU will have a file alarm raised if PRSM is unable to locate the PRSU file. If the applied XPM or SPM PRSU file is moved, it is recommended that the PRSU be validated following it being moved so the alarm will not be raised.

Missing PRSU files

For situations where the current PRSM discovers PRSUs that have been applied by another instance of PRSM (for example an LIU7 patched image from another switch loaded into the LIU7), it is important that PRSM validate the PRSU files. PRSUs in this situation can display “???” for the category field. If this situation is encountered, retrieve a copy of the PRSU file and validate the PRSU in one of the DESTs that shows a category of “???”. PRSM will then take the information from the PRSU file and place it in the PRSM database and the category will change to what it is supposed to be.

> ***Note:*** The above procedure can be avoided if all of the PRSU files are located, placed in the users search patch, and a dbaudit is performed following loading of the DEST with the patched image. The dbaudit will find the PRSU files and immediately populate the PRSM database with the missing information. Dbaudit is only capable of doing this on the first attempt. If there are category “???” present in the PRSM database, then it is too late for the DBAUDIT command to correct the situation. Validating with the PRSU file is the only way to get the category to the correct value.

OBSolete/OBsolete Emergency (OBS/OBE) PRSUs at VA status

An OBS or OBE PRSU can be found at VA status. This is normal and not a cause for concern. When a PRSU changes category to OBS or OBE, PRSM

needs to be informed. This occurs when a file with a file name of <PRSUID>$DF is downloaded and validated. This file is just the administration section of the patch and is erased after validation automatically. If the PRSU has already been removed when this occurs, the patch transitions from R to VA, the category goes from what it was (GENeral (GEN) for example) to OBS or OBE, and AUTO APPly (AUTOAPP) goes to N. The only way to get the OBS/OBE PRSU back to R at this point is to apply it and then remove it — which is NOT RECOMMENDED. The process requires that the OBS/OBE PRSU file be removed from the site after removal from all DESTs in the office so an accidental apply cannot occur.

For XPM PRSUs the category will not change to OBS or OBE since the only two categories allowed for XPM PRSUs are SouRCe (SRC) and MANual (MAN). However, the AUTOAPP field will be N following validation of the obsolete $DF for XPM PRSUs.

SPM loadfile destinations

When an SPM loadfile is datafilled in table PMLOADS, a destination is added to the PRSM database with the type of SPMLOAD. The SPM permanent PRSUs associated with the SPMLOAD are placed in the PRSM database during a dbaudit of the SPMLOAD. These PRSUs are contained within the load file and cannot be removed from the SPMLOAD DEST (hence the designation permanent).

The DBAUDIT command can be issued manually following adding of the loadfile to PMLOADS, but this is not required since the nightly status audit will perform a dbaudit on all SPMLOAD DESTs in the office.

An SPM loadfile which contains non-permanent (and thus removable) PRSUs is called a Pre-Patched Spectrum Load (PPSL). The filename of a PPSL has 2 characters (a letter followed by a number) appended to the 14 character milestone file name. The DESTID in PRSM will only refer to the 14 character loadfilename for both milestone and PPSL files.

To determine what non-permanent PRSUs are resident in a PPSL, the SPMLFINFO command can be used. For a PPSL there is an additional permanent PRSU which contains a list of the resident non-permanent PRSUs in its description text. The naming convention of this permanent PRSU starts with “SPPSL” followed by the 7 character loadname of the given SPM load. A space separated list of removable PRSUs contained within the load will be displayed in the description section of this PRSU. An example command line would look like:

>spmlfinfo cem16cm_010064a2 qprsu SPPSLCEM16CM

It is recommended that the PRSU files associated with the contained removable PRSUs be located and validated before the PPSL is datafilled in table PMLOADS, but validation can be done after. Note that a validation of the given SPM PRSU file must be performed and the file must be available in order to remove the PRSU.

Note: A PPSL is the same as the milestone load with the patches already applied. It behaves the same as the milestone load with the patches applied via PRSM. Therefore, there is no reason (under normal circumstances) to upgrade from a milestone load to the PPSL version. Simply datafill the PPSL in PMLOADS to be prepared for any future reload from disk (manual or system).

Patching After Loading (PAL)

Following a reload of an XPM device, PAL is invoked. The patches to be applied are chosen by the status of the Apply On Reload (AOR) flag. If the AOR flag is set to Y for any XPM DEST with the given loadname in the office, then the PRSU will be reapplied following the reload.

If the AOR flag is set to N for all XPM DESTs with the given loadname, then the PRSU will not be re-applied. Anytime a PRSU is applied to an XPM device, PRSM automatically sets the AOR flag to Y for that PRSU on that DEST.

Conversely, anytime a PRSU is removed from an XPM device, PRSM automatically sets the AOR flag to N for that PRSU on that DEST. The AOR flag can also be set manually using the ASSIGN command. For example, if one wanted to soak a PRSU in one DEST and did not want it to be re-applied following a reload, just set AOR to N for the entire office:

>assign aor n in prsuset abc04x17 on xpm

PRSU abc04x17 will not be re-applied to any device following a reload.

SPM Patching After Return to Service (SPARTS)

Whenever an SPM destination is brought into service, the SPM maintenance software sends a request to PRSM to execute SPARTS. SPARTS will compare the patch content in the running device with the patch content associated with the given loadname and remove/apply patches to bring the device up to date patch-wise if required.

What PRSUs are removed/applied is based upon the AOR flag just like PAL in XPMs. If the AOR flag is set to Y for any SPM DEST with the given loadname in the office, then the PRSU will be re-applied following the RTS if required. If the AOR flag is set to N for all SPM DESTs with the given loadname, then the PRSU will not be re-applied and in fact will be removed if found applied. PRSM similarly automatically sets the AOR flag to Y/N for a given PRSU on a given device upon application/removal just like in the XPM case.

The steps SPARTS performs are the same as the steps performed by the ISTBAUDIT command on an SPM device:

Query the SPM device whether or not a reload has occurred. If a reload has occurred, then continue on to the next step. If not, then inform SPM OAMP software that the patchfail is cleared and exit.

Run a dbaudit on the specified destinations to sync the destinations with the PRSM database.

Remove any extra PRSUs applied to the specified destinations as determined by the AOR flag (see above). This situation may occur with a Pre-patched SPM load (PPSL) that contained an unwanted PRSU or a device reloading from a stale flash image.

> ***Note:*** There is a time delay following removal (or application) of a patch to an SPM device before the patched image is copied from RAM memory to flash memory. If an SPM device reloads from flash memory during this time delay, then a patch that was recently removed could show up as applied. This is an example of a stale flash image.

Apply any missing PRSUs to the specified destinations as determined by the AOR flag (see above).

Inform SPM OAMP software about the status of the patchfail alarm and exit. If the above 2 steps completed successfully, then patchfail is cleared, and if not, then patchfail is failed for the given SPM device. An SPM301 log is output to show the status of the patchfail alarm.

> ***Note:*** Following any SPARTS failure (patches unable to be applied, PRSM busy etc.) SPARTS will reattempt multiple times after the failure at approximately 30 minute intervals.

The technique used in PAL for XPMs can be applied to SPMs to control re-applying or removing a PRSU following an RTS, namely setting the AOR flag to N for all SPM devices via the ASSIGN command:

>assign aor n in prsuset def09s0p on spm

PRSU def09s0p will now not be re-applied on any device following an RTS and removed on any DEST that it is found applied to.

Other ways to control SPARTS (these do not work for PAL) is to place a PRSU on hold or hold an SPM DEST:

>assign onhold y in prsuset def09s0p

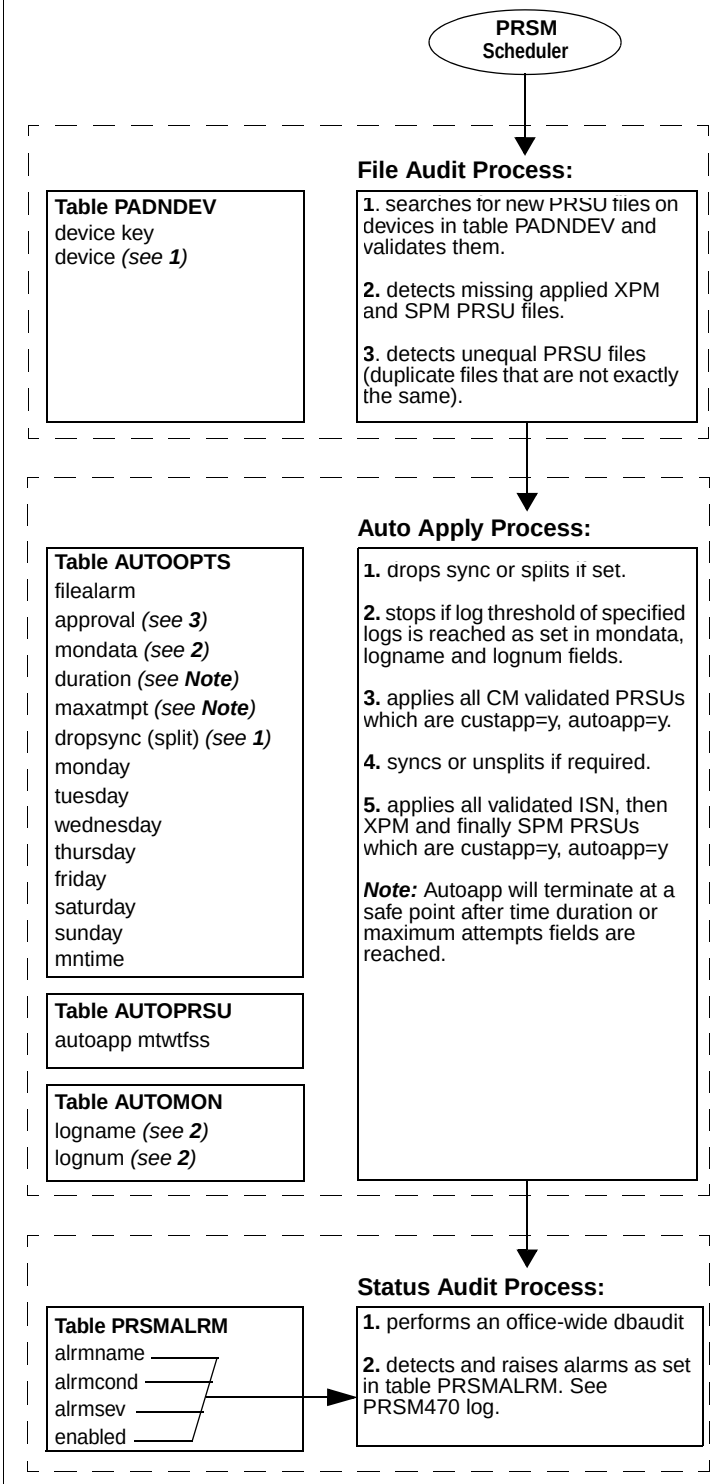
The status of PRSU def09s0p will now be frozen and SPARTS will not be able to re-apply it or remove it from any device.

>assign hold y in destset spm 3 cem 1

The patch content of spm 3 cem 1 will now be frozen and SPARTS will not be able to apply or remove any PRSUs from the DEST.

Summary of PRSM auto processes

PRSM auto processes are controlled by the PRSM scheduler. Every day at the day of the week times set in table AUTOOPTS, it executes File Audit, AUTOAPP and Status Audit. Auto Apply is an optional process that can be controlled via table AUTOPRSU to set which days of the week it runs. Other fields in table AUTOOPTS (mondata, duration, maxatmpt and dropsync (split for XA Core)) are used to control other attributes.The approval field is used to set the custapp default for new PRSU files. Field MNTIME is calculated and written by the system, which estimates the next time autoapp will start.



AUTOPROC command

Use the AUTOPROC command to query the status of any or all of the PRSM automated processes discussed on the following page. It can also be used to START, STOP or DELAY any of the automated processes. For more information, type **> prsm;help commands autoproc**.

Automatic Image Dump

Autodump commands

>AUTODUMP <subcommands>has the following *subcommands*:

>HISTORY	displays the history of the last scheduled image
>STATUS	displays info on last dump taken and ON/OFF status
>ON/OFF	turns scheduled image ON or OFF
>MANUAL	starts an image dump on command
>RETAIN	changes the primary load route updating
>STOPDUMP	stops a scheduled image already in progress

Note: Automatic image (AUTOIMAGE) allows for image dumps to be taken automatically for DMS-100F SuperNode switches.

AUTOIMAGE tables

Table IMAGEDEV defines the image storage file storage devices used in the automatic image dump process. Each tuple in this table consists of 2 fields, VOLNAME and ACTIVE. This table has a maximum size of 4 corresponding to the 4 load routes.

Table IMAGESCHED is used to track and schedule the automatic image dump process. Each tuple in this table consists of four fields: DAY, DUMPHOUR, DUMPMIN, and ACTIVE. The table has a maximum size of 7 tuples corresponding to the seven days of the week.

Note:

1. If any tuples are not datafilled, the auto-image will not run.

2. If more than one volume is defined, then the next image occurs on the next available volume. If current volume is the last one, auto-image will rotate to the top of the table and use the volume defined in the first tuple.

3. If a tuple is datafilled in either table but the ACTIVE field is set to “N”, the auto-image will not run on that day nor use the oldest volume, depending on the table.

4. Some offices may need to increase the size of their disk volumes to accommodate two images.

Ringing quick reference

NTP 297-1001-131, Ringing System
NTP 297-1001-592, Peripheral Maintenance Guide

Informational notes for ringing:

Calls in ringing state are dropped when a warm SWACT occurs.

Ringing is provided to all lines in the LCE frame by RG0 and RG1.

Normally, RG0 supplies ringing to the even-numbered LCM.

Normally, RG1 supplies ringing to the odd-numbered LCM.

The LCM is capable of switching RGs when an RG or LD fault occurs.

A single RG can supply ringing to all LDs in the LCE frame.

The ANI/COIN circuit in RG0 serves unit 0 of both LCMs.

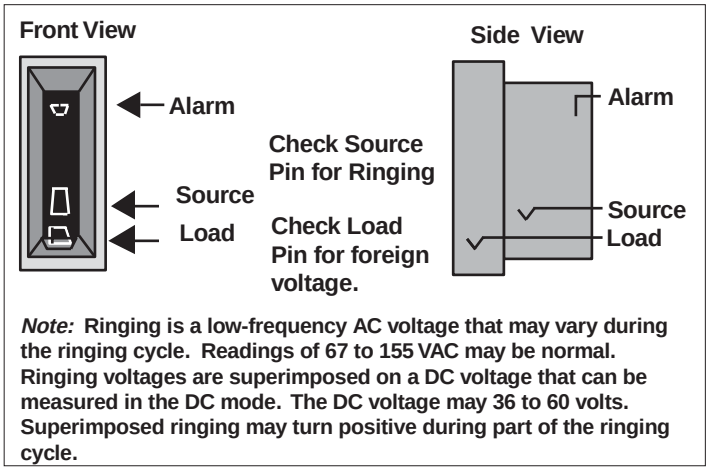
The ANI/COIN circuit in RG1 serves unit 1 of both LCMs.

An ANI/COIN failure in either circuit causes both LCMs to enter takeover mode. In takeover, the remaining ANI/COIN circuit is capable of serving both LCMs in the LCE frame.

Reloading LCMs or performing a SWACT on the C-Side PM does not correct problems associated with ringing.Troubleshooting guidelines for ringing problems can be found in Chapter 31 of *NTP 297-1001-592, Peripheral Maintenance Guide*. Guidelines for changing ringing data in table LCMINV can be found in Chapter 24 of *NTP 297-1001-592, Peripheral Maintenance Guide*.

See “LM/RLM Ringing” in this QRG for a table on “Line Class Codes by Card Type and Ring Code” and reference to Table LMRNG.

RA/RB fuse block reference for ringing check



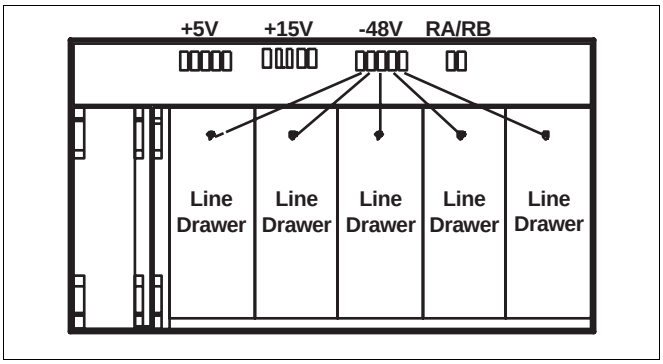
Note: **Ringing is a low-frequency AC voltage that may vary during the ringing cycle. Readings of 67 to 155 VAC may be normal. Ringing voltages are superimposed on a DC voltage that can be measured in the DC mode. The DC voltage may 36 to 60 volts. Superimposed ringing may turn positive during part of the ringing cycle.**

Cross reference of LCMs and drawers to RA and RB fuses

Shelf location	04	21	38	55
LCM number	0	0	1	1
LCM unit	0	1	0	1
Odd LSGs	RB	RA	RB	RA
Even LSGs	RA	RB	RA	RB

Note: See LCE Frame in this QRG for location of LSGs and drawers.

