Meridian SL-100 PCL Release Documents (MSL12)

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Part 1 of 2

Year 2000 READINESS DISCLOSURE

DMS* - FAMILY SOFTWARE

PRODUCT COMPUTING MODULE LOAD RELEASE DOCUMENT

(PCL) Release Document

The MSL-100 Family Software release document is supplied for each Software Stream. This release document provides software feature information pertinent to the new software load.

A status of PRELIMINARY means the final feature content of the software release has not been finalized and features may be added or deleted without notice. A status of STANDARD indicates that the feature content of the software release is firm.

The release document consists of the following sections:

FEATURE CONTENT

This section provides information concerning MSL-100 Family System features associated with software releases. Each office configuration is customized to meet Telco/Carrier requirements. The following subsections include information necessary to determine that system software changes have occurred since the last software release.

Note: only features NEW or CHANGED in the release(s) covered by the document are included

Cross Reference Tables

This section contains many tables to make it more efficient to find information. A description of the tables precedes them.

The following sections provide information necessary to support changes applicable to the new software release.

Functional Descriptions (FN)	-summarizes the functions of the feature
Data Schema (DS)	-indicates major additions/changes to the Data Schema table
Logs (LG)	-indicates major additions/changes to the LOGs
Operational Measurements(OM)	-indicates major additions/changes to the OM groups
Man-Machine interface (MM)	-indicates major additions/changes to the LOGs
Service Orders (SO)	-indicates major additions/changes to the Service Orders
Automatic Message Accounting (AM)	-indicates major additions/changes to the AMA

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How To Use the Feature Content Section

The feature content software section contains the documentation for the features new or changed in the release. There are tables included to help in the reading of the feature content section.

The items in the tables are feature numbers and feature functional groups. Features are designed by Nortel Networks (NT) against a NT feature ID (featid).

A functional group is made up of several features.

Table 1: Functional Group to Feature Cross Reference

This table lists all features new to the release that may be included in the release document. The functional group is indicated along with the Nortel Networks technologies featid against which the documentation has been written.

Table 1: Functional Group to Feature Cross Reference

Featid	Title	Stream and release
A59006371	E911 ISUP Enhancements	MSL12
A59006586	PRI - CFW/IB (Call Forward/Interface Bus	MSL12
A59006586	PRI - CFW/IB (Call Forward/Interface Bus	MSL12
A59010572	Event driven termination for MADN	MSL12
A59010576	SMDI re-enginerring	MSL12
A59011294	OSS7 - ISUP Support for Operator Service	MSL12
A59011676	Centrex E.164 part II	MSL12
A59011720	NGLA IDT MTCE documentation	MSL12
A59011902	Call Transfer Fraud Prevention	MSL12
A59011907	Create Call Message Processing	MSL12
A59011948	ICM Called Party Number Reporting	MSL12
A59011953	ICM ACDDN Association Expansion	MSL12
A59011953	ICM ACDDN Association Expansion	MSL12
A59012000	UXLA Table expansion	MSL12
A59012144	Call Redirect	MSL12
A59012182	Number Pooling Servord Interface	MSL12
A59012192	Number Pooling Feature Interactions	MSL12
A59012232	19-NGLA RDTINV Provisioning	MSL12
A59012259	18-NGLA Static Data (CM)	MSL12
A59012291	26-NGLA OAM Misc	MSL12
A59012324	1-NGLA CallP Messaging	MSL12
A59012347	Design Doc for AI on NGLA	MSL12
A59012375	Design Doc for MCC on NGLA	MSL12
A59012446	AIN 0.2 Offhook_Delay on PX Trunks	MSL12

Table 1: Functional Group to Feature Cross Reference

Featid	Title	Stream and release
A59012468	LNP/MBG Interworking	MSL12
A59012488	SIE Deployment II	MSL12
A59012521	NGLA Operational Measurements	MSL12
A59012574	LNP: LNP Enhancements	MSL12
A59012624	DND/MSB ONP Survival	MSL12
A59012642	E164 utilities - Phase II	MSL12
A59012655	Who's Calling	MSL12
A59012680	P-side Link Mapci Phase I	MSL12
A59012730	NGLA P-Side Link Mtce	MSL12
A59012746	NGLA State Ripple in CNA13	MSL12
A59012846	Fan Alarm Enhancements	MSL12
A59012880	FPE Realtime Recovery	MSL12
A59013009	HUNTSERV Rearchitecture Feature	MSL12
A59013034	Hunt LOD Expansion	MSL12
A59013044	Taurus Phase 2	MSL12
A59013088	ISUP Generic Name	MSL12
A59013111	Redirection on SMDI using ADD	MSL12
A59013169	DCR Interworking with AIN	MSL12
A59013226	OCM Nested Extended Transactions	MSL12
A59013251	AIN Network Tools Enhancements	MSL12
A59013383	Alternate Trunk Group Selection	MSL12
A59013430	Prevent Deletion Option	MSL12
A59013476	AINSE PFC LARP and PFC/SFC Group Subscri	MSL12
A59013533	NGLA C-Side Channel Expansion	MSL12
A59013762	LNP: LNP/NPASplit Interworking Enhanceme	MSL12

Table 1: Functional Group to Feature Cross Reference

Featid	Title	Stream and release
A59013792	NGLA Line Test (CM)	MSL12
A59013804	Clock Sync; STM-1 Loop Timing (OC-3 Equi	MSL12
A59013873	CSMI Enhancements - Stub Message Delete	MSL12
A59013912	OC-3 Line-Timing For DMS SuperNode(CSP &	MSL12
A59013999	ANSI Support on MLIU	MSL12
A59014046	DMS CktLoc Command Enhancement	MSL12
A59014132	SPM 8BIT SUPPORT FOR EXTERNAL AND INTERN	MSL12
A59014137	SPM Isolation Checks	MSL12
A59014167	CCS7 Channelized Access for SPM OC3 TDM	MSL12
A59014406	PX trunk support on SPM	MSL12
A59014588	RM Patching - IDM Support	MSL12
A59014614	SS7 Transport over ATM	MSL12
A59014625	SPM Large Systen Enhancements - Support	MSL12
A59014653	IOM DAT TAPE DRIVE (BYTE REVERSAL)	MSL12
A59014752	TCAPTRID removal feature	MSL12
A59014864	DDM/Transactors Robustness	MSL12
A59015125	Centrex IP capacity ehancement	MSL12
B59017494	Redundant Feature Enhancement	MSL12
S10252433	800P Southbound calls do not always send	MSL12
S10253300	QDNSU does not report DN's in a duplicat	MSL12
SPMBBFP	Black Box Fraud Prevention on Spectrum Peripheral	MSL12