Line Drawers and associated fuses



Note: The BICRELAY Testing feature should be set up for testing only if party lines are assigned on NT6X17 line cards, or if any NT6X19 message waiting cards are used. Reference the LCMINV table and the BICTST field where the test is set to “Y” or “N”. See the OFCENG table parameter ALLOW_RINGING_ON_TIP_SIDE. Parameter BICRELAY_XLCM_TEST_SCHEDULE is preset.

SMDI quick references

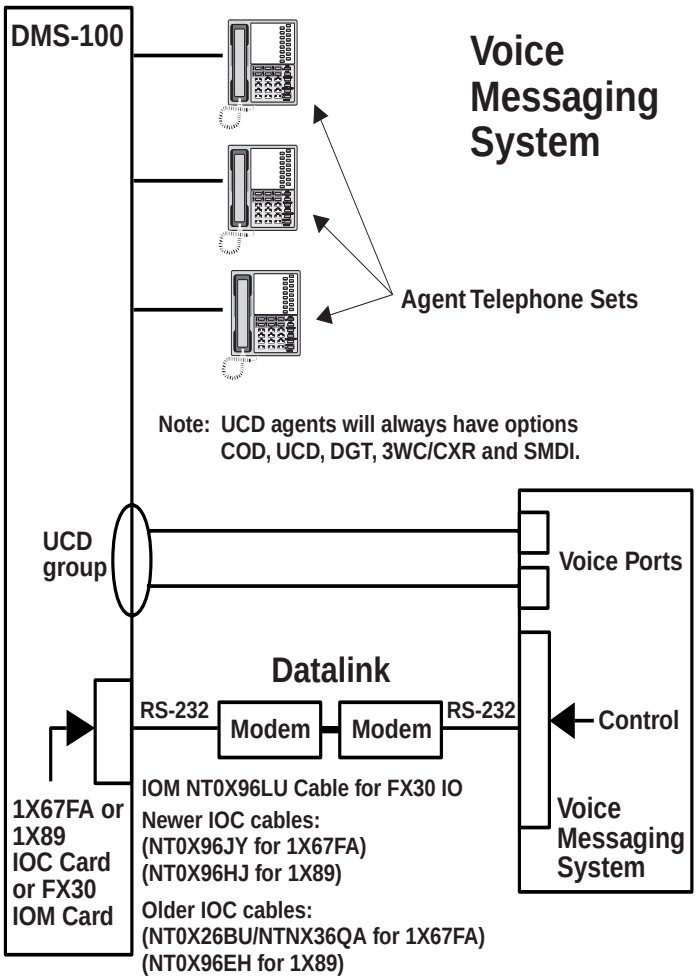
NTP 297-2051-104, SMDI Set-up and Operation
NTP 297-YYYY-350, Translations Guides

Tables
TERMDEV, SLLNKDEV, UCDGRP, and DNROUTE.
Also, see tables MPC and MPCLINK if using 1X89 MPC card instead of 1X67FA card.

Logs
SMDI, SLNK, IOD, MPC, SWER

OMs
SLLNK, SLLNKINC

Engineering parameters
AUXCP_CPU_SHARE (1X89),
CFGDA_SEND_PILOT_DN_TO_SMDI_ISUP (CCM04), FTRQ2WPERMS, FTRQ8WPERMS



Commands to bring link down, BSY/RTS card, and restore link

Note: The BSY/RTS of the SMDI link at the IOC level will automatically perform the following commands:

>LNKUTIL

>SMDILNK

>SMDIDISC <vmail device name>

>DEVSTOP <vmail device name> SMDIDATA

>DEVDISC <vmail device name> KILL

>MAPCI;MTC;IOD;IOC <ioc>; CARD <SMDI card>

Note: IOC and CARD information can be found in table TERMDEV.

>BSY 0; RTS 0

>DEVCON <vmail device name>

>DEVSTART <vmail device name> SMDIDATA

>SMDICON <vmail device name>

>LNKSTAT ALL

Note 1: Should show transferring after entering this command.

>SMDISTAT ALL

Note 2: Should show routing. The DMS accepts two kinds of incoming messages from the voice mailbox:

1. Message to activate the MWT indicator:

   OP: MWI (SP) nnnnnnn! (D)

2. Message to deactivate the MWT indicator:

   RMV: MWI (SP) nnnnnnn! (D)

The DMS sends two groups of outgoing messages to the voice mailbox:

1. Call Detail Messages:

   (CR) (LF) MDqqqmmmmannnnnnn (SP) yyyyyyy (SP) (CR) (LF) (Y)

   (CR) (LF) MDqqqmmmmannnnnnn (SP) (SP) (CR) (LF) (Y)

   (CR) (LF) MDqqqmmmma (SP) yyyyyyy (SP)(CR)(LF)(Y)

2. MWT Change Failure Messages:

   (CR) (LF) MWInnnnnnn (SP) INV (CR) (LF) (DL) (DL) (Y)

   (CR) (LF) MWInnnnnnn (SP) BLK (CR) (LF) (DL) (DL) (Y)

   where:

   (SP) = space
   (CR) = carriage return
   (D) = <ctrl>D (end of transmission)
   (LF) = line feed
   (DL) = delete character (ASCII value FF)
   (Y) = <ctrl>Y
   qqq = message desk number (001 - 063)
   mmm = msg desk terminal or line number (0001 - 2047)
   nnnnnnn = forwarding from station number (7 or 10 digits)
   yyyyyyy = calling station number (7 or 10 digits)
   a = type of call:
   D = direct calls
   A = forward all calls
   B = forward bsy calls
   N = forward no ans calls

Commands to view incoming and outgoing messages (1X67FA)

>RECORD START FROM <vmail devicename>

>RECORD START FROM <vmail devicename>

To view incoming and outgoing messages (1X89 MPC Card)

XPMIST the MPC link or use the MONMPC CI level commands

MONMPC CI level commands

>QUIT

>MPCSTART

>MPCSTOP

quits MONMPC level
starts recording MPC messages onto a device
stops recording MPC messages onto a device

>MPCPRINT parses the files and displays to terminal
>STARTMSGS starts monitoring for a specified MPC
>STOPMSGS stops monitoring for a specified MPC
>DISPLAY displays captured MPC messages to the user
>QUERY displays current MONMOCCI status information
>FORMAT determines how captured data will be displayed
>DEALLOC halts message capturing and deallocates MONMPC memory
>CAPTURE initiates capturing of MPC messages from started MPC

Example of MONMPC command:

>MPCSTART <mpc #> <device> %% fname will be RECFILE

Make test calls then:
>MPCSTOP <mpc # or all>
>MPCPRINT <filename>

Message waiting utility commands

>MWQ activates the message waiting query utility

>HELP MWQ displays the subcommands and their descriptions

>STATUS <dn> displays messages waiting for DN with MWT/EMW option

>RESET <dn> clears messages for DN with MWT or EMW option

>DEQ <dn> <L,M,C>dequeues the requestor from the requestee

>QUEUE <dn> <L,M,C> <opt> queues the requestor from the requestee

Process states for SMDI	**Should show:**
>QUERY PROCESS SMDIICT	'queued on event'
>QUERY PROCESS SMDIOG	‘queued on flag’ (1 per 1X67)
>QUERY PROCESS SMDIINC	‘queued on mailbox’ (1 per 1X67)
>QUERY PROCESS SLMPCOGT	‘queued on flag’ (1 per 1X89)
>QUERY PROCESS SMDINMPC	‘queued on flag’ (1 if using 1X89)
>QUERY PROCESS SMDIAUDP	‘queued on time’

The following command may be helpful for reviving MPS processes.

>MAPCI;MTC;IOD;IOC x;CARD y;REVIVE ALL
%%x = IOC # y = CARD #

The following command provides all the lines assigned to a UCD group from line number 1 (LINE_NO: 1) and up:

>SMDIDISP LINE_TABLE GROUP 0
%%0 is first entry in table UCDGRP that has the ucd_smdi option

UCDQUERY utility

>UCDQUERY activates the UCDQUERY utility
>QUIT quits from the UCDQUERY environment
>HELP displays UCDQUERY commands
>SETGROUP sets the global group parameter
>CLEARGROUP clears the global group parameter
>SHOWGROUP displays the global group parameter
>QUERY displays the UCD data structures
>UCDDNS displays list of UCD DNs

Example of QUERY command:

>QUERY RUNNINGTOTALS GROUP COVM

UCD RUNNING TOTALS FOR UCD GROUP 1 (“COVM”):

Total UCD Agents Enqueued:	48
Total UCD Agents in BUSY queue:	0
Total UCD Agents in IDLE queue:	48
Total Incoming Calls:	0
IS EMPTY.	
Total P0 Call Queue Size	0
IS EMPTY.	
Total P1 Call Queue Size	0
IS EMPTY.	

Total P2 Call Queue Size 0

IS EMPTY.

Total P3 Call Queue Size 0

IS EMPTY

Example of UCDDNS command:

>UCDDNS GROUP COVM

UCD Directory Numbers For UCD Group COVM

Primary UCDDN: 619 675 4555

Call Priority: 0

SMDR Quick Reference

297-2071-119, Station Message Detail Recording Reference Guide

Tables

CRSFMT, DISPOOL, DIRPSSYS, CRSMAP and CUSTSMDR (basic table datafill order to activate SMDR Recording)

Note: For a list of tables used by SMDR, refer to NTP 297-2071-119

Logs

AMAB

Engineering parameters

AMA_FAILURE_FREE_CALL, NO_OF_FTR_CONTROL_BLKS, NO_OF_DATA_BLKS, CRS_PRU_POOL3_SIZE, NUM_CALLREC_STREAMS, CRS_SUBRU_POOL1_SIZE, CRS_SUBRU_POOL2_SIZE, CRS_SUBRU_POOL3_SIZE, NUMCPWAKE, UNIQUE_BY_SITE_NUMBERING, ANI_IN_SMDR, SMDR_OFFICE, AMA_FAILURE_ROUTE_POSITION, DATA_CALL_SMDR, FGD_ANI_SMDR_REQD, SMDR_LOG_REPORT

Commands

The AMADUMP and CALLDUMP commands are used to display a fully formatted billing record. CALLDUMP uses the same display format as the AMAPDUMP command. The major difference is that CALLDUMP formats billing records out of the internal call record buffer and AMADUMP formats billing records from a DIRP file using CALLDUMP.

Note: Refer to the "DMS Menu and Non-menu Commands" under "OAMP" chapter for commands information.

Using the DIRP facility

The DIRP facility is used for storing SMDR data. Refer to the DMS *Routine Maintenance*, *Alarms and Performance Monitoring*, *Trouble Locating and Clearing* and *Recovery* procedures for DIRP maintenance.

SPM Quick Reference

Determining SPM Trunk Terminal & Node Numbers

Note: Unless you know the SPM and the and circuit numbers, locate it in table TRKMEM.
TRKMEM Ex: **SRMPODNWDS0 255 0 SPM 1 98 5**

Note: In this example for trunk 255 in the SRMPODNWDS0 trunk group, 98 is the ckt # (span #) and 5 is the circuit (channel #) in SPM 1.

Note: Terminal Number (TN) = (Span X 24) + Channel (Channel = 1-24)

Note: SPM ckt #'s start at 95 which is span 0; therefore, circuit 98 in this example would be span 3. Since we now know the span is 3 and the channel is 5, we can figure the terminal number. Terminal Number is: (3 X 24 + 5) = 77

Note: To get node number (NODENO), you can use XPMIST. Ex: >**XPMIST;NODENO SPM 1**

Note: Another way to get an SPM trunk TN and NODENO is to go into toss-up and turn PMIST on. Once in PMIST, use the command >**CONVERT TRK SRMPODNWS0 255**. The output will be in HEX so convert to decimal if needed

DSP Island (DSPI) Resource Provisioning

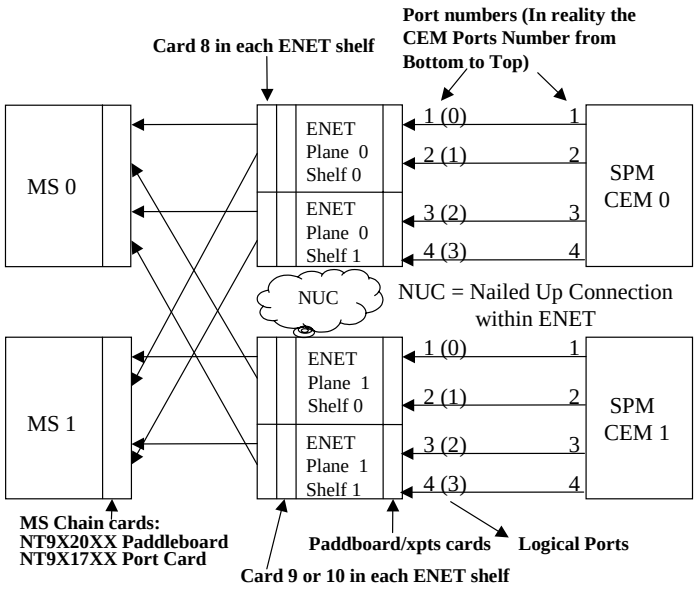
Note: Each DSP RM provides a total of 9 DSP Islands (DSPIs). The resources should be allocated across the RMs so that the DSP messaging load is evenly distributed. Only one type of resource can be provisioned per DSPI. The following table defines the capacity number for each resource:

*	**	Notes and Descriptions
COT	80	COT = Continuity tone transceiver.
Tone Syn	255	It is not recommended to have more than 14 ABBIT resources (one ABBIT DSPI) on an RM that also has 255 ToneSyn (Tone Synthesizers) resources allocated on it, since both of these resources are messaging intensive.
DTMF	64	DTMF = DigiTone/Multi-Frequency receiver with dial tone generation.
ABBIT	14	It is not recommended to have more than 28 ABBIT (AB Bit) resources (two ABBIT DSPIs) on the same RM.
MF	40	MF=Multi-Frequency receiver

Note: * Resources column

** Each of the values in this capacity column is equal to one DSPI.

SPM to ENET Connectivity Diagram



Note: Each SPM CEM card has 4 DS512 ports which are cabled via fiber straight from the front of the CEM cards to ENET planes using NT9X40DA Paddleboards; then from the ENET via existing DS512 fibers to the MS.

Verifying Crossover Messaging

Enter the SPMXMSG level at the CI: level of the MAP

>SPMXMSG

>DISPLAY

Example of response:

```
SPM_NO     XOVER_MSG      CEM0        CEM1
-------------------------------------------------
  0          N          NTLX63AA    NTLX63AA
  1          N          NTLX63AA    NTLX63AA
  2          Y          NTLX82xx    NTLX82xx
  3          Y          NTLX82xx    NTLX82xx
```

Note: SPM(s) with NTLX82(s) must have XOVER_MSG field set to “Y”.

Contact your Nortel Regional Customer Service Representative if Crossover criteria is met and Crossover has not been activated. Reference DMS-100 Technical Bulletin 20010043.

Table MNHSCARR (Mgmnt Network High Speed Carrier)

(*NTP 297-YYYY-351, Customer Data Schema Reference Manual*

FRAMEFMT	DS1ZCS	Equivalent To
ESF	OFF	B8ZS / 64kbs
ESF	ON	Does not exist
SF	OFF	B8ZS / 56kbs
SF	ON	AMI / 56kbs

Note: The DS1ZCS parameter is available in NA011 and above. The DS1ZCS must match the far-end MUX.

SPM Primary Rate Interface (PRI)

PRI on SPM is available as of NA012/SP12. PRI on SPM requires 2 DLC (NTLX72xx) RMs. They provide 1 + 1 redundancy and are suggested to be assigned in slots 1, 2, 7, or 8 of SPM Shelf 1 to avoid wasting S-links.
Note: Use PRSM command ISTBAUDIT to confirm DLC patches. ex:
>**ISTBAUDIT <spm #><dlc #>**

SPM PRI Trunk Tables Datafill Sequence and Notes

Datafill in the following sequence for PRI on SPM: CLLI, TRKGRP, MNPRIIID, TRKSGRP, TRKMEM, LTDFEF, LTMAP, LTCALLS.

Note: In table TRKSGRP, the CRLENGTH field should always be set to 2 for SPM PRI. The IFCLSSS field must be the opposite of the far-end CPE and is generally set for NETWORK in the DMS-100.

Note: Table MNPRIIID maps the SPM and circuit number to the Interface Identifier used by the PRI circuit (DS1). Use the following conventions and ensure they correspond to the same value in the CPE provisioned spans:

Primary D-Channel = IID 0
Backup D-Channel = IID 1
24 B-Channel Span = IID $\geq$ 2

Note: In table LTDEF, the VARIANT must match the far-end CPE or problems may be experienced. The PROFNAME should be set to NIL, unless connecting to Meridian-1 CPE for which the PROFNAME should be set to SL1PROFL. The Profile Name is defined in table PRIPROF.

Note: Even though some changes to tables MNPRIID and TRKSGRP are allowed while LTID is mapped in table LTMAP. To help prevent possible corruption, perform the following steps to complete PRI datafill:

1. BSY;BSY INB the D-Channel and B-Channels of the trunk.
2. Remove the associated LTID tipple from table LTMAP.
3. Make the desired table changes.
4. Add the associated LTID tipple back into table LTMAP.
5. BSY;RTS the D-Channel and B-Channels of the trunk.