*** FUNCTIONAL DESCRIPTION LIST OF FEATURES ***

a59006371_fn.aa08
a59006586_fn.ab44
a59010572_fn.aa12
a59010576_fn.aa12
a59011294_fn.aa28
a59011676_fn.aa12
a59011902_fn.aa05
a59011907_fn.aa82
a59011948_fn.aa14
a59011953_fn.aa09
a59012000_fn.aa07
a59012144_fn.aa11
a59012182_fn.aa20
a59012192_fn.aa12
a59012232_fn.aa09
a59012259_fn.aa26
a59012291_fn.aa03
a59012324_fn.aa05
a59012446_fn.aa10
a59012468_fn.aa08
a59012488_fn.aa14
a59012574_fn.aa14
a59012624_fn.aa08
a59012642_fn.aa06
a59012655_fn.aa07
a59012846_fn.aa08
a59012880_fn.aa07
a59013009_fn.aa11
a59013034_fn.aa11
a59013044_fn.aa21
a59013088_fn.aa10
a59013111_fn.aa02
a59013169_fn.aa14
a59013226_fn.aa49
a59013251_fn.aa08
a59013383_fn.aa11
a59013430_fn.aa23
a59013476_fn.aa04
a59013533_fn.aa04
a59013762_fn.aa12
a59013792_fn.aa03
a59013804_fn.aa13
a59013873_fn.aa09
a59013912_fn.aa13
a59013999_fn.aa12
a59014046_fn.aa07
a59014132_fn.aa15
a59014137_fn.aa11
a59014167_fn.ab01
a59014406_fn.aa10
a59014588_fn.aa07

a59014614_fn.aa05
a59014625_fn.aa05
a59014653_fn.aa05
a59014752_fn.aa08
a59014864_fn.aa01
a59015125_fn.aa10
b59017494_fn.aa05
s10252433_fn.aa03
s10253300_fn.aa01
spmbbfp_fn.aa01

2: Functional description (FN)

2.1 Feature name

E911 ISUP Enhancements

2.2 Background

The transition from traditional Multi-Frequency (MF) trunking to Integrated Services Digital Network (ISDN) User Part (ISUP) trunking has resulted in very short call setup times. As telephone customers become more and more accustomed to the extremely short ISUP call setup delays for most public switched calls, they have also come to expect a short call setup delay for E911 calls. Additionally, the rapid growth of wireless communications has prompted the need to relay more information about the caller (such as location in the form of cell site, sector, latitude, longitude, altitude etc) to enhance emergency services. The industry has chosen to relay this information in the form of a generic digits parameter found in ISUP signaling protocol. It is for these, and other similar reasons, that more emphasis is being placed on the support of E911 calls using the ISUP signaling protocol.

2.3 Description

The DMS-100 emergency services software currently supports dedicated E911 trunking using ISUP signaling protocol on InterToll (IT) trunks between end office to E911 tandem interfaces, Mobile Switching Center (MSC) to E911 tandem interfaces, as well as E911 tandem to E911 tandem interfaces. However, some E911 service options such as Originator Hold (ORIGHOLD), Ringback, and Enhanced Calling Party Hold (ECPH) are not compatible with the current offering of ISUP IT trunks used for E911 service.

Evolving industry standards, the need for a more flexible E911 service, and the desire for greater E911 service option compatibility dictates the enhancement of the current ISUP IT trunking used for E911 calls.

This feature enhances the current E911 ISUP offering by modifying the Calling Party's Category (CPC) and Originating Line Information (OLI) parameters, as well as implementing Orighold, Ringback, and ECPH.

2.3.1 Calling Party's Category

This feature modifies the DMS-100, when acting as an end office, to set the CPC parameter in the outgoing IAM of emergency calls terminating on ISUP trunks to 11100000 (#E0) indicating "emergency service call". In this context, emergency calls are defined as those calls dialed 911 (excluding any prefix digits).

It also modifies the DMS-100, when acting as an E911 tandem, to set the CPC parameter in the outgoing IAM of emergency calls terminating on ISUP trunks to 11100000 indicating "emergency service call". This would be the case for E911 tandem to E911 tandem transfers using ISUP trunking where the first tandem is a DMS-100.

This activity does not make any modifications to the DMS-100 E911 tandem in regards to using the CPC parameter on incoming ISUP trunks to identify emergency calls.

This allows the DMS-100 products to properly interface with other vendor equipment and be more compliant with Telcordia GR-2956-CORE.

2.3.2 Originating Line Information Parameter

This feature modifies the DMS-100, when acting as an E911 tandem, to build the OLI parameter in the outgoing IAM of wireless emergency calls terminating to ISUP trunks and assign it the value of 00111101 indicating "cellular services (type 1)".

However, if the OLI parameter was received via the IAM on the inbound portion of a call from a wireless network to the DMS-100 E911 tandem, it is passed unchanged into the outgoing IAM of the E911 tandem-to-E911 tandem transfer.

Wireline calls are not affected by this modification.

Once again this makes the DMS-100 product more compatible with other vendor equipment, and more compliant with Telcordia GR-2956-CORE.

2.3.3 E911 Orighold, ECPH, and Ringback Over ISUP Trunks

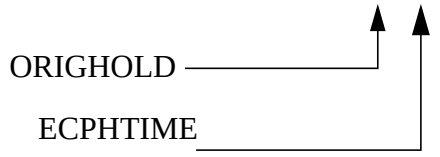
- Originator Hold (Orighold) - Provides the ability to hold the originator of a 911 call. If activated, the network connection from the originator's phone to the PSAP will be maintained if the originator goes onhook. The connection will remain until the PSAP releases the call or until the end office tears down the connection. The PSAP calltaker will hear a tone to indicate when a caller has gone onhook and is being held.
- Enhanced Calling Party Hold (ECPH) - Provides the ability to hold the originator of a 911 prior to answer by the PSAP. If activated, the network connection will be maintained until the PSAP answers or until the ECPH timer expires, whichever comes first.
- Ringback - Provides the ability to ring a 911 caller who is onhook and being held by the orighold feature. It also provides the ability to send the receive offhook (ROH) to a caller's phone which is offhook.

2.3.3.1 Activation / Deactivation

Orighold and ECPH will be controlled by the new ORIGHOLD and ECPHTIME subfields of the E911 option in the E911 tandem, which can be assigned to an intertoll (IT) ISUP trunk in table TRKGRP. Please see the DS section for details.

Example from table TRKGRP:

E911ICS7 IT 0 ELO NCRT IC NIL MIDL 613 AT1 NSCR 613 000 N N (E911 747 113 E911_STD ***Y 120***) $



Ringback is controlled by the RBACK feature option assignment in the E911 tandem found in table IBNXLA. This assignment is identical to the current requirements for ringback on MF trunks.