SPM Trunk Provisioning Limits for pre-SP16

Note: The limits will be removed in the SP16 release, which will allow any combination of trunk types up to the full SPM port capacity.

Trunk Combination	ISUP T1s	PTS T1s	PRI T1s	Notes
ISUP	84	-	-	Full Capacity
PTS	-	56	-	Up to 56 PTS with the remaining T1s unused
PRI 23B + D	-	-	84	Full Capacity
ISUP/PTS	84-59	0-25	-	Up to 25 PTS with the remaining T1s ISUP
ISUP/PRI	84-0	-	0-84	Any combination of ISUP and PRI to equal 84 T1s
PTS/PRI	-	0-16	84-68	Up to 16 PTS with the remaining T1s PRI

Trunk Combination	ISUP T1s	PTS T1s	PRI T1s	Notes
ISUP/PTS/PRI	84-32	0-20	0-32	Up to 20 PTS and up to 32 PRI with the remaining ISUP
ISUP/PTS/PRI	84-0	0-16	0-84	Up to 16 PTS with any combination of ISUP and PRI

SPM EXECTAB lineup

The following is the basic execs datafill to allow PTS and PRI functionality. Datafilled in table MNNODE.

Appl:	DMS 100:	DMS 250:	DMS 500
Appl:	DMS 100:	DMS 250:	DMS 500:
PTS:	ABTRK SPMEX	AB250 SPM250	AB250 SPM250
		ABSPMX PXSPMX**	ABTRK SPMEX
		AB250 PXDTCX ***	ABSPMX PXSPMX**
PRI:	PRAB SPMEX	PRAB SPM250*	PRAB500 SPM250 *

***** The PRAB500 SPM250 exec is not available until SP15. Prior to SP15, you cannot have PRA (DMS100/200) and PRA250 (DMS250/500) PRI on the same physical SPM. Until the PRAB500 SPM250 exec is available, you must have the PRI trunks designated for either PRA (DMS100/200) or PRA250 (DMS250/500) and use the PRAB SPMEX (for PRA) or the PRAB SPM250 (for PRA250) applications. (This means in DMS500 offices the PRI trunks have to physically be in a SPM that is designated via the execs for the DMS100 or either the DMS250 side - at least until SP15 and the PRAB500 SPM250 exec is available anyway...)

****** ABSPMX PXSPMX is not fully functional until SP16. (Even though it can be datafilled prior to SP16.) ABSPMX PXSPMX allows PX trunks that use FX signaling. This lineup also allows DAL and PX FX trunks to function on the same SPM.

******* AB250 PXDTCX is used for PX trunks with FX signaling pre-SP16. Remember: DAL and PX FX cannot be placed on the same SPM prior to SP16.

Example exec lineups in table MNNODE for DMS250/500:

Pre-SP16: (If you have standard PTS and nothing else, use: (ABTRK SPMEX) (AB250 SPM250) (If you have standard PTS and PRI for DMS250, use: (ABTRK SPMEX) (AB250 SPM250) (PRAB SPM250) (If you have standard PTS and PRI for DMS100 in a DMS500 office, use: (ABTRK SPMEX) (AB250 SPM250) (PRAB SPMEX) (If you have standard PTS, PX FX without any DAL trunks on this SPM, and PRI for DMS250, use: (ABTRK SPMEX) (AB250 SPM250) (AB250 PXDTCX) (PRAB SPM250) (If you have standard PTS, PX FX without any DAL trunks on this SPM, and PRI for DMS100 in a DMS500 office, use: (ABTRK SPMEX) (AB250 SPM250) (AB250 PXDTCX) (PRAB SPMEX)

SP16 and above: (The following execs should handle about ANY configuration...but see below if placing both DAL and PX FX trunks on same SPM...) (ABTRK SPMEX) (AB250 SPM250) (ABSPX PXSPMX) (PRAB500 SPM250)

Example exec lineups in table MNNODE for DMS100 offices:

Pre and post SP16: (This is all you need to cover standard PTS and PRI...) (ABTRK SPMEX) (PRAB SPMEX)

DAL prefix on the same SPM

Note: To allow DAL and PX FX trunks to function on the same SPM, the following must be performed:

Reference:

PLN-8021-004 DMS-100F North American DMS-100 Release Doc.
Volume 1 of 2

LET0014 Preliminary 12.02 October 2000
Pages 161 - 168, inclusive; Page 165 - 166, excerpt

7.6 Upgrade Procedure

This feature requires a special upgrade procedure to properly activate its functionality without causing a loss of service in an active switch. Activating the office parm for this feature without following the upgrade procedure below may cause loss of service in live switches. The following steps are necessary for this procedure:

1. SPMs must be at least SP16 load.

2. The core must be at least LLT00014 and have patch PJL26BHZ applied. (For LLT00015, core patch PJL26BHL)

Note: The office parm DAL_pxfx_on_same_spm SHOULD NOT be activated at this time.

3. Table MNNODE accessed and ABSPX PXSPMX added to each tuple in the EXECTAB optional field for each SPM that DAL and PX FX on same SPM is desired. (NOTE: ANY SPMs that currently have FX trunks on them will also have to have ABSPX PXSPMX added as an EXECTAB. Once the core parm DAL_pxfx_on_same_spm is activated, ABSPX PXSPMX will be the only exec being used for this functionality, regardless of if DAL is also on the SPM.)

4. All SPMs on the switch that were affected by the MNNODE changes in step 3 must be BSY/RTS'd to allow the new termtype and its corresponding execs (ABSPX PXSPMX) to be downloaded to all the SPMs.

Note: The BSY/ RTSing a SPM as mentioned here consists of the following steps:

i. BSY the inactive CEM.

ii. RTS the inactive CEM.

iii. Perform a SPM SWACT.

iv. BSY the newly inactive CEM (was the active)

v. RTS the newly inactive CEM

Note You will also be prompted by the DMS to perform this when adding the new termtype and execs in step 3.

5. The office parm DAL_pxfx_on_same_spm for this feature is now activated on the CM. To allow all PX FX trunks to be recognized as the new termtype, all SPMs on the switch affected by the MNNODE changes in step 3 must be BSY/RTS'd again, as in step 4 above. This is necessary for the smooth transition of PX FX trunks from the AB250 termtype to the new termtype ABSPX without causing call outages.

SPM Table References

Several tables have been added for configuring SPMs. Except for the need to datafill table TRKMEM after SPM table MNHSCARR, and table TRKSGRP after SPM table MNRIIID for PRI, datafill the existing tables CLLI, PECINV, CLLIMTCE, PMLOAD, and TRKGRP for trunking, and table ENCDINV for hooking it up to the ENET, the following new SPM tables must be datafilled in the following order: MNPRTGRP, MNNODE, MNSHELF, MNCKTPAK, MNLINK, MNHSCARR, MNATMCON, MNPRIIID, SPMECAN, FEATCNTL.

SPM OM References

For SPM OM support, reference the following OM Groups: DSPRMAN, ECANRMAN, MNTCNODE, MNTCTYPE, MNTCUNIT, MNTCLINK.

SPM Log References

Use SPM logs SPM300 thru SPM710 and other related logs: SPRF670 - 671; CARR300, 310, 500, 510, 511, 512, 800, 810, 811; ENET211, 308, 311; PRSM400.

SPM Alarms

Note:If your office is pre-NA011 and you have a non-node visible alarm, (such as a PROTFAIL), you must use logutil and/or dlog/scanlog to locate an SPM331 log indicating the source of the alarm. The only way to clear a “Non-Node Visual” SPM alarm is to perform a successful Protection Switch of the RM causing the alarm.

Note:In NA011 and above offices you can list all SPMs with alarms, INCLUDING the ones caused by protection switching alarms by entering >MAPCI NODISP;MTC;MTC;POST SPM ALL and then enter >QUERYPM FLT ALL.

Note:Tables MNPRTGRP, MNCKTPAK, MNNODE, and MNHSCARR, contain alarm datafill.

LED Alarm Indicators

Note: For a detailed description of the alarm LED indicators for the frame and RMs, see NTP 297-1771-550, SPM Hardware Maintenance Reference Manual.

The following table provides a quick reference for RM LED status and what their indication means.

LED Status		Indication and Action
Green Off	Red Off	Green LEDs are in sleep mode (module can also be not powered or not seated). When all LEDs are off, there are no critical faults and an indicator test is not underway. Use an indicator test to check LED function. Also, see note below on prolonging LED life.
Green On	Red On	A power on self test (POST) or an LED indicator test is underway. During a POST, the LEDs are controlled by the initial boot loader (IBL) software. If both LEDs remain on for an extended period after a POST, the module is defective. For detailed instructions for replacement, see the appropriate NTP for Card Replacement Procedures. Also, see note below on prolonging LED life.
Green On	Red Off	Normal operation—there are no critical faults and no action is required. Do not remove a module displaying this alarm indication or combination.
Green Off	Red On	Critical fault—replace the module. For detailed instructions for replacement, see the appropriate NTP for Card Replacement Procedures.
Amber Off		Normal operation—all external signal inputs to the module faceplate are valid.
Amber On		At least one external signal source entering the module faceplate is not carrying a valid signal.

Note: To prolong LED life, program the green LEDs so it can enter the sleep mode. LED sleep-mode timing is controlled by the entry in field LEDTIMER in data schema table MNNODE. Sleep mode does not apply to red LEDs.

PREPDATACHNG Command

Prior to BAS18 core offices, in order to perform SPM resource manipulation in table MNCKTPAK, the craft person needed to have an understanding of the concept of "Roving Spare Strategy", and may have to perform several sparing actions (prot switches) in order to align the RMID and PROTWHOMID and change the RM's Resource Datafill properly.

In BAS18 and above, the PREPDATACHNG command will reduce the complexity/difficulty of provisioning, configuring, and changing the Resource Datafill on RMs. The user will only need to issue a command (PrepDataChng) to align the RMID and PROTWHOMID of the RM in context. Depending on the result of this command, the customer will be notified if they can proceed to change the RM datafill and finally RTS the RM.

To invoke this command:

>**mapci;mtc;pm;post spm <#> ; select <DSP or VSP to be modified in MNCKTPAK>**

>**PrepDataChng**

Circuit Pack Descriptions

Note 1: The following circuit pack descriptions are for most of the packs shown within the various Carrier VoIP and TDM component hardware shelves in this QRG.

Note 2: Refer to the DMS-100 Quick Reference Guide for additional TDM components and their PECs that are not addressed in this QRG.

PEC	Description
NTRX51FH and NTRX51FE	Two Shelf Controller cards are configured in each CPX8221 shelf. There are two types of shelf controller cards. NTRX51FH for IP networks and NTRX51FE for ATM networks. The CCF frame is not deployed in ATM applications. Instead the SAMF frame provides this functionality. The cards are manufactured by Motorola using the model number MCP750HA. Each card has one 10/100 Ethernet port. Motorola SMM750HA-1352-F Board, 366 MHz MPC750-128MB RAM w/ Linux PPC.
NTRX51BL NTRX51DL	The Gateway Controller cards are configured in pairs (one active and one standby).In IP applications, this functional pair of cards should always be split across different shelves for redundancy and reliability. In ATM applications, this functional pair should be configured side by side within the same shelf to support communication between the pair. Motorola manufactures these cards, of model number of MCPN750A. Each card has one 10/100 Ethernet port. Motorola MCPN750 Board, 366 MHz/128 MB RAM w/ VrTxO/S.
NTRX51LC	Required for SIP Lines applications. Should be provisioned for use with new installations of H.323, CICM, and IPSec Trunk applications.
NTRX51GZ (1.5GB) and **NTRX51FZ** (1.0 GB)	One Call Agent card is configured in each CPX8221 shelf. Each card has two 10/100 Ethernet ports and has a fibre channel interface to each other. It is comprised of a Motorola MCPN765 Board, MPC7410-500 MHz/1.0 or 1.5 GB RAM w/ LinuxPPC O/S+ rear Transition Module + Fibre Channel PMC. The 1.5 GB version of this card is baseline for SN06 and later releases.
NTRX51FN(T1) and **NTRX51FJ(E1)** will be replaced by **NTRX51TD**	Functionality of a full chassis based USP which provides Signaling Gateway solutions will be complemented by the USP Compact card. USP Compact supports channelized T1/E1 SS7 links (4 or 8 channels per card), and IPS7 connections. USP Compact will not support m2pa IP High speed SS7 links, ATM based High speed SS7 links, DS0a SS7 links, or V-35 SS7 links.

PEC	Description
NTRX51GY and **NTRX51HY**	Two Message Controller cards are required for Hybrid, and they are configured as one in each CPX8221. The cards are manufactured by Motorola using the model number MCPN765. Each multinode card has two 10/100 Ethernet ports, and two ATM PMCs. Motorola MCPN765 Board, MPC7410-500 MHz/512 MB RAM w/ LinuxPPC O/S+ rear Transition Module (NTRX51FS) + Two ATM PMCs.
NTRX51FM	One Storage Management card per SAM21 shelf in Slot 5 is required for access to fault management storage. The STORM card is a Motorola MCPN750 board with 366 MHZ powerpc processor, 256 MB RAM and fiber channel peripheral component interconnect (PCI) mezzanine card (PMC). From SN06, the STORM hardware platform is available in a rack mountable configuration (SAM-XTS).
NTRX51GX	The Persistent Data Storage Raid mass storage shelf occupies the position immediately below the power distribution shelf in the call control frame. The shelf houses disk drives, two interface cards, and redundant power supplies. Each interface card has a fiber channel interface to a STORM card on the SAM21 shelf. This fiber connectivity mass data storage SANnet 7000 is manufactured by DotHill. Beginning with SN06, it is replaced by a PDS server. Two Server based PDS chassis can be installed in the CCF directly below the BIP. The PDS is a 2U NEBS compliant server based on Intel architecture. The PDS has a 2+ GHz Pentium 4 Xeon Processor and contains two hot swap SCSI disk drives (72 GB). Connectivity to the PDS is through dual 100/1000 Base-T copper ethernet interfaces. Each PDS is connected to both lan routers.
NTRX51LC	Required for IAA in cable deployments
NY26AA	ThePower Filter card provides filtering of talk battery A/B feeds and signal battery A/B feeds. It is always required on equipped shelves and is located in the lower half of slot 1 in the MG9000 shelf.
NY23AA	The SIC card works with the alarm relay card and provides an interface to the Breaker Interface Panel. It is always required on equipped shelves and is located in the top half of physical slot 1.
NTNY45AA and **NTNY45CA**	The Data control card (with OC-3c WAN or OC-3 Channelized) is an interface slot for traffic and element control to the ATM network. Provisioned in pairs for redundancy with a maximum of one pair on each shelf. When present, it makes the shelf a Master shelf. Replaces the OC3 ATM Card (NTNP36BA) from SN05 onwards.

PEC	Description
NTNY45BA	Data control card (with 8 port IMA WAN) is a redundant 8 port DS1 IMA interface and an interface slot for traffic and element control to the ATM network. Provisioned in pairs for redundancy with a maximum of one pair on each shelf. When present, it makes the shelf a Master shelf. Supports a maximum of 4 MG9K shelves (1 Master + 3 subtending). Does not support DS512 ABI circuit packs
NTNY41AA and **NTNY41BA**	The Internet telephony extender provides subtending to additional MG9000 shelves and processes the ATM-25 line the ITX card creates. Allows the MG9000 platform to terminate POTS phone and type-B lines, convert TDM data streams to ATM cells and provide processing and interface for Internet Telephony processing. It is an interface for traffic and control data to and from the ITX in the master shelf. It resides in all shelves
NTNY40AA	The 16-port DS1 circuit emulation service card for the MG9000 allows the platform to terminate TDM based DS1s and provides circuit emulation over ATM AAL-1.
NTNY42AB	New MTA card; supports real-time monitoring of A-feed and B-feed talk battery voltages
NTNY45FA	Provides GigE IP interface from the MG 9000
NTNY50AA	This card will support 32 subscribers for North American UA-AAL1 and UA-IP applications. Each POTs 32 card has a dedicated ringing generator and power supply. The number of line cards used on the master MG9000 shelf is dependent on the number of ITX and MTA cards required for the MG9000 node. Line cards should be provisioned from left to right
NTNY52AA	The 8 + 8 combo ADSL line card is provisioned in the master shelf only. The max number of combo line cards provisioned is dependent on the number of ITX cards required for the node. They are provisioned from the left side of the MG9000 to the right side.
NTNY51BA	The Service Adaptive Access (SAA-12) Linecard is a 12 port service adaptive access line card that supports 2-wire services (POTS, P-phone, COIN) in UA-AAL1 application
NTNY53AB	New GLC-32 line card; supports NA POTS, Ground start, Loop reversal, and P-phone

PEC	Description
NTNY64EA	The Metallic Test Access line card provides an interface for control and loop connections to an external test head and provisions for an integrated test head and test response circuitry. One MTA is required per standalone master shelf. Also, one MTA is required for the first subtended shelf in each MG9000 Network Element and, if the NE spans multiple frames, the first shelf in each subsequent frame must be equipped with an MTA.
NTNY43AA and **NTNY43BA**.	Each DS-512 card hosts a single DS-512 fiber link consisting of one downstream/TX fiber and one upstream/RX fiber. DS-512 cards must be housed on a master shelf equipped with OC-3 Super Core network interface CP_s. (DS1 IMA DCC CP_s will not support DS512 ABI interfaces). Up to 8 DS512 cards can be provisioned, eight for OC-3 and two for DS3 equipped DCC's. The SN05 release supports 2 subtending XPM_s, SN06 supports 4. The NTNY43BA supports both ATM and IP applications. However, it is not supported in MG9K IP or UA-IP applications (NTNY43AA only)
NTRX51TA	The PTE 2000 based Call Control Frame is (7 ft. high x 2 ft. wide x 2 ft. deep frame with front and rear vented doors and optional side panels) can house a total of 2 SAM21 chassis and 1 SAM16 chassis or 2 SAM21 chassis and up to 6 AMS chassis
NTRX51HA	The PTE 2000 based SAMF Frame is (7 ft. high x 2 ft. wide x 2 ft. deep frame with front and rear vented doors and optional side panels) is used as an extension shelf. This frame is capable of containing any combination of three SAM21 or SAM16 chassis.
NTLX82BA and **NTLX82EA**	The Common Equipment module (CEM) provide the centralized resources required to support Spectrum Peripheral Module applications. The Spectrum system architecture is based on duplicated common equipment modules (CEMs), each providing control and traffic switching functions and half of the redundant DS-512 links to the ENET (up to 2048 channels are provided, which supports a full OC-3 payload of 2016 channels with additional channels for messaging)
NTLX73BB	The ATM Resource module provides a single unidirectional OC-3 concatenated optical line interface. The OC-3 carrier is broken up into its constituent 2016x64kbits/s payload envelopes. This uses a total of 9 serial links which are contained within a single special RM card (256 channels per S-link). ATM RMs are not used on the standard SPM.

PEC	Description
NTLX61AA	The Shelf Interface Modules (SIMs) for SPM applications provide power supply conditioning and connection points for the power feeds and alarm signals. The SIMs provide an alarm interface from the CEM to PCIU and cooling unit. The required service circuit and interface provisioning is duplicated OC3 ByteSync/ Async VT1.5 Interface with Protection Switching (2016 Trunks) SIMs to provide power distribution to the IW-SPM, MG 4000 and DPT SPM shelves.
NTLX44AA	The Sync Resource Module (Sync RM), provides an alternative timing and synchronization interface for the Spectrum Peripheral Module (SPM), Interworking SPM (IW SPM ATM), or MG4000. A Sync RM receives clocking information via DS1 twisted pairs from a BITS DS-1 timing reference. Each Sync RM has four DS1 inputs (two available for test purposes) and two DS1 outputs; two inputs are dedicated as separate BITS clock inputs, the other two inputs are available for monitor/test equipment.
NTLX16 and NTLX86AA	The Coherent Echo Cancellation (ECAN)) provides support for 336 individual echo cancellers. The ECAN is similar to the VSP, but supports a larger number of individual echo cancellers.
NTLX71AA	The OC-3 TDM interface module provides SONET OC3 interface with DS3, SONET alarm support and DS0 trunk conditioning support
NTLX66BA	The Voice Services Processor (VSP) Resource Module processes more computing-intensive tasks than DSP, including echo cancellation and voice band enhancement services. Each module supports 260 individual echo cancellers.
NTLX72BA	The Data Link Control Module (DLC) provides high-level data link control termination for ISDN D-channels for Primary Rate Interface (PRI) functions. This module also interfaces with the CEMs through the system Serial links (S-links).
NTLX65AA or **NTLX65BA**	The Digital Signal Processor provides voice processing and compression services for the SPM. It provides tone generation and reception, ABCD bit processing, and trunk test services.

PEC	Description
NTLZ20BA **NTLZ20CA** **NTLZ20DA**	The GEM RM provides the IP interface for the IW-SPM IP system. It provides a gigabit interface, capable of handling 1.25 Gb/s worth of bandwidth. However, given the limitations of the SPM platform, only 2016 simultaneous voice calls can be handled. This translates to an average bandwidth of about 300 Mb/s in each direction on the gigabit link, given the overhead associated with each IP voice packet.
NTST02AA - CC1 **NTST02AB** - CC1 **NTST02BA** - CC2	The CAM Controller Mission card is inserted in the front of the shelf and paired with the NTST07 (OC-3 TM) to provide a CAM Controller system node
NTST11BA - CE3 **NTST11BB** - CE3 **NTST11DA** - CE4 **NTST11DB** - CE4D **NTST11FA** - CE6 **NTST11FB** - CE6D	The Computing Engine (CE3) Card paired paired with a NTST09 (PSE TM) forms an IP link system node for M3UA signaling over the CS LAN to CS 2000.
NTST12AA - 2 GB **NTST12BA** - 6 GB **NTST12CA** - 3 GB	The hard disk mission card paired with NTST09 (PSE TM) and NTST11 (CE3 mission card) form a Real Time System node (RTC). The RTC node boots and manages recovery of all CAM shelf cards
NTST07AA or **NTST07AB**	The OC-3 Transition Module faceplate provides interfaces for the system alarm (telemetry) cables, external clock input cables and a fiber OC-3 interface.The OC-3 TM paired with the NTST02 (CC Mission card) provides a CAM controller system node
NTST08AA or **NTST08AB**	The DS0A Transition Module paired with the INTST10 (link mission) card forms an DS0A link system node that terminates 4 DS0A SS7 links
NTST09AA or **NTST09AB** **NTST09AC**	Power/SCSI/Ethernet (PSE) Transition Module
NTST10AB - LE 2 **NTST10BA** - LE 3 **NTST10CA** - LE 4 **NTST10EA** - LE 3N **NTST10FA** - LE 4N	The Link Mission Card combined with the NTST81 (T1/E1) TM forms a ATM high speed link system node and with the DS0A (NTST08) TM forms a DS0A link system node to terminate SS7 links
NTST58AA	V.35 Transition Module forms a V.35 link system node that terminates 4 V.35 system links
NTST81AA - 4 links **NTST81BA** - 8 links	The T1/E1TransitionModule paired with the NTST10 (Link mission card) forms a T1/E1 channelized link system node that terminates 8 56/64 kbs SS7 links over the T1/E1 physical interface at 1.544/2.048 Mbs. The T1/E1 TM requires the BALUN converter (NTTD13AA) to enable the E1 links to be transported over 75 Ohm unbalanced coaxial cables.

PEC	Description
NTRX51FJ will be replaced by **NTRX51TD**	MCPN750-1352A single board PMC module, 366MHz, 128MB ECC DRAM, 5MB FLASH, 1MB L2 Cache, with dual opening face.
NTRX51FN will be replaced by **NTRX51TD**	MPMC8260 PMC module, MPMC8260-T1-F or MPMC8260-E1-F, 200MHz, 64MB SDRAM, 8MB FLASH
NTRX51TD	E1/T1 Link Interface. MCPN905-220; includes Force PMC daughter card
NTRX5131	One Serial Maintenance Cable can be used to connect a terminal to a USP-Compact blade
NTRX5133	The Shielded LAN Cables are required to connect the 100Base-T ports to the LAN Switch for IP communications. Note: the cable shield is only grounded at the SAM21 end.
NTRX5132	The T1/E1 Cable is used to connect SS7 links from the USP Compact card to the MDF Panel of the customer site and is open ended for wire wrap.
NTST91AA	This T1/E1 Cable is used to connect the USP-Compact card to the customer supplied TSG. The TSG source should provide a Stratum 3 or Stratum 3E reference. The DS1 signals from the TSG will be using a framed, all ones, bipolar, Return to zero line format (REF GR378).
NTRX51FH	Two Shelf Controller cards are configured in each CPX8221 shelf. There are two types of shelf controller cards. NTRX51FH for IP networks and NTRX51FE for ATM networks. The CCF frame is not deployed in ATM applications. Instead the SAMF frame provides this functionality. The cards are manufactured by Motorola using the model number MCP750HA. Each card has one 10/100 Ethernet port. Motorola SMM750HA-1352-F Board, 366 MHz MPC750-128MB RAM w/ LinuxPPC
NTRX51BK	The Transition Module is required behind each shelf controller. They provide the two serial interfaces between the 2 shelf controllers.
NTRX51BT or **NTRX51FT**	The Hot Swap controller is a bridge to allow the Shelf controller to communicate with the cards on the shelf. There are 2 Hot Swap SCSI disk drives (72 GB).
NTRX51BS	The bridge extension modules link the CPCI bus segments which then allow 21 slots in the shelf to be used.

PEC	Description
NTLX03AB single width **NTLX03BB** double width	IOPs provide a generic support platform for all input/output and mass storage requirements. There are two types of IOPs single slot width IOP and dual slots width IOP. The dual slots width IOP supports disks and tapes packlets and single slot width IOP supports RTIF, Ethernet and OC-3 packlets. The single slot width and dual slots width IOPs can be inserted into the front or rear of the XA-Core shelf. IOPs with cabled interfaces can only be installed at the rear.
NTLX05AB or **NTLX17AA**	The HCMIC, NTLX17AA, delivers CMIC, RTIF, and Ethernet connectivity as a single circuit pack. This pack addresses obsolescence of components on the NTLX05AB CMIC circuit pack – which means the HCMIC will replace the NTLX03A*/NTLX05AB/NTLX08A* IOP combination. In addition, the HCMIC has Ethernet capability and can provide Ethernet connectivity to a Core & Billing Manager or to a Packet IP network.
NTLX07AA or **NTLX07BA**	The Digital Audio Tape (DAT) packlet inserts into the double wide IOP module provides the transportable mass storage requirements for the XA-Core. This packlet supports SCSI-2 DAT drives of the 4 x 5.9 x 1.6 inch form factor. The Tape Packlet provides up to 4 Gigabytes of transportable storage for XA-Core, based on tape length and format.
RS232-c or current loop port	The packlet is to be placed at the rear side of the shelf since it requires cabling. Please note that while existing offices with the A* are still supported, the NTLX17AA HCMIC should be provided for RTIF interface for new installations
NTLX14CA	The shared memory card provides scalable shared memory capacity for global program and data store. The card is a single design that supports 384 Mbytes per card using current 64MBits SDRAM technology.

PEC	Description
NTHW31AA or **NTHW31BA**	The 16-port OC-3/STM-1 function processor has sixteen OC-3 duplex LC fiber optic transceivers. It is available in single-mode (intermediate reach). It supports either one User-Network-Interface (UNI) or one ATM Network to Network Interface (NNI) for each port. These can operate from either side of the user/network boundary, and can provide access to and from a public network. They can also provide an interface between Passport switches within a private network. It supports SONET or SDH APS line and equipment protection provided you configure a pair of ports on two adjacent 16-port OC-3/STM-1 FPs and the pair shares the same port number With dual line APS the original active port may be on an active FP and the spare port on an adjacent spare FP. Line rate: 155.52 Mbit/s supports the following services: ATM, IP over ATM, FR over ATM.
NTHW70AA	The 4 port OC-3 TDM FP has four OC3 duplex SC fiber optic transceivers. It supports either one user-to-network interface (UNI) or one ATM Passport-to-Passport interface (PPI) for each port. These can operate from either side of the user/network boundary, and can provide access to and from a public network. They can also provide an interface between Passport switches within a private network, It supports SONET or SDH line APS between pre-designated pairs of ports. It supports either STM-1 or OC-3 ports, not both simultaneously. It supports the following services: Packet Voice Gateway.
NTW77AA	The Voice Service Processor- Optical (VSP-O) function processor provides 2016 DSOs terminated per VSP-O FP (G.711, G.729).
NTHW49AA	The Four Port Gigabit interface (4pGe) function processor (FP) provides support for 1000BASE-SX and 1000BASE-LX based on choice of Optical Interface.
NTHR89AA	The Four Port DS3Ch Frame Relay function processor (FP) offers: • support for frame-based inverse multiplexing function, sometimes referred to as an IMUX • Frame Relay to ATM network interworking or service interworking • IP Packet forwarding in hardware, access to Passport virtual routers (VRs) and IP tunneling Segmentation and reassembly of FR to AAL5 ATM cells. • Four DS3 ports supporting unchannelized DS3 or channelized to 1024 DS0 channels per card • Up to 256 HDLC channels per DS3 port

PEC	Description
NTHR31DA	The four-port DS3 channelized function processor time division multiplexed (TDM) FP provides a gateway interface to ATM FPs. It provides the capability of ATM adaptation layer 1 (AAL1) for circuit emulation services (CES) over multiple DS1 channels through DS3 lines. 28 DS1 channels per port with 24 64-Kbits/s timeslots per DS1, or 254 channels per DS0 port with between 1 and 24 timeslots per channel, or a combination of both per DS3 port.
NTRX51BL **NTRX51DL**	The Gateway Controller cards are configured in pairs (one active and one standby).In IP applications, this functional pair of cards should always be split across different shelves for redundancy and reliability. In ATM applications, this functional pair should be configured side by side within the same shelf to support communication between the pair. Motorola manufactures these cards, of model number of MCPN750A. Each card has one 10/100 Ethernet port. Motorola MCPN750 Board, 366 MHz/128 MB RAM w/ VrTxO/S
NTLX02CA	The 266 MB, PPC604 processor element modules provide the XA-Core with a spared fault-detecting computing engine that operates in a multiprocessing environment.
NTLX04CA	The HIOP - I/O Processor with OC-3 & Ethernet is a high-speed multi-service access card that migrates the current call processing message path between the XA-Core and the Message Switch to include an ATM core backbone network. This ATM messaging path supports minimum 34K message capacity required for Carrier VoIP Networks. It provides higher performance than the IOP.
NTLX06AB 8.4 GB **NTLX06AC** 34.2 GB	The Disk Drive packlet that inserts into the double wide IOP module provides the fixed mass storage requirements for the XA-Core. This packlet supports SCSI-2 Fast & Wide hard disk drives of the 3.5 x 5.75 x 1 inch form factor. The Disk Packlet provides 4, 8.4, or 34.2 Gigabytes of storage for XA-Core.
NTLX08AB and **NTLX17AA**	The Reset Terminal Interface Packlet (RTIF) provides terminal interfaces and a reset system for the monitoring and control of the subsystems of XA-Core. The RTIF packlet has two connectors on the front of the packlet: * RS232C on remote port.
NTLX12AA	The Shelf Interface Modules (SIMs) are connectorized module, which are always required and must be provisioned with the XA-Core shelf. The SIMs provide low frequency filtering and allows load stabilization for those feeds. Each of the input feeds has a dedicated filter to prevent battery oscillation.

PEC	Description
NT9X63AB	The OC-3 ATM Paddle Board interface for the message switch is required to maintain the messaging link between the DMS-Core and the DMS-Bus. The NT9X63AB provides the CMIC link, which connects the XA-Core to the DMS-Bus. This PB is a substitute for the NT9X62CA DS512 PB in SNSE and the NT9X20AA DS-512 PB in the SuperNode for CMIC Links. The **NT9X17AD** is the baseline MS Port card in the Message Switch of the SuperNode and SNSE to support the CMIC links to XA-Core. When upgrading to XA-Core, the 4 **NT9X17AA** cards, if used for connecting the CM to the MS's, are to be upgraded to NT9X17AD.
NTHR21CA or **NTHR21DA** **NTHR21FA**	The 4-port OC-3/STM-1 function processor has four OC-3 duplex SC fiber optic transceivers. It is available in two formats: single-mode (intermediate reach) or multi-mode. It supports either one User-Network-Interface (UNI) or one ATM Passport-Passport Interface (PPI) for each port. It supports SONET APS between pre-designated pairs of ports. When activated, egress traffic is bridged to both active port and spare port, and ingress traffic is received from the spare port instead of the original active port. Line rate: 155.52 Mbit/s Supports the following services: ATM, IP over ATM, FR over ATM, ATM MPE o/ soft PVC_s
NTHW21AA or **NTHW31AA** **NTHW21AB**	The 16-port OC-3/STM-1 function processor (NTHW21 has sixteen OC-3 duplex MT-RJ fiber optic transceivers. It is available in single-mode (intermediate reach). It supports either one User-Network-Interface (UNI) or one ATM Network to Network Interface (NNI) for each port. These can operate from either side of the user/network boundary, and can provide access to and from a public network. They can also provide an interface between Passport switches within a private network, supports SONET or SDH APS line and equipment protection provided you configure a pair of ports on two adjacent 16-port OC-3/STM-1 FPs and the pair shares the same port number With dual line APS the original active port may be on an active FP and the spare port on an adjacent spare FP. Line rate: 155.52 Mbit/s Supports the following services: ATM, IP over ATM, FR over ATM.