Activation will also be required in a DMS End Office (EO) by assignment of the OSNC option on the outgoing IT ISUP trunk. All end offices will need to conform with GR-1277 (OSS7) in order to provide orighold, ecph, and ringback.

In a DMS end office, OSNC can be assigned in table TRKOPTS to an outgoing or two-way intertoll (IT) trunk which has the CHGNUM ALL option in table TRKGRP.

Figure 1 Typical DMS to DMS E911 configuration for implementing ORIGHOLD

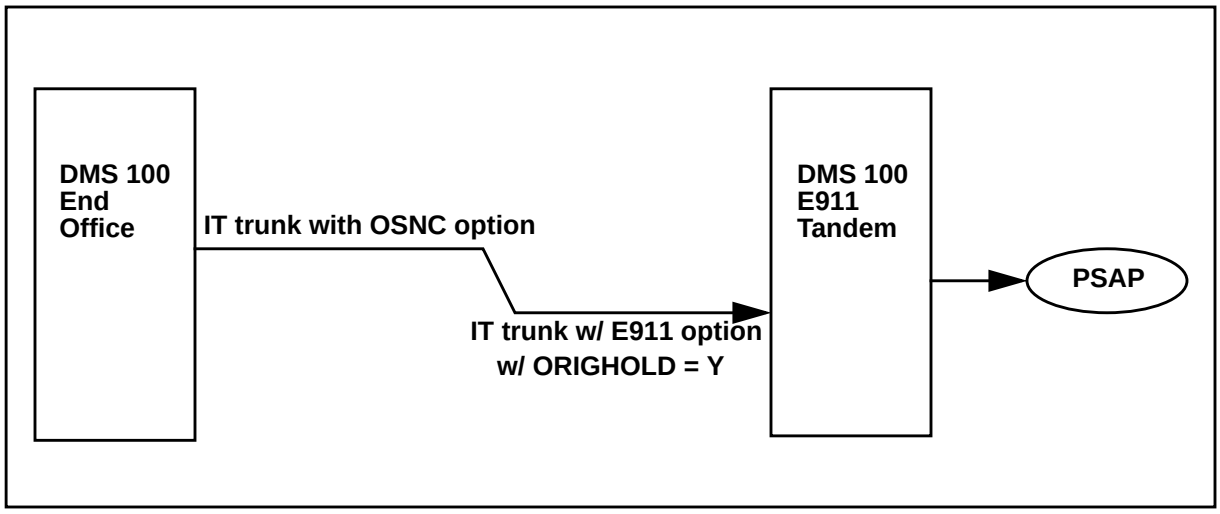
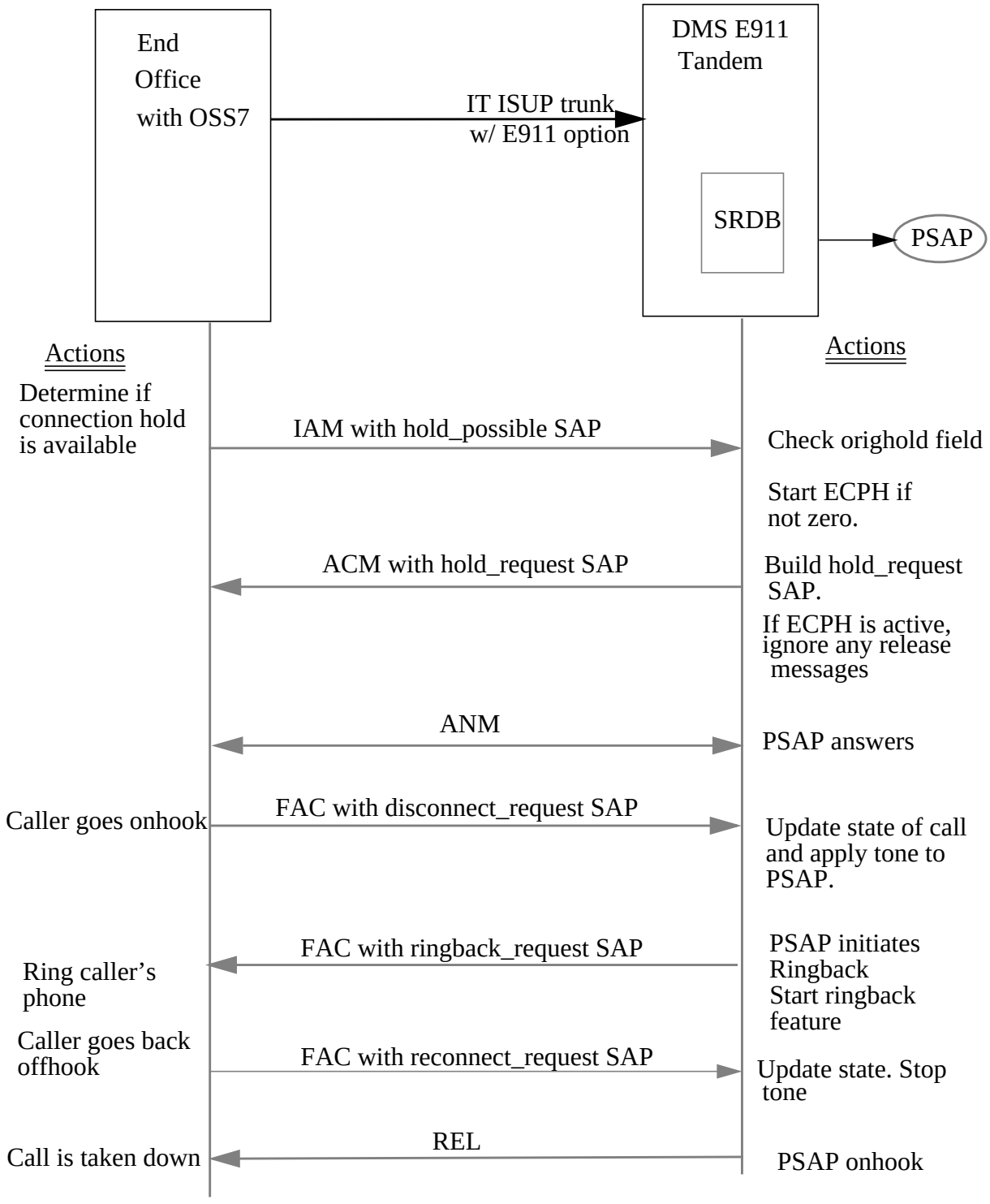


Figure 2 Implementation for a typical E911 Call



2.3.3.2 Tandem to Tandem Routing and Transfers

It is the intent of this feature to support orighold, ecph, and ringback on E911 calls transferred or routed between E911 tandem offices. This feature will support the following setup:

- ISUP to ISUP tandem-to-tandem routing and transfers
- MF to ISUP tandem-to-tandem routing and transfers

Note: ISUP to MF configurations will not be supported.