PEC	Description
NTHR90 & **NTHW87**	The 2-port DS-3 TDM FP NTHW87 has two fully channelized DS3 ports. It supports a total of 56 structured DS1 tributaries. It provides a gateway between a TDM network and an ATM or IP network. The DS3C TDM FP provides the interface to the TDM network. It supports structured AAL service over the Passport backplane. It supports up to 128 AAL virtual channel connections (VCCs). It supports one-for-one (1:1) sparing It supports the following service: Packet Voice Gateway
NTHW92AA	The 32 port TDM E1 FP has two sets of coax connectors (each set has a transmit and a receive connector) that each support 16 E1 ports, for a total of 32 structured E1 ports. It supports up to 992 64 kbit/s timeslots. It transports common channel signaling and can transport channel associated signaling using NSTA unsignaled trunks for non-switched voice gateways
NTHR23CA or **NTHR23DA** for ISP handoff	The 12-port DS3 ATM function processor (FP) has three cable bundles bundle and with an 8W8 mini-coax cable connector at one end and an 8W8 or BNC connectors at the other end. It supports ATM user-to-network interfaces (UNIs). Ports can operate on either side of the user/network boundary. It provides interfaces for Passport-to-Passport communication and for communication between Passport nodes and external ATM devices. It supports ATM interfaces that can support Passport trunks or ATM bearer services. It can provide hitless services when configured for 1-for-1 equipment protection.
NTHW44AA	The 16-port OC-3/STM-1 POS and ATM FP supports the following features: • ATM services with network-to-network interfaces (NNIs), which enable using the FP for trunking • full line rate of 2.5 Gbit/s for DPRS logical trunk frame forwarding - when configured for dual-FP (inter-card) line automatic protection • ATM hitless services (hot standby)
NT0X70AA - NA TM processor **NT0X70BA** - intl TM processor	This processor card is used in the TM, MTM, DRAM, and the STM. It performs or controls all of the operations accomplished by the components of the STM. It also store the load and includes circuits that generate the clock signal, check parity, and perform synchronization. The NT0X70BA is the international card.

PEC	Description
NT2X06AA	A power converter (5V/40 A) card, located in the MTM and RMM shelves, receives a nominal -48V input and converts it to a regulated 5-V output. The card monitors the output and shuts down the converter if the output exceeds a recommended threshold. If the converter is used with a frame supervisory panel (FSP), the shutdown continues until the RESET button on the converter faceplate is pushed.
NT2X09AA	The 5V 40Amp power converter produces five outputs (-5V, -15V, +5V, +12V, and +24V dc). This pack is used in the TM, MTM, DRAM, STM, and RMM modules.
NT2X45AA or **NT2X45BA**	The trunk module (TM) interface card is used in the TM, MTM, DRAM, and OAU shelves. The TM interface card serves as the network interface for both planes of the network. In addition to providing two 2-way interfaces for the two transmission paths from both network planes, it contains message registers, bit and channel timing circuits, parity-checking circuits, and circuits that reformat data.
NT2X53AA	The trunk module (TM) control card is used in the TM MTM, DRAM, and OAU shelves. This card includes message registers as well as bit and channel timing, parity-checking, and data-reformatting circuit. This circuit includes three controllers that handle trunk, network, and integrity messages, and it generates enabling signals for the 30 individual trunk interfaces.
NT2X59AA or **NT2X59BA**	The A-law TM CODEC with BT tones card is used in the TM, MTM, RMM, DRAM, and OAU shelves. The card codes pulse amplitude modulation (PAM) signals into PCM and decodes PCM signals into PAM signals. The card also produces PCM tones for signaling and supervision purposes. The NT2X59EA is the DMS-250 CODEC.
NT2X70AA	A dc-to-dc regulated power converter card. It works from a -48V dc input and supplies voltages of +5V, -5V, +12V, and -12V, each with a common ground. Some features include fixed current limiting, over-voltage/under-voltage shutdown, an interlock (to ensure that 5V is present before +12V) and dc isolation between input and output. An on-off-reset switch (Converter Fail) LED is provided to operate in conjunction with a frame supervisory panel (FSP) power control and alarm circuit. CAUTION: When replacing a NT2X70AF Power Converter, follow the replacement procedures within the NTP.

PEC	Description
NT1X80AA - 2 Mbyte **NT1X80BA -** 8 Mbyte	The enhanced digital recorded announcement machine card (EDRAM) provides voice messages to the user. The NT1X80AA provides 4.3 minutes of announcement time and 30 announcement channels. The NT1X80AA is positioned as a peripheral module (PM) to the DMS (a digital trunk module (DTM). The card is located in a provisional trunk slot of the maintenance trunk module (MTM), the services trunk module (STM), or the integrated services module (ISM). The card has its own DS30 link and is connected to the network by means of a direct cable.
NT2X48	A digital 4-channel dual-tone multifrequency (DTMF) or digitone (DGT) receiver. NT2X48AA = DTMF; NT2X48AB = DGT; NT2X48BB = ESA DGT; NT2X48CA = A-law DTMF receiver (international—Turkey); NT2X48CB= DTMF for British Telecom; NT2X48CC A-law DTMF for U.K.
NT3X09	The Metallic Test Access (MTA) card provides 8 by 8 two wire metallic matrix for cross connection between the test equipment, test card, line and line card.
NTAX78AB or **NTAX78BA**	The Enhanced time switch (ETS) card is functionally equivalent to the NT6X44CA time switch card. As of NA003, the NTAX78 replaces the NT6X44 that will implement DTA for ESMU or SMA. As of NA004, SMA interfacing TR-303 compliant terminals require the NTAX78 card. The ETS card is required to perform ISDN DTA functions on an ESMU or any subtending RCU ISDN lines.
NTBX01AB or **NTBX01AC**	This enhanced ISDN card is a redesign of the ISDN signaling pre-processor (ISP) card. Memory size and processor speed have been increased to meet changing system requirements. The card provides interfaces both to the signaling processor (SP) and to the speech bus. It terminates a single messaging link for each D-channel handler (DCH) and processes layer-3 information. Signaling information that is extracted by the DCH is sent to the master processor (MP) by way of the enhanced ISDN signaling pre-processor (EISP).
NTBX02BA	The D-channel handler card is the main interface to all D-channels through the speech bus. The DCH sets up communication with an ISDN terminal on request from the terminal or the line group controller (LGC) master processor (MP). NTBX02BA is an enhanced DCH card.

PEC	Description
NTMX76	This message and tone generator card provides DMSX and HDLC messaging capability, and tone generation for DMS-100 XMS-based peripheral modules. It is a hybrid of features in the NT6X69 & NT6X42, with added logic for extra features. The AB version is required if the RSC-S will also support Spontaneous Call Waiting Display (SCWID) based on an Analog Display Services Interface (ADSI) service. The AB version is also required in the LTC or LGC that supports the Star Remote. The AD version is used in the TOPS Voice over IP Gateway peripheral.
NTMX77AA	The unified processor card replaced the NT6X45, NT6X46, and the NT6X47 cards with the XPM PLUS Upgrade. The NTMX77AA is a 68020-based unified processor (UP) CP. The NTMX77AA is the main processing unit in the central processor and memory (CPM) shelf. It controls all the service packs, and the trunks and lines, and communicates with the central control.
NTSX05AA	A new revolution XPM Processor with 64 MB of DRAM that replaces the NTMX77 Unified Processor. It is ten times faster. It is equipped with NTSX06BA 60 MB or NTSX06CA 120MB Packlet Cards, or NTSX06AA Filler Packs when not equipped. It also features an Ethernet connection through the backplane for linkage to IP networking equipment.
NT6X40	The DS30 network interface (NI) card, found in the DTC, LGC, LTC, SMA, SMU, SMR, LTCI/DTCI, TMS, and RCC shelves, is available in two versions: the NT6X40AB (NT6X40AA is MD'd) eight port card and the NT6X40AC 16 port card. The card provides a central-side (C-side) interface for DS30 links to the network. Each port of a DS30 NI card provides a two-way voice and data interface and contains a looparound circuit for fault isolation. Note: If equipped with SLC-96 6X85AA CPs, replacethe 6X40AA/AB/AC with a 6X40BA in slot 22. If equipped with SLC-966X85AB CPs, then 6X40AA/AB/AC packs can be left in.

PEC	Description
NT6X41	The speech bus formatter card, found in the DTC, LGC, LTC, SMA, SMU, SMR, LTCI/DTCI, TMS, and RCC shelves, consists of two sections: the clock section and the formatting section. The clock section generates the 10.24-MHz shelf clock. The formatting section of the card provides parallel-to-serial conversion of the encoded voice signals received from the CSM interface card and destined for the C-side links. It also provides serial-to-parallel conversion of the encoded voice signals received from the C-side interface cards, network plane selection, parity error generation for test purposes, and T1 clock generation.
NT6X42	The CSM card, found in the DTC, LGC, LTC, SMA, SMU, SMR, LTCI/DTCI, TMS, and RCC shelves, performs several functions. It extracts the CSM bit from the C-side channels, assembles the CSM for each channel, and inserts the CSM into the outgoing C-side bytes. The CSM CP also performs parity checking on all incoming bytes, as well as parity generation on all outgoing bytes.
NT6X43	The messaging interface card, an older messaging card found in the SMA, SMR, SMU, LTCI/DTCI, TMS, and RCC shelves, provides interface for the parallel speech bus and extracts control messages received on channel zero from the control module (CM).
NT6X44	The time switch TS, found in the DTC, LGC, LTC, SMA, SMU, SMR, LTCI/DTCI, TMS, and RCC shelves, card converts between the serial stream that is received from (or transmitted to) the DS30 interface card or DS1 interface card and the parallel stream that is used on the internal speech bus. When controlled by the SP, the TS also associates any of the DS30 interface cards and DS1 interface cards with any of the time slots on the parallel speech bus and transfers data between the associated channel and the time slot. NA6X44AA not acceptable for PCL loads. See the NTAX78 ETS card used for ISDN PRI and Digital Test Access.
NT6X48	The DS30A interface card, located in the LGC, LTC, LTCI/DTCI, RCC, MSB7, and TPC contains ten separate ports. Each port provides a two-way voice and data interface and carries a 32-channel, 2.56-Mbps bit stream. Each DS30A port contains a looparound circuit for fault isolation. Note: For further information on the following NT6X50 card DIP switch settings, see the “DIP Switch Settings for the 6X50 & 6X85 DS1” within this QRG.

PEC	Description
NT6X50	(see previous note) — The DS1 card, found in the DTC, LGC, LTC, SMA, SMR, LTCI/DTCI, HIE, TMS, and RCC shelves, contains 2 DS1 ports. One to ten cards provisionable for each LTC module provides 2-way voice and data interface, looparound paths, Xmission of local alms, detection of remote alarms, anddetection of error conditions such as loss of synchronization, bipolar errors, and slips. Note: It has been reported that 6X50AA cards below release #OU can cause slips. The NT6X50AB card is the DS1 Extended Super Frame (ESF) interface card. The NT6X50BA will be required for ISDN-3 applications. The NT6X50EC is used to provide near-end echo cancellation on one or more DS1 trunks.
NT6X69	Common peripheral processor messaging protocol and tone card, found in the DTC, LGC, LTC, SMA, SMR, SMU, LTCI/DTCI, MSB7, TMS, and RCC shelves, provides interface for the parallel speech bus and extracts control messages received on channel zero from the control module (CM). See the PEC codes within this QRG for a list of the NT6X69 cards available.
NT6X70	The continuity tone detector card detects tones that are used in call processing to verify the continuity of the voice/data path between LTCs. It monitors and records the frequency and level of the tones. The continuity tone detector CP retains this data for use by the XPM processor CP in the LTC.
NT6X78	The CLASS modem resource card, found in SCMs, provides various residential (RES) enhanced features and can be provisioned in slot 16 of the SMU shelf. The CMR card is required if the calling number delivery (CND) feature is being provisioned.
NT6X92	The UTR is a 32-channel tone receiver, found in the DTC, LGC, LTC, SMA, SMR, SMU, LTCI/DTCI, MSB7, TMS, and RCC shelves, detects a variety of tones, including dual-tone multifrequency (DTMF) and multifrequency (MF). Tone samples are switched onto the parallel speech bus
NTMX72	A power converter provides +5 V, +12 V, –12 V power for the RCC2 and GPP CPM shelves. The NTMX72AA pack has test points, a reset switch, and power fail LED while the NTMX73AB has only a fail and active LED.

PEC	Description
NTMX73	This pulse code modulation (PCM) signaling pack controls all low-level PCM and DS1 signaling tasks, and it generates the system clock. The PCM and DS1 signaling tasks include link maintenance, receiving and sending derived data link (DDL), and receiving and sending ABCD bits. It supports DS1 and PCM30 trunks on both the core side (C-side) and the peripheral side (P-side). This pack replaces the 6X28, 6X41, 6X44, and 6X86 packs, either partially or totally.
NTMX75	This enhanced matrix pack performs all speech channel switching functions for the RCC2 and GPP CPM shelves. Those functions include: providing digital connections between all C- and P-side channels, moving ABCD bits from the DS1 ports to the SIGP pack, supporting the parallel buses for service circuits, selecting C-side input and output links and channels, and selecting P-side link connections. The DA pack version is needed for the 16 to 20 C-side DS1 upgrade for the RCC2.
NTMX79	This DS30 extender pack transfers signals between the main RCC2-EXT shelf and the packs placed in the extension shelf of the RCC2 and GPP CPM extension shelf, and provides +5 V and +12 V or –12 V of power.
NTMX87	The quad frame carrier card provides a DS1 interface between the SMA2 shelf and the RDT, and the RCC2 and the RSC. It also supports the GPP CPM for PCM30. The NTMX87 is a normal sized circuit card that contains four slots (0-3) in its faceplate. Smaller-sized circuit cards known as dual DS1 NTMX81 or PCM30 NMTX82 packlets are inserted into these slots to supply the NTMX87AA with its functional identity. Each NTMX87 holds a maximum of four dual DS1 or PCM30 packlets. Each packlet has two ports for a total of 8 ports per card. The BA version is needed for the 16 to 20 C-side DS1 RCC2 upgrade.
NT6X80	The pad/ring card, found in SCMs, generates ringing frequency instructions using PCM. The frequencies are switched by the TS card onto the DS1 channels which are associated with the subscriber loops that are to be rung.
NT6X81	The A/B interface card, found in SCMs, inserts and extracts A and B bits from the PCM stream. These per-channel signaling bits are used for ringing, hook status detection, and, in some instances, ANI and coin functions. Note: For further information on the following NT6X85 card DIP switch settings, see the “DIP Switch Settings for the 6X50 & 6X85 DS1 Cards” within this QRG.

PEC	Description
NT6X85	(see previous note) — The SLC-96 DS1 interface card contains two DS1 ports. One to ten cards are provisionable for each SMS, SMS-R, or SMU module. The DS1 interface card operates in one of two modes: (1) DDL mode and (2) non-DDL mode. Each port provides a two-way voice, data, and signaling interface. The card provides looparound paths for each DS1 port to allow isolation of faults. It also provides transmission of local alarms and the detection of remote alarms as well as detection of error conditions such as loss of synchronization, bipolar error, and slip.
NT6X86	The A/B interface card, located in the SCMs, inserts and extracts A and B bits from the PCM stream. These per-channel signaling bits are used for ringing, hook status detection, and, in some instances, ANI and coin functions. NT6X86AB card is required for XPM PLUS upgrades.
NT8X18AA	DS30A C-side Interface Card, located in the SMS-R shelf, connects to the RSC.
NT9X79AA or **NT9X79BA**	NT9X79AA is a frame transport bus (F-bus) extension paddle board. Both are located behind the NT9X74 (F-bus repeater card) in the top and middle link interface shelves (LIS) of the link interface module (LIM). The NT9X79BA is located behind the NT9X73AA (rate adaptor) in the LMS shelf.
NT9X96AA	The link interface shelf (LIS) frame transport bus (F-bus) controller card, NT9X96AA, in conjunction with a NT9X98AA paddle board (LIS fiber interface), allows the LIS to connect directly to the DMS-bus by means of a fiber cable.
NT9X98AA	The link interface shelf (LIS) fiber interface paddle board provides a direct link by a fiber cable between the link interface shelf and the DMS-bus.
NTDX16AA	The +5V dual power converter can provide full redundancy for an LPP/LIS shelf. If one NTDX16 power converter fails, or requires power-down or replacement, the other NTDX16 power converter supplies power for the entire LPP or LIS shelf.

PEC	Description
NT9X74AA	The Frame transport bus (F-bus) repeater card, located within the LIU7 shelves, reclocks and repeats all F-bus correspondence between the intershelf F-bus and the intrashelf F-bus. The NT9X74BA version of the repeater card is similar to the AA version with the exception that the far-end F-bus terminations have been removed and placed on the NTEX20AA and BA. The NT9X74CA version of the repeater card is similar to the BA version with the added firmware function of querying the identification (ID) PROM of the NTEX20AA and BA. The NT9X74DA supersedes the NT9X74CA by adding channel bus (C-bus) terminations for link peripheral processor (LPP) channel access.
NT9X63AA or **NT9X63BA**	This OC-3 interface paddle board is used to connect the CMIC links (OC-3) between MS & XA-core NTLX05 CMIC packlet.
NT9X13DG	This CPU 20-MHz processor card performs special applications in the junctor network (JNET), enhanced network (ENET), single shelf link peripheral processor (SS LPP), and link interface module (LIM).
NTFX30AA	The IOM controller card (NTFX30), located in slot 3 of the ISM shelf, contains hardware and firmware to support 16 general purpose ports. The ports include the RS-232C, V.35, current loop and PERTEC. The hardware and firmware also support two DS-30 links to the message switch (MS) and two optional external SCSI devices on the storage media card. The NTFX30 controls the entire operation of the IOM.
NTFX31AA	The IOM Paddle Board (NTFX31) contains the power feed circuits. The Paddle Board contains a maximum of 16 smart connectors and circuits. The Paddle Board implements a local loopback for diagnostic purposes. The Paddle Board is at the rear of the ISM shelf backplane at the slot 3 position.
NTFX32AA media card **NTFX32BA** DDU packlet **NTFX32CA** DAT packlet **NTFX32CB** PCMCIA module	The storage media card (NTFX32AA) occupies slot 4 of the ISM shelf. This card has slots for plug-in digital audio tape (DAT) (NTFX32CA) and disk drive unit (DDU) (NTFX32BA) plug-in units.
NTFX34AA	RS-232C Smart Connector Assembly containing IOM to RS-232C message protocol conversion circuit. The NTFX34AA smart connector has a 6 pin teledapt connector on the IOM side (C side) and a DB25M (male) connector on the device side (P side). This converts the IOM link into a standard SR232C protocol for interface with Printer, VDU and Modem devices.

PEC	Description
NTFX35AA	V.35 Smart Connector Assembly containing IOM to V.35 message protocol conversion circuit. The NTFX35AA smart connector has a 6 pin teledapt connector on the IOM side (C side) and a DB25M (male) connector on the device side (P side). This converts the IOM link into a standard V.35 protocol for interface with Modem devices. Since the industry standard for V.35 protocol is a 34 pin connector, a NTFX3505 passive adapter is required to do the 25 pin to 34 pin conversion.
NTFX3505	Passive Adapter to allow a 25 pin, V.35 connector to connect with a 34 pin, V.35 connector. The V.35 smart connector (NTFX35AA) has a 25 pin connector and the NTFX3505 adapter may be needed to connect to devices that have the standard V.35 34 pin connectors.
NTFX35BA	512Kbps Compatible Smart Connector for use in specific requirements for 512Kbps Synchronous Communications support on IOM. Supports X.25 links at 512Kbps synchronous speed for up to a maximum of 2 links per IOM.
NTFX3506	Passive Adapter to allow a 25 pin, 512Kbps connector to connect with a 34 pin,V.35 connector. The 512Kbps Smart Connector (NTFX35BA) has a 25 pin connector and the NTFX3506 adapter may be needed to connect to devices that have V.35 34 pin connectors.
NTFX38AA	Current Loop Smart Connector providing 20 mA current loop to the FSP portable VDU jacks on each FSP or MSP. Contains IOM to Current Loop protocol conversion circuitry.
NTFX36AA	PERTEC Smart Connector Assembly containing IOM to PERTEC protocol conversion circuit for 9 track MTD support. If the PERTEC device is cabinetized the PERTEC Smart Connector is mounted inside the cabinet, on the right hand side upright, looking from the rear. The PERTEC SC to bulkhead (CIOE) connection is made using the cable NT0X4321 (length=2.5 feet). Both the NT0X4320 and the NT0X4321 cables are included in the NTRX33DX and NTRX33DW Retrofit Kits.

PEC	Description
NTFX39AA	CISM Bulkhead One-to-Nine Cable Splitter Unit-This connection unit is mounted on CISM bulkhead, and connects with one NTFX40HA (1 cable split into 4 cables with 4 connectors)to IOM Paddleboards on the ISM Shelf. This units printed circuit board includes the EMI filtering elements and eliminates the current bulkhead filter adapters for those bulkhead positions that are used for IOM connections. The NTFX39AA converts connectors 5,6,7,8 on the existing bulkhead to 4 groups of 9 connectors, 1 connector for MS and 8 for IOM ports.
NTFX40UC	SC Extension Cable- This cable is required from the RS232 SC to location J16 on the DS6 modem shelf in MIS or CMIS because of spacing requirements.
NTFX40UD	Smart Connector DB25F Gender Adapter Cable - This cable is used with NTFX34AA SC to connect IOM to modems equipped with 25 pin male connector. Also used to connect IOM to older printer types. Refer to EMS NTFX4101 for accepted printer types.
NTFX40UE	Smart Connector Female to Male RS-232 Roll Over Cable - required to connect the Smart Connectors to the MAP terminals or printers. Provide this cable if a DB25M end is required to connect into a DB25F equipped MAP terminal device
NTFX40UF	Smart Connector Female to Female RS-232 Roll Over Cable - required to connect the Smart Connectors to the MAP Terminals or printers. Provide this cable if a DB25F end is required to connect into a DB25M equipped MAP terminal device
NTFX40HD	Current Loop Interface Cable Assembly. This cable connects the NTFX38AA current loop SC to the AXU bulkhead to provide 20mA current loop interface from IOM to AXU. The NTFX38AA is only used to support the portable VDU which plugs into the jacks located on the MSPs and FSPs throughout the office. This cable is only used on CISMs, and runs from the CISM bulkhead Port 0(if first two IOMs in an initial office) to the AXU bulkhead connector xx located in the same CISM.
NTZZ40AJ	IOM Storage Media Card Kit - this building block contains one NTFX32AA SMC, one NTFX40HB Cable Assy., one P0831733 Des. Label and four 2X4 Connector Shrouds (A0337195). Use this building block which includes these miscellaneous provisionable items when ordering the Storage Media Card.

PEC	Description
NTFX40UG	ISM Retrofit Kit for IOM (Filter Card Version) - for field upgrades to CISM, allows for IOM provisioning on ISM Shelves. The NTFX40UG contains one NTFX40HJ Cable Assembly, 4 NTFX39CA IOM Choke cards, and miscellaneous hardware. The NTFX40HJ Modified ISM Harness is used to connect two IOM Paddleboards to the bulkhead to modify existing CISMs to accommodate one or two IOMs.
NTFX40UB	ISM Retrofit Kit for IOM (Frame) - for field upgrades to ISME, allows for IOM provisioning on ISM Shelves. The NTFX40UB contains miscellaneous hardware.
NTFX40HC	Cable Harness for CISM to connect two IOM Paddleboards to the bulkhead, included on newly manufactured CISMs.
NT0X96LE	Provides same current loop functionality of the above NTFX40HD but is used in a frame based/ISME/NTFX40BA environment. This cable connects the NTFX38AA SC directly to the NT3X89AC and higher AXU panel.
NT0X96MK	Provides same current loop functionality of the above NT0X96LE but connects the NTFX38AA SC directly to the NT3X89AA/AB AXU panels.
NT9X78AA thru DA	These DS-0A interface paddle boards are contained in the link interface unit (LIU7) of the link interface modules of the signaling transfer point (STP) switch or the SNSE ENET shelves when equipped with LIUs. The DS-0 interface provides layer-1 functions such as level shifting drivers/receivers between the signaling terminal (ST) and a digital line.
NT9X77AA	The NT9X77AA paddle board, like the following NT9X78 PB, provides the electrical interface between the LIU and the CCS7 signalling link (SL).
NT9X19AA & BA	The AA is a circuit pack filler and the BA is a paddle board filler pack.
NTEX20	The intra F-bus terminator PBs (NTEX20AA and NTEX20BA) provide intrashelf F-bus termination. NTEX20AA provides intrashelf termination for F-bus (A) 0 signals. NTEX20BA provides intrashelf termination for F-bus (B) 1 signals.

PEC	Description
NTEX22BA - 8 Mbyte **NTEX22CA** - 32 Mbyte	The integrated processor & F-bus interface card (IPF) provides a LIU7 link general processor, a dual F-bus interface capability, and is used for LIUs, EIUs, FRIUs, and NUIs. It replaces the NT9X13CA link general processor and the NT9X75AA F-bus to F-bus interface. In regard to the LIU7, the NTEX22BA card is optional in North America, but is required in the United Kingdom. The NTEX22BA is functionally identical to the NTEX22AA, except that the BA card has 8 Mbytes of DRAM. The AA card is no longer supported. The upgrade NTEX22BB is functionally identical to the NTEX22AA and BA cards except that the BB card supports 32-bit asynchronous P-bus slaves and spared peripherals. The NTEX22CA is a 32MB LIU7 Integrated Processor that provides 2.5 to 2.7 times the capacity of the 8MB LIU7. The FA version is a 128MB card.
NT9X30AA	This is a dc-to-dc +5V 86-A power converter.
NTFX43	The ISM DC converter card provides regulated and protected power supplies required by the ISM shelf. The converted voltages are +5 V, +12 V, +25 V, and -15 V (dc).
NT9X30AB	A global dc-to-dc +5V 86-A power converter.
NT9X12AD	The CPU port card, located in the SN Computing Module (CM) Processor, SLM, and the SNSE CM/SLM shelves, provides a high-bandwidth communications link between the CPU and message switch. The transport mediums can be either a DS512 fiber optic link, with a 40.96 Mbps capacity or DS30 transmission link, with a 2.084 Mbps capacity. A standard configuration consists of four port cards per system, with each half of the processor having two port cards in the card slots immediately adjacent to each processor. The NT9X12AC supersedes the NT9X12AB CPU port card. It adds parity and fault isolation capabilities to the transmit and receive buffers located on the card.
NT9X13DD - LPP CPU **NT9X13DG** - MS Processor	This CPU 20-MHz processor card, located in the ENET shelf, is a high-performance microcomputer board based on the Motorola MC68020 32-bit microprocessor.
NT9X21AA or **NT9X21AB**	The CM-bus terminator paddle board contains element identification (ID) PROM.
NT9X22AA or **NT9X22CA**	The CM subsystem clock paddle board is used in the computing module (CM) of the DMS-core.

PEC	Description
NT9X26AA **NT9X26AB** **NT9X26CA**	The remote terminal interface (RTIF) card monitors and controls the DMS-100 SuperNode. It operates in a monitoring mode when the SuperNode equipment is functioning properly. When the equipment fails, a technician uses the remote system to restore service. The remote system connects to the master DMS-Core, which reboots the DMS-bus.
NT9X27AA & **NT9X27BA**	The CM bus extender paddle board extends the peripheral bus (P-bus) from the NT9X06AA (computing module (CM) processor shelf), used for housing CPU and memory, to the NT9X07AA (CM extension shelf), used for housing the system load unit (SLU). An NT9X27BA card (CM extension shelf bus extender) installed in the extension shelf receives the signals from the NT9X27AA and buffers them onto the extension shelf backplane. Two NT9X27AAs are required on a CM processor shelf for each installed extension shelf.
NT9X31AA and **NT9X31AB**	A global dc-to-dc -5V 20-A power converter.
NT9X35BA - 16K X 16K card **NT9X35CA -** 16K X 16K card & H bus card **NT9X35FA -** 4K X 8K card	The Enhanced Network (ENET) 128K crosspoint card performs the nonblocking switching function.
NT9X36BA	The ENET message clock card provides two DS512 message links between the ENET shelf processor and the message switch. It also provides the clocks and timing signals required by the shelf. The card and its associated paddle board NT9X40BA (ENET+ quad fiber paddle board) provide two DS512 communication links between the ENET shelf and the duplicated message switches (one link per plane).
NT9X40BA	The ENET+ quad fiber paddle board is used to receive, transmit, and repeat four DS512 fiber links.
NT9X40BB	An enhanced version of the BA card and utilizes the latest version of the DS512 treatment receiver controller (DTRC).
NT9X40DA	This ENET paddle board uses four hard-clad silica (HCS) fibers operating at 650 nm wavelength to provide 2048 channels to the ENET XPT cards. The SPM IF to ENET uses this card.
NT9X41BA	The 16-port DS30 paddle board links DS30 peripherals to the enhanced network through twisted-pair copper cables.

PEC	Description
NT9X46AA	This parallel computing module (CM) port interface paddle board operates as a pair with one paddle board mounted behind an NT9X12 CPU port card and the other mounted behind an NT9X4402 system load module (SLM) controller. An interconnect cable joins the two paddle boards.
NT9X47AA	This +12V power converter provides power to the NT9X44 system load module (SLM). The card interfaces with DMS-100 alarm circuits using the NT9X03 frame supervisory panel (FSP). The NT9X47AB is the 60V input global version.
NTLX65AA or **NTLX65BA**	The digital signal processor (DSP) resource module (RM) provides digital signal processing services for the SPM.
NTFX42	The ISM processor card ISM processor circuit card is designed to be functionally compatible with the existing TM/MTM service circuit cards. It provides a combined functionality of the NT0X70, NT3X45, NT2X53, and NT2X59 controller cards.
NT9X75AA	This processor bus (P-bus) to frame transport bus (F-bus) interface (PFI) card is a component of the signal transfer point (STP) link interface unit (LIU7). It provides an interface between P-bus & both instances of the F-bus (F-bus A & F-bus B).
NT9X76AA	The signaling terminal (ST) card, located within the link interface shelf, is a single board with two processors that handle the data link level functions of the CCS7 protocol. The signaling transfer point (STP) connects to each CCS7 link through an ST card.

Customer support

Documentation

Nortel Networks has introduced a new document numbering and naming system for all of its NTPs. Going forward, all new NTPs will adhere to this numbering and naming convention.

Existing NTPs will not be renumbered and renamed, they will continue to be identified using the previous numbering system.

Newly developed NTPs bear a unique alpha-numeric identifier and they are named according to a Nortel Networks-wide documentation naming standard.

The format for the Nortel Networks unique documentation identifier is

NNxxxxx-xxx.

where each “x” represents a numeric character.

Unlike the previous NTP numbering system, the position and value of the numeric characters does not denote a particular product family or information type.

The complete customer documentation set for Carrier VoIP Networks consists of several Helmsman collections. All Helmsman collections can be accessed from the Technical Documentation menu at http://www.nortelnetworks.com/. The collections applicable to Carrier VoIP Networks include:

- the Solution Collections and the Hardware Drawings collection in the Carrier VoIP Networks Package (SCS01).
- the LEC and LET collections in the DMS-100 Carrier Solutions Package (CS01).
- the EUR collection in the DMS-100 European Solutions Package (EUR01).
- the UCS collection in the DMS250 Solutions Package (GCS250-01).
- the Nortel Networks Media Gateway 7400/15000/20000 and Nortel Networks Multiservice Data Manager collections in the Carrier Packet Solution Package (CPS01) -- if you are using Nortel Networks’ ATM fabric.
- the Installation Methods collection in the Installation Methods package (INST01).

The following table provides a list of Carrier VoIP NTPs.

Document number	Description
Solution Documents	
PLN-08ATM-OSSO SS Advanced Feature Guide ATM ISN08 OSS Guide (intl) Advanced Feature Guide (intl only) PLN-O8IP-OSS OSS Advanced Feature Guide IP	New Feature Summary

Document number	Description
NN10441-100 PT-AAL2 Solution-level Basics	Solution Overview
NN10442-100 PT-IP Solution-level Basics	Solution Overview
NN10443-100 UA-AAL1 Solution-level Basics	Solution Overview
NN10444-100 Integrated Access Cable Solution-level Basics (IAC)	Solution Overview
NN10445-100 Integrated Access Wireline Solution-level Basics (IAW)	Solution Overview
NN10446-100 Universal Access - IP Solution-level Basics (UA-IP)	Solution Overview
NN10234-100 Carrier Hosted Services	Solution Overview
Upgrading a Carrier Voice over IP Network, NN10440-450	Solution Upgrades
NN10408-900	ATM/IP Solution-level Fault Management.
NN10450-900	Carrier VoIP Solutions Disaster Recovery Procedures.
NN10275-909	Solution Fault Management Logs Reference (6 volumes)
NN10324-509	Carrier VoIP Operational Configuration: Data Schema Reference (2 volumes)
NN10409-500	ATM/IP Solution-level Configuration Management
NN10400-800	ATM/IP Solution-level Accounting (intl)
NN10412-800	ATM/IP Solution-level Accounting (NA)
NN10435-501	Carrier VoIP Networks Configuration Management: Event Management (NA IAC only)
NN10401-700	ATM/IP Solution-level Performance Management
NN10264-709	Carrier VoIP Networkss Performance Management Operational Measurements Reference (2 volumes)
NN10402-600	ATM/IP Solution-level Security and Administration
NN10514-111	CS 2000 Release ISN08 Software Portfolio (intl only)

Document number	Description
NN10515-111	ISN08 (TDM) Software Portfolio (intl only)
297-9051-599	ISN08 Peripheral Module Software Release Document (intl only)
297-2663-599	SN08 Peripheral Module Software Release Document (NA only)
PLN-SN08-004	SN08 Release Change Reference Manual - DMS on Carrier VoIP
NN10004-512	OSS Gate User Guide
Engineering Guidelines	This document can be accessed via www.nortelnetworks.com/helmsman. When you have logged in using your customer id, you will be faced with the Collection Access site. Click on the point directly beneath the statement To Request Access to: BCM/Norstar; Periphonics Doc.; SEB/Eng. Guidelines; Job Specs and Drawings; and you will be forwarded to a document controller who can arrange access.
Component Documents	
Overview documents	
NN10023-111	Call Agent Basics
NN10355-111	CBM 850 Basics
NN10448-111	CS 2000 Basics
NN10018-111	CS 2000 Core Basics
NN10368-111	CVoIP Database Module Basics
NN10369-111	CVoIP Management Module Basics
NN10367-111	CVoIP RTP Media Portal Basics
NN10370-111	CVoIP System Management Console User Guide
NN10016-111	DPT- SPM (ATM) Basics
NN10015-111	IW- SPM (IP) Basics
NN10014-111	IW-SPM (ATM) Basics
NN10411-111	International Spectrum Peripheral Module Program
HLM-1771-PMA	Setup and Use of Carrier Performance Monitoring Architecture (PMA) for SPMs
NN10329-111	Integrated EMS Basics