The OSNC option is an end office feature and is not necessary on outgoing trunks from an E911 DMS E911 Tandem office for tandem to tandem calls. The orighold and ecphtime fields must be consistent between E911 tandems when sending calls between offices.

Figure 3 Tandem-to-Tandem ISUP

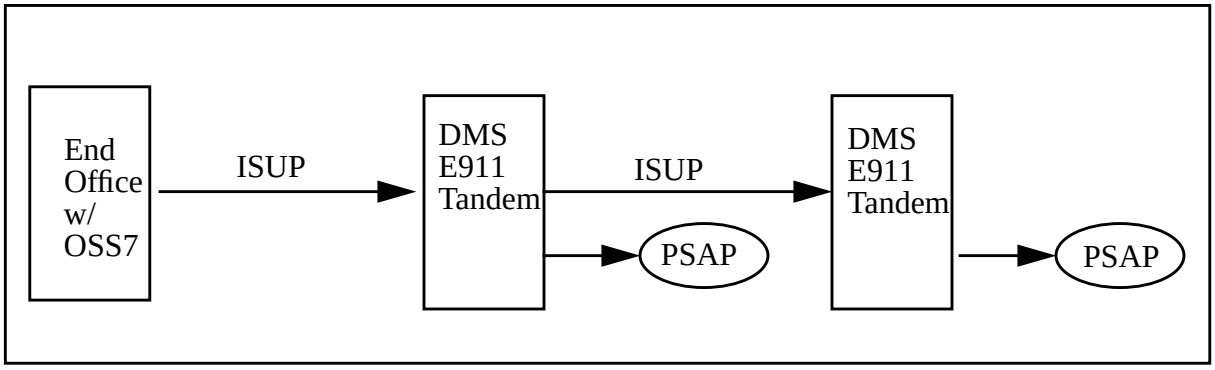
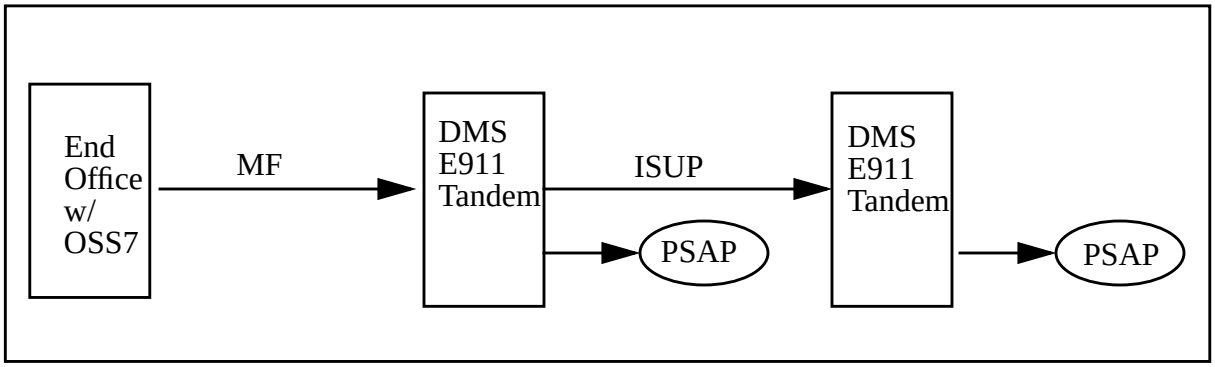


Figure 4 Tandem-to-Tandem MF to ISUP



2.3.3.3 OSNC Timer in the End Office

The OSNC option in a DMS end office has a timer which will release a held caller when it expires. It is defined by office parameter CONNECTION_HOLD_TIMER_IN_MINS found in table OFCENG. Its value can be between 1 and 4 minutes and has a default setting of 2 minutes.. With 911 calls, however, this timer will be reset at regular intervals when a

caller goes onhook. This is accomplished by sending a facility (FAC) ISUP message every 50 seconds when a caller is onhook that will indicate ‘continuation request’. The timer should never expire on 911 calls. A TRK 921 log is generated in the end office if this timer ever expires.

2.4 Hardware requirements

None

2.5 Limitations and restrictions

It is not the intent of this feature to make the DMS-100 fully compliant with GR-2956-CORE. It is the intent to become compliant with the specific requirements mentioned herein.

It is not the intent of this feature to make the DMS-100 compliant with GR-1277-CORE. The requirements outlined in GR-1277 will be implemented as part of the base ISUP and TOPS programs. The E911 feature adapts some of the functions of the base ISUP and TOPS features for E911 use.

The orighold and ringback features are dependant on the end office ability to conform to GR-1277 (OSS7).

2.6 Logs (LG)

None

2.7 Data schema (DS)

2.7.1 New/modified tables

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
TRKGRP	Changed	Unchanged

2.8 Office parameters (OP)

None

2.9 Service orders (SO)

None

2.10 Alarms (AL)

None

2.11 Command interface (CI)

None

2.12 Operational measurements (OM)

None

2.13 AMA/Billing information (AM)

None

2.14 Software optionality control (SOC)

None

2.15 Glossary

Term	Description
ACD	Automatic Call Distribution
ACM	Address Complete Message
ANI	Automatic Number Identification
ANM	Answer Message
CPC	Calling Party's Category
DMS	Digital Multiplex Switch
DN	Directory Number
E911	Enhanced 911
ECPH	Enhanced Calling Party Hold
EDNR	Emergency Directory Number Route
ES	Emergency Services
ESN	Emergency Services Number
FAC	Facility Message
FSD	Feature Specification Document
LDT	Line Appearance on a Digital Trunk
IAM	Initial Address Message
ISDN	Integrated Services Digital Network
ISUP	Integrated Services User Part
IT	Intertoll

MSC	Mobile Switching Center
OLI	Originating Line Information
ORIGHOLD	Originator Hold
OSNC	Operator Services Network Capability
OSS7	Operator Services Signaling 7
PSAP	Public Safety Answering Point
REL	Release Message
SAP	Service Activation Parameter
SRDB	Selective Routing Database
SS7	Signaling System #7

2.16 References

REF #	Description of Reference
GR-1277-CORE	Operator Services: Switching System Generic Requirements using Integrated Services Digital Network User Part (ISUP)
GR-2956-CORE	CCS/SS7 Generic Requirements in Support of E911 Service

2: Functional description (FN)

2.1 Feature name

CFW/IB (CALL FORWARD/INTERFACE BUSY)

2.2 Description

Call Forwarding Interface Busy (CFIB) provides the capability to forward calls to a remote Directory Number (DN) when the routelist to the base DN is busy. The term **interface** in this feature document refers to a routelist entry in the routing tables. A routelist is busy when all routes in the routelist are call processing busy, out-of-service or unavailable. In such situations, if the base DN subscribes to the CFIB feature, then the call is redirected to a new DN, also known as the Remote DN.