Document number	Description
NN10189-111	GWC Basics
NN10190-113	Lawful Intercept Basics (NA only)
NN10013-111	MG4000 Basics
NN10011-111	MG9000 Basics
NN10323-111	MS 2010 Basics
NN10028-111	Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Carrier VoIP Networks Basics (NA only)
NN10025-111	SAM21 Shelf Controller Basics
NN10333-111	Session Server Basics - Trunks
NN10427-111	Session Server Basics - Policy Controller
NN10012-111	SPM Basics (NA only)
NN10024-111	STORM Management Basics
NN10010-111	UAS Basics
NN10008-111	USP Basics
NN10009-111	USP Compact Basics
USPc10 SN08RelNotes	USP Compact 10 SN08 Release Notes
USPc SN08 Readme	USP Compact 10 SN08 Readme Notes
Product Upgrades documents	
NN10065-461	Call Agent Upgrades
NN10347-461	Core and Billing Manager 850 Upgrades
NN10061-461	CS 2000 Upgrades
NN10060-461	CS2 Core Upgrades
NN10057-461	DPT-SPM (IP) Upgrades
NN10058-461	DPT-SPM (ATM) Upgrades
NN10235-461	Ethernet Routing Switch 8600 Upgrades
NN10196-461	GWC Upgrade
NN10326-461	Integrated EMS Upgrades
NN10055-461	IW-SPM (ATM) Upgrades
NN10056-461	IW-SPM (IP) Upgrades
NN10054-461	MG4000 Upgrades

Document number	Description
NN10048-461	MG9000 Upgrades
NN10335-461	MS 2010 Upgrades
NN10070-461	Upgrading the Nortel Networks Multiservice Switch 15000 in Carrier VoIP Networks (NA only)
NN10366-461	Nortel Networks Multiservice Data Manager in Carrier VoIP Networks Upgrade Guide (PVG)
NN10185-461	Upgrading Nortel Networks Multiservice Data Manager in Carrier VoIP Networks
NN10419-461	Upgrading MSS 15000 and MG 15000/20000 in IP Solutions
NN10067-461	SAM21 Shelf Controller Upgrades
NN10053-461	SPM Upgrades
NN10066-461	STORM Upgrades
NN10431-461	Session Server - Policy Controller Upgrades
NN10349-461	Session Server - Trunks Upgrades
NN10047-461	UAS Upgrades
NN10045-461	USP Upgrades
NN10046-461	USP Compact Upgrades
Product Fault Management documents	
NN10087-911	Call Agent Fault Management
NN10351-911	CBM Fault Management
NN10083-911	CS 2000 Fault Management
NN10082-911	CS 2000 Core Fault Management
NN10080-911	DPT-SPM (ATM) Fault Management (NA only)
NN10202-911	GWC Fault Management
NN10077-911	IW-SPM (ATM) Fault Management
NN10078-911	IW-SPM (IP) Fault Management
NN10334-911	Integrated EMS Fault Management
NN10076-911	MG4000 Fault Management
NN10074-911	MG9000 Fault Management
NN10328-911	MS 2000 Series Fault Management
NN10198-912	Nortel Networks Multiservice Switch 15000 and Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Carrier VoIP Networks Fault Management (NA only)

Document number	Description
NN10254-913	Nortel Networks Multiservice Switch 15000 in Carrier VoIP Networks Fault Management: 16-port OC-3c/STM-1 ATM FP (NA only)
NN10092-911	Nortel Networks Multiservice switch 15000, Media Gateway 15000 Carrier VoIP Networks Fault Management: overview (NA only)
NN10089-911	SAM21 Shelf Controller Fault Management
NN10438-911	Session Server - Policy Controller Fault Management
NN10332-911	Session Server - Trunks Fault Management
NN10075-911	SPM Fault Management
NN10088-911	STORM Fault Management
NN10073-911	UAS Fault Management
NN10071-911	USP Fault Management
NN10072-911	USP Compact Fault Management
Product configuration management documents	
NN10109-511	Call Agent Configuration Management
NN10353-511	CBM 850 Configuration Management
NN10188-511	CS 2000 Configuration Management (IAC & IAW)
NN10201-511	CS 2000 Configuration Management (PT-AAL1 & PT-AAL2)
NN10193-511	CS 2000 Configuration Management (PT-IP)
NN10284-511	CS 2000 Configuration Management (UA-IP)
NN10324-511	CS 2000 Configuration Management (Services)
NN10105-511	CS 2000 Configuration Management (UA-AAL1)
NN10104-511	CS 2000 Core Configuration Management
NN10102-511	DPT-SPM (ATM) Configuration Management (NA only)
NN10205-511	Gateway Controller Configuration Management
NN10330-511	Integrated EMS Configuration Management
NN10099-511	IW-SPM (ATM) Configuration Management
NN10100-511	IW-SPM (IP) Configuration Management
NN10098-511	MG4000 Configuration Management
NN10096-511	MG9000 Configuration Management
NN10340-511	MS 2000 series Configuration Management

Document number	Description
NN10400-006	Multiservice Data Manager Network Configuration
NN10114-511	Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Carrier VoIP Networks Configuration Management (NA only)
NN10225-512	Nortel Networks Multiservice Switch 15000 and Media Gateway 15000 in Carrier VoIP Networks Configuration Attribute Summary (NA only)
NN10111-511	SAM21 Shelf Controller Configuration Management
NN10432-511	Session Server - Policy Controller Configuration Management
NN10338-511	Session Server - Trunks Configuration Management
NN10097-511	SPM Configuration Management
NN10110-511	STORM Configuration Management
NN10095-511	UAS Configuration Management
NN10093-511	USP Configuration Management
NN10094-511	USP Compact Configuration Management
Product Accounting documents	
NN10126-811	CS 2000Core Manager Accounting
NN10363-811	Core and Billing Manager 850 Accounting
Product Performance Management documents	
NN10153-711	Call Agent Performance Management
NN10361-711	CBM Performance Management
NN10151-711	CS 2000 Compact Performance Management
NN10149-711	CS 2000 Performance
NN10148-711	CS 2000 Core Performance Management
NN10146-711	DPT-SPM (ATM) Performance Management
NN10145-711	DPT-SPM (IP) Performance Management
NN10208-711	Gateway Controller Performance Management
NN10327-711	Integrated EMS Performance Management
NN10143-711	IW-SPM (ATM) Performance Management
NN10144-711	IW-SPM (IP) Performance Management
NN10142-711	MG4000 Performance Management
NN10140-711	MG9000 Performance Management

Document number	Description
NN10331-711	MS 2010 Performance Management
NN10158-711	Nortel Networks Multiservice Switch 15000, Media Gateway 15000, and Nortel Networks Multiservice Data Manager in Carrier VoIP Networks Performance Management (NA only)
NN10155-711	SAM21 Shelf Controller Performance Management
NN10439-711	Session Server - Policy Controller Performance Management
NN10342-711	Session Server - Trunks Performance Management
NN10141-711	SPM Performance Management (NA only)
NN10154-711	STORM Performance Management
NN10139-711	UAS Performance Management
NN10138-711	USP Compact Performance Management
NN10137-711	USP Performance Management
Product Security and Administration documents	
NN10175-611	Call Agent Security and Administration
NN10358-611	CBM 850 Administration and Security
NN10171-611	CS 2000 Security and Administration
NN10170-611	CS 2000 Core Security and Administration
NN10168-611	DPT-SPM (ATM) Security and Administration
NN10213-611	Gateway Controller Security and Administration
NN10165-611	IW-SPM (ATM) Security and Administration
NN10166-611	IW-SPM (IP) Security and Administration
NN10336-611	Integrated EMS Security and Administration
NN10164-611	MG4000 Security and Administration
NN10162-611	MG9000 Security and Administration
NN10337-611	MS 2010 Security and Administration
NN10400-300	Multiservice Data Manager Administration Tools
NN10400-305	Multiservice Data Manager Administration Fundamentals
NN10600-605	Multiservice Data Manager Network Security Fundamentals
NN10600-606	Multiservice Data Manager Network Security: User Access Configuration

Document number	Description
NN10600-607	Multiservice Data Manager Network Security: Secure Communications Configuration
NN10180-611	Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Nortel Networks Multiservice Data Manager in Carrier VoIP Networks Security and Administration (NA only)
NN10180-612	MSS 15000, MG 15000 & MDM in VoIP Networks - Securing Network Elements
NN10177-611	SAM21 Shelf Controller Security and Administration
NN10434-611	Session Server - Policy Controller Security and Administration
NN10346-611	Session Server - Trunks Security and Administration
NN10163-611	SPM Security and Administration
NN10176-611	STORM Security and Administration
NN10161-611	UAS Security and Administration
NN10159-611	USP Security and Administration
NN10160-611	USP Compact Security and Administration
Supporting documents	
CS 2000 XA-Core	
297-8991-307	XA-Core Cutover Procedures Manual
297-8991-510	XA-Core Maintenance Manual
297-8991-810	XA-Core Reference Manual
CS 2000 system	
NE10003-112	Electronic Software Delivery Customer Implementation Guide
297-8991-303	Global Software Delivery One Night Process Procedures Guide
CS 2000 Interfaces (intl only)	
NIS S118-1	CLASS Modem Interface Specification (TDM) implementations
INAPSum 3.1	CS-1R INAP Protocol Summary
INAPPar 1.0	CS-1R INAP Interworking Specification
A246-1	CS 2000 ETSI ISUP Compliance
A265-1	CS 2000 ETSI ISUP V1 Compliance
A215-1	CS 2000 ETSI PRI(T) Specification
NIS-D365-1	CS 2000 SIP-T Specification

Document number	Description
NIS S223-1	DMS-100 Implementation of ETSI ISDN Basic Rate Interface at the S/T Reference Point
NIS S255-1	DMS-100 Implementation of ETSI ISDN Basic Rate Interface at the S/T Reference Point
NIS S232-2	DMS-100 Implementation of ETSI ISDN Basic Rate Interface at the T Reference Point
NIS S255-2	DMS-100 Implementation of ETSI ISDN Basic Rate Interface at the T Reference Point
NIS V207-1	DMS-100 International Switching V5 Interface Specification
A59036800	Functional description SIP-T trunks (CS 2000 ETSI ISUP SIPT looparound)
INAPSum 10.1	INAP Protocol Summary ITU IN SSP on INAP Operation and Parameter Support
A219-1	Interface Specification at the Q and C Reference Points
Media Gateway 3200	
LTRT69701	Media Gateway 3200 Users Manual
LTRT72901	Media Gateway 3200 Configuration Instructions
LTRT70102	Media Gateway 3200 Fasttrack Installation Guide
LTRT69801	Media Gateway 3200 Users Manual
Media Gateway 3500	
LTRT7453	MG 3500 Installation, Operation and Maintenance Manual
LTRT7463	MG 3500 Product Description (technical)
LTRT-74003	EMS User Manual
LTRT-74103	EMS Product Description
LTRT-74203	EMS Installation and Maintenance Guide
Nortel Networks Multiservice Switch 7480/15000	
Product fundamentals	
NN10600-000	Nortel Networks Multiservice Switch 7400/15000/20000 What's New in PCRx.x
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

Document number	Description
NN10600-030	Nortel Networks Multiservice Switch 7400/15000/20000 Overview
NN10600-050	Nortel Networks Multiservice Switch 7400/15000/20000 Commands Reference
NN10600-053	Nortel Networks Multiservice Switch 7400/15000/20000 Commands Job Aid
NN10600-060	Nortel Networks Multiservice Switch 7400/15000/20000 Components Reference (multi-volumes)
NN10600-272	Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software
NN10600-300	Nortel Networks Multiservice Switch 7400/15000/20000 Operations: SNMP
NN10600-510	Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Trace System
NN10600-560	Nortel Networks Multiservice Switch 7400/15000/20000 Accounting
NN10600-561	Nortel Networks Multiservice Switch 7400/15000/20000 Data Management
NN10600-581	Nortel Networks Multiservice Switch 7400/15000/20000 IP VPN Technology Fundamentals
NN10600-590	Nortel Networks Multiservice Switch 7400/15000/20000 Layer 3 Traffic Management Fundamentals
NN10600-702	Nortel Networks Multiservice Switch 7400/15000/20000 ATM Routing and Signalling 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
NN10600-720	Nortel Networks Multiservice Switch 7400/15000/20000 Operations: AAL1 Circuit Emulation
NN10600-730	Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Inverse Multiplexing for ATM

Document number	Description
NN10600-900	Nortel Networks Multiservice Switch 7400/15000/20000 Frame Relay Technology Fundamentals
NN10600-905	Nortel Networks Multiservice Switch 7400/15000/20000 Frame Relay UNI Job Aid
NN10600-906	Nortel Networks Multiservice Switch 7400/15000/20000 Frame Relay NNI Job Aid
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
NN10600-775	Nortel Networks Multiservice Switch 7400 Operations: Bit Transparent Data Service
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NN10600-120	Nortel Networks Multiservice Switch 15000/20000 Hardware Description
NN10600-125	Nortel Networks Multiservice Switch 15000/20000 Planning Site Requirements
NN10600-130	Nortel Networks Multiservice Switch 15000/20000 Hardware Installation, Maintenance, and Upgrade
NN10600-170	Nortel Networks Multiservice Switch 7400 Hardware Description
NN10600-172	Nortel Networks Multiservice Switch 7400 FP Cabling Reference
NN10600-175	Nortel Networks Multiservice Switch 7400 Hardware Installation, Maintenance, and Upgrade
NN10600-920	Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Frame Relay to ATM Interworking
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NN10600-270	Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation
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NN10600-271	Nortel Networks Multiservice Switch 7400/15000/20000 Network Management Connectivity
NN10600-405	Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Call Server

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NN10600-410	Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Call Redirection Server
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
NN10600-500	Nortel Networks Multiservice Switch 7400/15000/20000 Alarms Reference
NN10600-520	Nortel Networks Multiservice Switch 7400/15000/20000 Fault and Performance Management: Troubleshooting
NN10600-550	Nortel Networks Multiservice Switch 7400/15000/20000 Common Configuration Procedures
NN10600-551	Nortel Networks Multiservice Switch 7400/15000/20000 FP Configuration Reference
NN10600-582	Nortel Networks Multiservice Switch 7400/15000/20000 IP VPN Configuration Management
NN10600-591	Nortel Networks Multiservice Switch 7400/15000/20000 Layer 3 Traffic Management Configuration
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
NN10600-781	Nortel Networks Media Gateway 7480/15000 Non-switched Service Configuration Management
NN10600-782	Nortel Networks Media Gateway 7480/15000 Switched Service Configuration Management
NN10600-901	Nortel Networks Multiservice Switch 7400/15000/20000 Frame Relay Configuration Management
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NN10600-601	Nortel Networks Multiservice Switch 7400/15000/20000 Administration and Security
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NN10600-415	Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Hunt Group Server
NN10600-420	Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Trunking
NN10600-445	Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Multiprotocol Label Switching
NN10600-745	Nortel Networks Multiservice Switch 7400 Operations: Multiservice Passport Access Network Link
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NN10600-580	Nortel Networks Multiservice Switch 15000/20000 Operations: Ethernet Service
NN10600-800	Nortel Networks Multiservice Switch 7400/15000/20000 IP Technology Fundamentals
NN10600-801	Nortel Networks Multiservice Switch 7400/15000/20000 IP Configuration Management
NN10600-760	Nortel Networks Multiservice Switch 7400 Operations: DCME Voice Service
NN10600-770	Nortel Networks Multiservice Switch 7400 Operations: HDLC Transparent Data Service
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NN10600-780	Nortel Networks Media Gateway 7480/15000 Technology Fundamentals
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241-6001-000	Nortel Networks Multiservice Data Manager Documentation Guide
241-6001-001	What's New in Nortel Networks Multiservice Data Manager Documentation
241-6001-012	Nortel Networks Multiservice Data Manager Configuration Management for DPN Users
241-6001-100	Nortel Networks Multiservice Data Manager Installer Guide
241-6001-101	Nortel Networks Multiservice Data Manager Engineering Guide
241-6001-102	Nortel Networks Multiservice Data Manager Planning Guide
241-6001-121	Nortel Networks Multiservice Data Manager Device Adapter Installation and Administration User Guide
241-6001-122	Multiservice Data Manager Using MDM Toolset and Operator Client Interfaces