The targeted customers for CFIB are the Internet Service Providers (ISPs). One application of this feature is to forward the calls from a location in one time zone, whenever a routelist is busy, to another location in a different time zone where the traffic may be less. Another application of this feature is to provide a way to handle routing during disaster situations which may cause the routelist to be unavailable.

CFIB feature is subscribed on a per DN basis. All such DNs which subscribe to CFIB are referred to as Base DNs in this feature document. The DNs to which the calls are forwarded are referred to as remote DNs. A remote DN should not be located on the same switch as the base DN.

The Originating DN is the DN or the user that calls the Base DN.

Two configurations of originating DN, base DN and remote DN are considered. They are depicted in Figure 1 on page 144 and Figure 2 on page 145.

Figure 1 on page 144 shows the configuration in which the Originating and Base DN reside on the same SPCS while the remote DN resides on a remote switch.

Figure 2 on page 145 shows the configuration in which the Originating DN, Base DN and Remote DN reside on different switches.

Figure 1 Originating and Base DN on the same SPCS

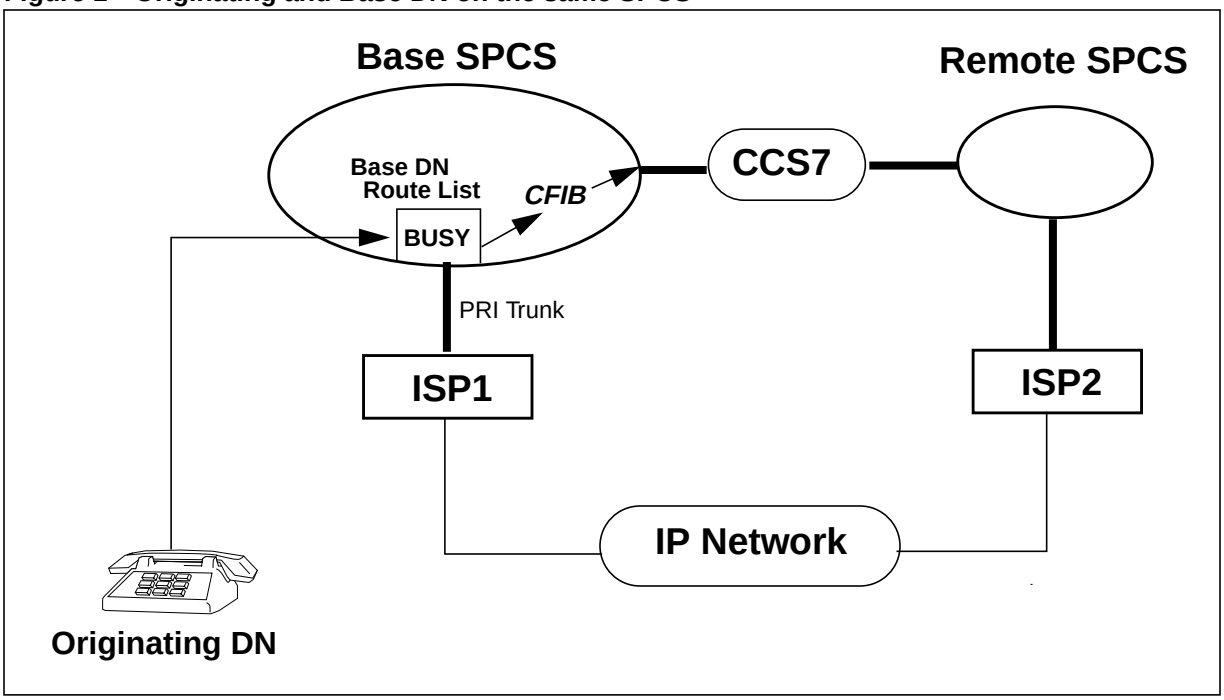
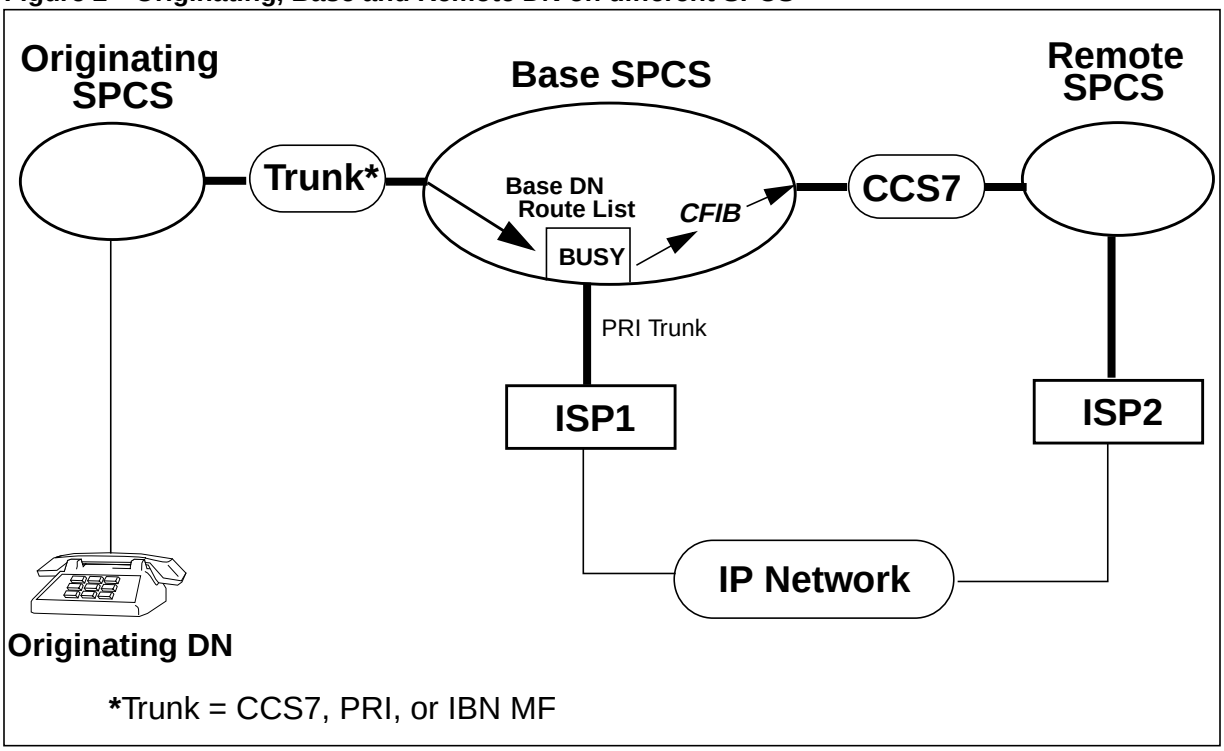