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NN10600-605	Media Gateway - Nortel Networks Multiservice Data Manager Network Security Operations
NN10600-606	Media Gateway - Nortel Networks Multiservice Data Manager Network Security: User Access Configuration
NN10600-607	Media Gateway - Nortel Networks Multiservice Data Manager Network Security: Secure Communications Configuration
241-6001-201	Media Gateway - Nortel Networks Multiservice Data Manager Network Model API Reference Guide
241-6001-203	Media Gateway - Nortel Networks Multiservice Data Manager Alarm and Status API Reference Guide
241-6001-204	Nortel Networks Multiservice Data Manager DPN Provisioning API Reference Guide
241-6001-207	Nortel Networks Multiservice Data Manager Media Gateway Provisioning API Reference Guide
241-6001-209	Nortel Networks Multiservice Data Manager Provisioning Command Filter API Reference Guide
241-6001-210	Nortel Networks Multiservice Data Manager DPN SNMP Agent User Guide
241-6001-211	Nortel Networks Multiservice Data Manager Embedded Programming Interface Reference Guide
241-6001-400	Nortel Networks Multiservice Data Manager Administration Database and Configuration Repository User Guide
241-6001-405	Nortel Networks Multiservice Data Manager Administration Database and Configuration Repository User Guide
241-6001-603	Nortel Networks Multiservice Data Manager Service Provisioning for Frame Relay User Guide
241-6001-610	Nortel Networks Multiservice Data Manager Nodal Provisioning User Guide
241-6001-611	Nortel Networks Multiservice Data Manager Nodal and Service Provisioning Reference Guide
241-6001-801	Nortel Networks Multiservice Data Manager Overview
241-6001-804	Nortel Networks Multiservice Data Manager Workstation Utilities User Guide
241-6001-805	Nortel Networks Multiservice Data Manager List of Terms

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241-6001-123	Multiservice Data Manager Upgrade
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241-6001-011	Nortel Networks Multiservice Data Manager Fault Management User Guide
241-6001-013	Nortel Networks Multiservice Data Manager Remote Network Communication System User Guide
241-6001-501	Nortel Networks Multiservice Data Manager Proxy Alarms Reference Guide
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241-6001-022	Nortel Networks Multiservice Data Manager Network Reporting System User Guide
241-6001-023	Nortel Networks Multiservice Data Manager Configuration Management for Passport User Guide
241-6001-200	Nortel Networks Multiservice Data Manager Application Programming Interface Primer
241-6001-304	Nortel Networks Multiservice Data Manager Configuration Management Administrator Guide
241-6001-308	Nortel Networks Multiservice Data Manager Network Configuration Database Administrator Guide
241-6001-600	Nortel Networks Multiservice Data Manager Service Provisioning for ATM User Guide
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241-6001-301	Nortel Networks Multiservice Data Manager Customization Administrator Guide
241-6001-303	Nortel Networks Multiservice Data Manager Administrator Guide

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212256B	Installing CWDM Gigabit Interface Converters
212257B	Installation and Networking Guidelines for Optical Routing
212486B	Adding MAC Adresses to the Passport 8000 Series Chassis
302403G	Installing Media Dependent Adapters (MDA)
312746C	Installing and Maintaining the Passport 8010co Chassis and Components
312747C	Installing and Maintaining the Passport 8010 Chassis and Components
312748C	Installing and Maintaining the Passport 8006 Chassis and Components
312749H	Installing Ethernet Routing Switch 8600 Switch Modules
312751C	Installing an AC Power Supply in an 8000 Series Switch
312752C	Installing a Fan Tray in an 8000 Series Switch
312755E	Installing the Breaker Interface Panel for the 8010co Chassis
312865A	Installing Gigabit Interface Converters
313070C	Installing a DC Power Supply in an 8000 Series Switch

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313072B	Installing Media Dependent Adapters for the 8683POSM Module
313074C	Installing and Maintaining the Passport 8003 Chassis and Components
313189D	Getting Started
313195A	Managing the Passport 8000 Series Switch Using Device Manager
313197D	Network Design Guidelines Passport 8000 Series Switch Release 3.3 Implementation Notes
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314754F	Release Notes for the Passport 8000 Series Switch
314832B	Installing a CPU Memory Upgrade
314937B	Important Information about your hardware and associated software compatibility
314969B	Installing the Web Switching Module for the 8600 Series Switch
314995B	Configuring the Web Switching Module Using Device Manager
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315015C	System Messaging Platform Reference Guide
315023C	Using the Packet Capture Tool
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315893C	Using the 10 Gigabit Ethernet Modules: 8681XLR and 8681XLW
316314D	Installing and Maintaining the 8000 Series Chassis

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316340B	Important Information about the 8000 Series Switch Modules
316341B	Installing and Using Device Manager
316343B	Configuring Internet Membership Group Authenication Protocol (IGAP)
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317177A	Release Notes for the Passport 8000 Series Switch Software Release 3.7
317359A	Using Diagnostic Tools
318034A	Installing GBIC and Gigabit SFP Transceivers
pp8600_tcg_dvmrp	Technical Configuration Guide For Passport 8600 Multicast DVMRP
pp8600_tcg_eap	Technical Configuration Guide For Passport 8600 EAPoL
pp8600_tcg_pim_sm	Technical Configuration Guide For Passport 8600 PIM-SM
pp8600_tcg_rem_port_mir	Passport 8600 Technical Configuration Guide For Remote Port Mirroring Release 3.7
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USP SN08 Logs & Oms	USP SN08 Logs & Oms
USP SN08 Readme	USP 08 Readme
297-8103-901	Broadband STP Inservice Introduction of ICCMs
297-8103-902	Broadband STP High Speed Link Cutover Guide
297-8103-903	Centillion 1200 ATM Switch User Manual
297-8103-904	Centillion 1200N ATM Switch Command Manual
297-8103-906	Broadband STP Centillion 1200N Element Manager User Guide
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311120B	Getting Started with the Contivity Extranet Switch 2600 (NA only)
311333A	Installing the Contivity 1600 (NA only)
311641A	Installing the Contivity 4600 (NA only)
311642K	Configuring the Contivity VPN Switch

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311645H	Reference for the Contivity VPN Switch Command Line Interface
311773N	Contivity VPN Client Release Notes [Version 4.91] (NA only)
311862C	Getting Started with the Contivity 600
313681A	Contivity 600 Notice
313998B	XP User Notification (NA only)
314708C	Installing the Contivity 2700 (NA only)
314711C	Installing the Contivity 1700 (NA only)
314961E	Installing the Contivity 1010/1050/1100 (NA only)
314962B	Connecting for Internet Access [Contivity 1010/1050/1100 Important Notice] (NA only)
315000G	Contivity Secure IP Services Gateway Release Notes
315896D	Configuring Firewalls, Filters, and NAT for the Contivity Secure IP Services Gateway
315897D	Configuring Authentication and Certificates for the Contivity Secure IP Services Gateway
315898C	Configuring Routing for the Contivity Secure IP Services Gateway
315899D	Configuring Tunneling Protocols and Advanced WAN Settings for the Contivity Secure IP Services Gateway
315900C	Managing and Troubleshooting the Contivity Secure IP Services Gateway
315990D	Installing the Contivity 5000 (NA only)
317086B	Installing the Contivity 1740 (NA only)
318438A	Configuring Tunneling Protocols for the Contivity Secure IP Services Gateway
318451A	Configuring SSL VPN Services on the Contivity Secure IP Services Gateway
Trunk Maintenance Manager	
NN10344-450	Solution Upgrade
See solution documents at the start of this table	Solution-level Basics
NN10402-600	Solution System Administration and Security

Document number	Description
NN10213-611	GWC Security and administration
Line Maintenance Manager	
NN10344-450	IP Solution Upgrade
See solution documents at the start of this table	Solution-level Basics
NN10402-600	Solution System Administration and Security
NN10213-611	GWC Security and administration

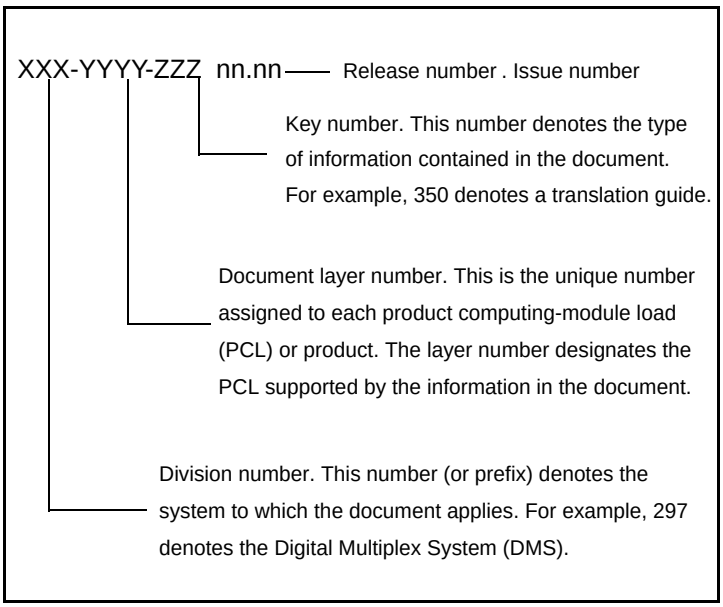
Document numbering

Nortel Networks documents are numbered according to various numbering schemes. The following sections describe the two numbering schemes used for most documents. Two additional two digit numbers (e.g. 01.01) after a document number indicates the document's release and issue.

Traditional numbering scheme

Traditional Nortel Networks documents are identified by a ten-digit number divided into three blocks, as shown in the figure Traditional document number below.

Traditional document number



The table Document division numbers below lists the division numbers of the documents that support the International Carrier VoIP Networks.

Document division numbers

Document division number	Product	Product name
241	Gateways	Packet Voice Gateway
297	DMS	Digital Multiplex System
NIS	DMS	Network Interface Specifications

The table Document layer numbers below lists the layer numbers used for the relevant documents.

Document layer numbers

Document layer number	Product	Product name
1001	Generic DMS-100	DMS-100 Common Application Practices
1501	Gateways	Nortel Networks Multiservice Switch 15000
2667	SDMC	SuperNode Data Manager
5001	SN	SuperNode
5051	SDM	SuperNode Data Manager
5061	SDM	SuperNode Data Manager
5071	Gateways	Universal Audio Server
5701	Gateways	Nortel Networks Multiservice Switch 7400 and 15000
6001	Nortel Networks Multiservice Data Manager	Nortel Networks Multiservice Data Manager
7401	Gateways	Nortel Networks Multiservice Switch 7400
8041	UK/EUR	European DMS-100
8991		Miscellaneous
9051	MMP	DMS-100 Multi-Market Platform

The table Key numbers below lists the main key numbers used for the relevant documents.

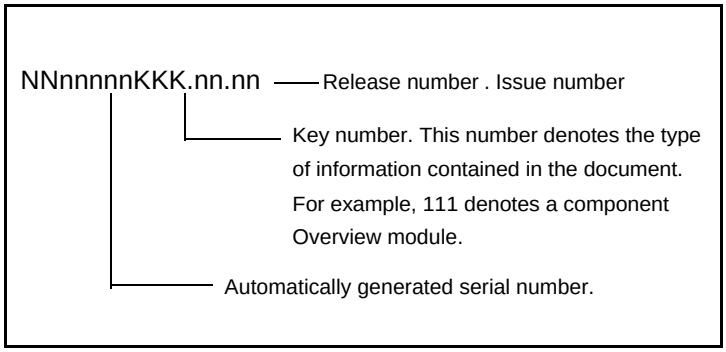
Key numbers

Key number	Document type
350	Translations Guide
351	Data Schema
543	Alarm and Performance Monitoring Procedures
544	Trouble Locating and Clearing Procedures
545	Recovery Procedures
546	Routine Maintenance Procedures
547	Card Replacement Procedures
808	Service Order Reference Manual
840	Log Report Reference Manual
855	Office Parameters Reference Manual

FCAPS numbering scheme

FCAPS documents are identified by the characters 'NN' followed by eight digits, and the release and issue number. The eight digits are divided into two blocks, as shown in the figure FCAPS document number below.

FCAPS document number



The table Key numbers for solution-level documents below lists the main key numbers used for the relevant solution-level documents.

Key numbers for solution-level documents

Key number	Document type
100	Solution Overview module
450	Upgrade module
900	Fault Management module
500	Configuration module
800	Accounting module
700	Performance Monitoring module
600	Security and Administration module

The table Key numbers for component documents below lists the main key numbers used for the relevant component documents.

Key numbers for component documents

Key number	Document type
111	Overview module
461	Upgrade module
911	Fault Management module
511	Configuration module
811	Accounting module
711	Performance Monitoring module
611	Security and Administration module

Release affecting documentation

If a document appears in the current release documentation suite with an earlier release nomenclature, or entitled (I)SN** and up, it is to be assumed

that although the content of this document has not changed, it is still applicable to the current release.

Training

Each Carrier VoIP networks provides a training curriculum that is specific to the solution. All course descriptions, prerequisites, schedules and locations can be viewed at http://www.nortelnetworks.com/td

For the most recent curriculum information, please contact your Nortel Networks Training and Documentation representative. For enrollment assistance, please contact Training registration at 1-800-4-NORTEL (1-800-466-7835), express routing code #280.

Product Support

Nortel Networks provides product support using standard Customer Service Center (CSC) and Global Product Support (GPS) policies and procedures.

> ***Note:*** If you need help, follow your own escalation procedures first as appropriate to your company.

If you need to reach Nortel Networks directly, contact the 1-800-4-NORTEL number, when you hear the recording, input the express routing code for the appropriate support group.

Carrier VoIP specific routing codes are as follows:

- VoIP=844#
- MDM=186#
- Nortel Networks Multiservice Switch 15K=555#

Abbreviations and acronyms

The following table lists common abbreviations used in Carrier VoIP Networks.

ACD	Automatic Call Distribution
AIN	Advanced Intelligent Network
AMA	Automatic Messaging Accounting
APS	Audio Provisioning Server
ARP	Address Resolution Protocol
ASCII	American Standard Code for Information Exchange
ASPEN	Automatic System for Performance Evaluation of the network
BOOTP	Boot Strap Protocol
C7TU	CCS7 Test Utility
CALLTRAK	Call Tracing
CAM	Call Agent Manager
CBM	Core and Billing Manager
CC MIS	Call Center - Management Information System
CCS7	Common Channel Signalling No. 7
CICM	Centrex IP Client Manager
CLASS	Custom Local Area Signaling Services
CS 2000	Communication Server 2000
CSAM	Communication Server Application Module
CS2K	CS 2000 Compact
DISKUT	Disk Utility (SLMs)
DISPCALL	Display Call
DRAM	Digital Recorded Announcement Machine
DSKUT	Disk Utility (DDUs)
EBS	Electronic Business Set
EDRAM	Enhanced Digital Recorded Announcement Machine
Ethernet Routing Switch 8600	Ethernet Routing Switch 8600 Device Manager
FTP	File Transfer Protocol
FTS	Frame Transport system

GWC	Gateway Controller
H.248	ITU-T standard
IAC	Integrated Access Cable solution
IAW	Integrated Access Wireline solution
ICMP	Internet Control Message Protocol
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISUP	Integrated Services Digital Network User Part
IUA	ISDN Q.921 User Adaption
KDC	Key Distribution Center
LIU7	Link Interface Unit (SS7)
LMM	Line Maintenance Manager
LNP	Local Number Portability
LRN	Location Routing Number
M3UA	MTP3 User Adaption Layer
MAP	Maintenance and Administration Position
MDM/ Nortel Networks Multiservice Data Manager	Nortel Networks Multiservice Data Manager
MG 4000	Media Gateway 4000
MG 9000	Media Gateway 9000
MGCP	Media Gateway Control Protocol
MTP	Message Transfer Part
NCS	Network Control System
Nortel Networks Multiservice Switch 15000	Nortel Networks Multiservice Switch 15000
Nortel Networks Multiservice Switch 15000/ Media Gateway 15000	Media Gateway 15000 Packet Voice Gateway
NPM	Network Patch Manager

NTP	Network Time Protocol
OSPFIGP	Open Shortest Path First Internet Gateway Protocol
PCL	Product Computing-module Load
PEC	Product Engineering Code
PPVM	Peripheral Processor Virtual Machine
PRSM	Post Release Software Manager (Replaced PATCHER)
PTA	Packet Trunking over ATM solution
PT-IP	Packet Trunking IP solution, Packet Transit IP solution (International)
PVG	Packet Voice Gateway
RTCP	Real Time Control Protocol
RTP	Real Time Transfer Protocol
SCCP	Signalling Connection Control Part
SCTP	Simple Computer Telephony Protocol
SDM	Supernode Data Manager
SIP-T	Session Initiation Protocol for Telephony
SLM	System Load Module
SMDI	Simplified Message Desk Interface
SNMP	Simple Network Management Protocol
SPM	Spectrum Peripheral Module
SP/SSP	Signalling Point/Service Switching Point
SS7	Signalling System 7 (SS7)
STORM	Storage Management Server
STP	Signalling Transfer Point
STP/SSP	Signalling Transfer Point/Service Switching Point
TCAP	Transaction Capabilities Application Part
TCP	Transmission Control Protocol
Telnet	Telephone Network
TFTP	Trivial File Transfer Protocol
TMM	Trunk Maintenance Manager
TMS	TOPS Message Switch
TOPS	Traffic Operator Position System
TOPS IWS	TOPS Intelligent Work Station

TOPS MPX	TOPS MPX (Provides Dir. Assist. and Intercept Services)
TOPS-TPC	TOPS-Terminal Position Controller
TRAVER	Translation Verification
UAA	Universal Access ATM solution
UAIP	Universal Access IP solution
UAS	Universal Audio Server
UDP	User Datagram Protocol
USP	Universal Signalling Point
USPC	Universal Signalling Point Compact
VRRP	Virtual Router Redundancy Protocol
XA-Core	Extended Architecture Core
XPMIST	XPM Intercept System Test

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