Figure 2 Originating, Base and Remote DN on different SPCS



The functional elements for this feature are briefly described below:

- Provisioning of CFIB
- CFIB feature operation
- Agent Interworking
- Billing Log
- OM group: RTESVCS

2.2.1 Provisioning of CFIB

CFIB is provisioned against a DN as an option on the **FEAT SELECTOR** in table **DNROUTE** and through SERVice ORDer (SERVORD). The CFIB option takes the following parameters:

- **CFIBSBDN**: A fixed 10-digit DN, to be used for billing the Base DN to the Remote DN leg of the CFIB'd call. (Since the feature is developed for the North-American market, the billing system requires the Billing DN to be a 10-digit DN).
- **TABNAME**: The name of the routing table which contains the route to the base DN. The valid tables are OFRT, OFR2, OFR3, OFR4, IBNRTE, IBNRT2, IBNRT3, and IBNRT4.
- **INDEX:** The index into the routing table.

- **CFIBID**: The identifier used to index the new table CFIBDATA which contains information of Remote DNs.
- **CFIBBASE**: PRI clli whos characteristics will be used as the base dn to retranslate the call to the remote dn if all the routes to the base dn are bsy.
- **RPNPP**: The redirecting party number presentation parameter can be set (Y) or reset (N). The default is Y. A value of Y indicates that presentation is allowed.

The CFIB option can also be provisioned using SERVORD.

A new table **CFIBDATA** is introduced by this feature. This table contains the information of the Remote DNs to which the call is to be forwarded. There is one Remote DN for each of the bearer capabilities supported by this feature. A tuple of this table takes the following parameters:

- **CFIBID**: Key to the tuple. This field is referenced in table DNROUTE for CFIB option.
- **RDNSPCH**: The remote DN used for incoming calls with bearer capability of Circuit-Mode Speech. This remote DN can be of maximum 15 digits in length.
- **RDN3KAUD**: The remote DN used for incoming calls with bearer capability of Circuit-Mode 3.1 KHz Audio.This remote DN can be of maximum 15 digits in length.
- **RDN64KUD**: The remote DN used for incoming calls with bearer capability of Circuit-Mode Unrestricted Digital Information (64 kbps). This remote DN can be of maximum 15 digits in length.
- **RDNUDAD**: The remote DN used for incoming calls with bearer capability of Circuit-Mode Unrestricted Digital Information adapted from 56 kbps to 64 kbps. This remote DN can be of maximum 15 digits in length.

For further details, refer to the DS section of this feature document.

2.2.2 CFIB Feature Operation

When a call to be routed to a base DN fails due to the routelist being call processing busy, out-of-service, or unavailable and if the base DN subscribes to CFIB, then the call is forwarded to a remote DN based on the bearer capability of the pri clli provisioned in DNROUTE. The call is forwarded to the remote DNs provided that

- the call is a circuit-mode call.
- the call is of a bearer capability supported by this feature
- the maximum redirection count is not reached.

For CFIB feature, two AMA records are generated. One AMA record is generated for the originating DN to the base DN portion of the call. The second AMA record is generated for the base DN to the remote DN portion of the call. A special billing DN which is provisioned in table DNROUTE is used in the second AMA record. The ISDN Core Module (i.e. Module 70/71) is appended by CFIB to the AMA record for the base DN to remote DN portion of the call. The format of the AMA records is not changed by this feature.

The redirection data, which consists of the Original Called Number (OCN), the RedirectinG Number (RGN) and the RedirectinG Reason (RGR), are sent to the originator and the terminator.

2.2.3 Agent Interworking

2.2.3.1 ISUP (ISDN User Part)-PRI-ISUP Interworking

The originating DN and base DN can exist on the same switch or on different switches but the base DN and the remote DN must reside in different switches. The switches are interconnected with CCS7 trunks. ISUP messages are used for messaging on the CCS7 network. The call forwarded as the result of CFIB can terminate on ISUP trunk only. The ISUP messaging is compliant to Q.732 specifications.

Whenever a call can be forwarded as the result of CFIB, an Initial Address Message (IAM) is sent to the remote switch on which the remote DN resides. If the originating DN resides on a different switch as the base DN, a Call ProGress (CPG) message is sent to the originating switch. The message flow of the ISUP IAM and CPG messages is depicted in Figure 3 on page 148. The content of CPG and IAM messages is described in figures Figure 4 on page 149 to Figure 7 on page 151.

Figure 3 ISUP-PRI-ISUP Message Flow Chart

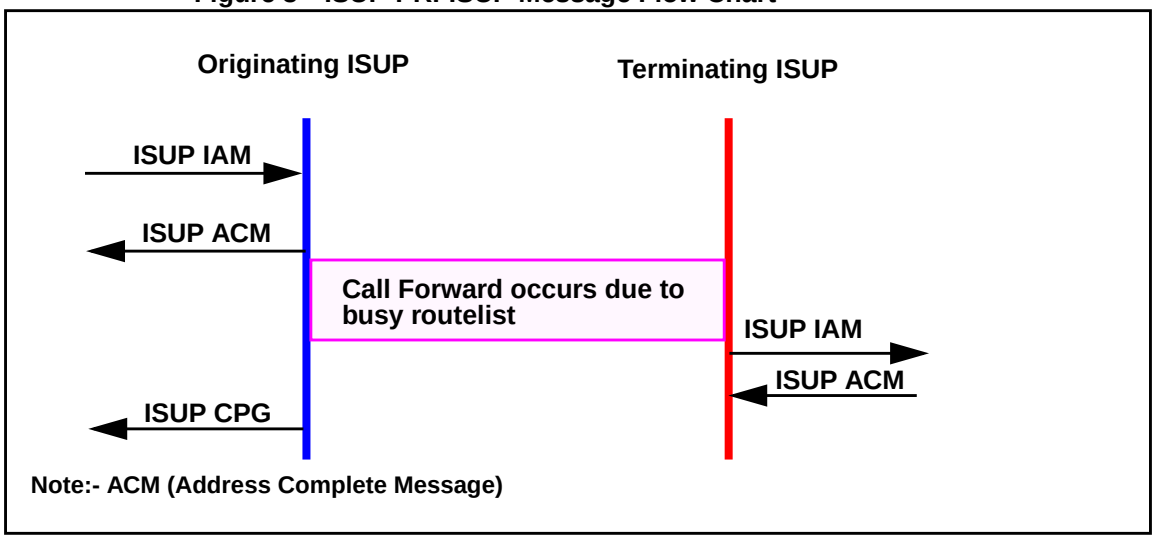
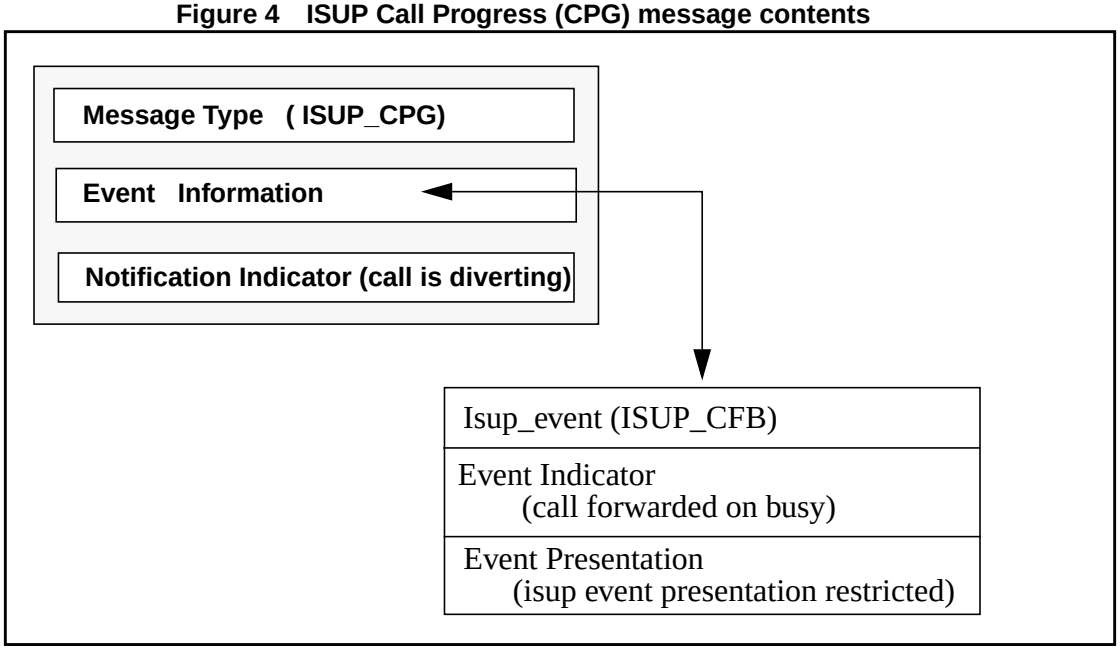


Figure 4 ISUP Call Progress (CPG) message contents



Whenever CFIB is invoked in the Base SPCS, for a call which has the Base DN and Remote DN existing on different SPCSs, an ISUP_IAM message (ISUP Initial Address Message) is sent to the terminating ISUP trunk.

Figure 5 on page 150 and Figure 7 on page 151 show the contents of this ISUP Initial Address Message.

Figure 5 ISUP Initial Address Message contents

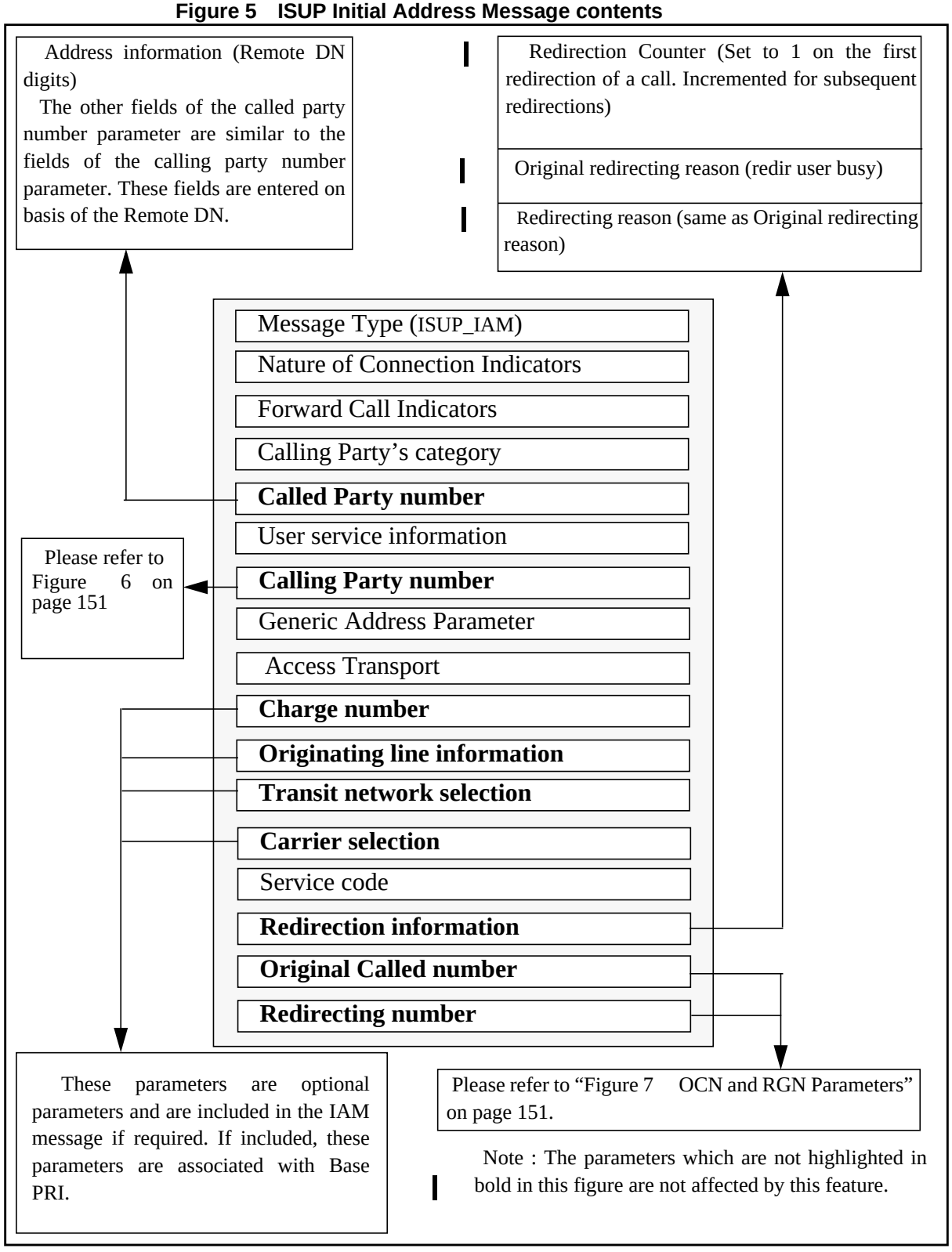


Figure 6 Calling Party Parameter

Odd/Even Indicator (even/odd)
Nature of address indicator (unique national significant number/ non-unique national significant number)
Numbering Plan (ISDN telephony numbering plan)
Presentation restriction indicator (presentation allowed / presentation restricted)
Address information (Special Billing DN digits)

Figure 7 OCN and RGN Parameters

Original Called number parameter (OCN)

This parameter is generated with the following format only if CFIB is the first redirection on the call.

Odd/Even Indicator (even/odd)
Nature of address indicator (unique national significant number/ non-unique national significant number)
Numbering Plan (ISDN telephony numbering plan)
Presentation restriction indicator (presentation allowed / presentation restricted)
Address information (Base DN digits)

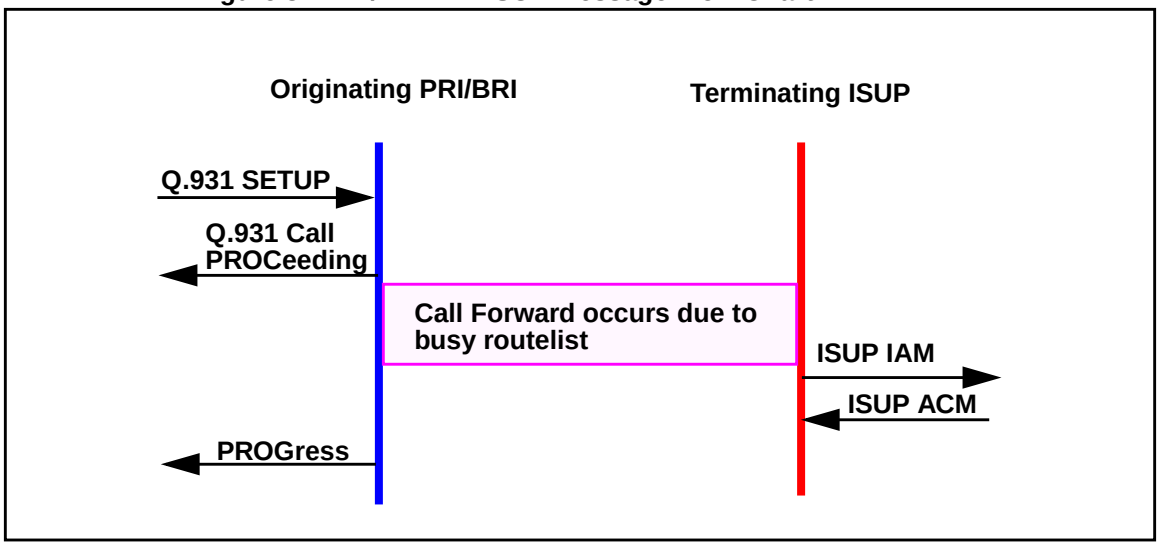
Redirecting Number parameter (RGN)

The redirecting number parameter is entered only if the contents of the Redirection Counter field in the Redirection Information parameter is equal to or more than two.
The format of Redirecting Number parameter is same as that of Original Called number.
In case of sequential forwardings, the base SPCS passes the redirecting number information of only the last forwarding base DN.

2.2.3.2 PRI/BRI (Basic Rate Interface)-PRI-ISUP

On successful termination of the forwarded call, an ISUP IAM message is sent to the remote switch. On receiving an ISUP ACM message in response to the ISUP IAM message, a PROGress message is sent to the originating PRI/BRI agent informing that the call has been forwarded. Figure 8 on page 152 depicts the message flow of the above scenarios.

Figure 8 PRI/BRI-PRI-ISUP Message Flow Chart



2.2.4 Billing Log : ISDN 404

Billing counters used to record the number of successfully forwarded calls as the result of CFIB are provided by this feature. CFIB is considered to be **successful** under the following circumstances:

- Remote DN answers.
- Remote DN is busy.
- Remote DN is alerted, but does not answer.
- Remote switch does not have available resources.

The billing counters are maintained on a per routelist basis and are reset on a daily basis.

A new log ISDN 404 is generated for each routelist to provide the accessibility of the billing counters to the Telephone Company (Telco). This log is generated once every 24 hours (at 00:14 hours), per routelist.

For further details, please refer to the LG section of this feature document.

2.2.5 OM group : RTESVCS

A new OM group **RTESVCS** is created to collect the number of CFIB attempts, CFIB success and CFIB failures. Thirteen OM registers are defined in the new RTESVCS OM group for CFIB. They are:

CFIB Attempts:

CFIBATT: This OM register is pegged when the routelist to the base DN is call processing busy, out-of-service or unavailable and an attempt is made to forward the call to the remote DN.

Because this register is pegged each time a CFIB attempt is made, the count should be equal to the total number of successes and failures combined.

CFIB Success:

The CFIB success OMs are pegged in four registers as described below:

- **CFIBRDNA**: Remote DN answered
- **CFIBRDNN**: Remote DN alerted but did not answer
- **CFIBRDNB**: Remote DN busy
- **CFIBRNAR**: Remote switch does not have available resources

CFIB Failures:

The CFIB failure OMs are pegged in eight registers as described below:

- **CFIBOGTB**: CCS7 Trunk Busy
- **CFIBRUAV**: Software Resource Unavailable
- **CFIBRCR**: Maximum redirection count is reached
- **CFIBBNM**: Bearer capability does not match
- **CFIBXLAF**: Translation failure for base DN to remote DN portion of call
- **CFIBAMAF**: Billing failure
- **CFIBRTEF**: Routing failure for base DN to remote DN portion of call
- **CFIBTRMF**: Termination failure for base DN to remote DN portion of call

For further details, please refer to the OM section of this feature document.

2.3 Hardware requirements

Not Applicable

2.4 Limitations and restrictions

1. The base DN and remote DN must reside on different switches in order for the CFIB feature to function properly. As a result, CFIB can only be activated once per call in the Base SPCS.
2. The remote DN should not subscribe to CFIB. This restriction is not enforced by software.
3. The Clli used to foward the call to the remote dn must be a PRI clli provisioned in the routelist to the base dn. This restriction is not enforced by software.
4. The PRI clli referenced by CFIB feature DNs in table DNROUTE should not be deleted from the routing tables. This restriction is not enforced by software.
5. CFIB is only supported for the following types of originators: PRI trunks, ISUP trunks, IBN MF trunks, BRI lines, POTS lines, RES lines, IBN lines.
6. Routing tables IRTE (for DMS250) and RRTE (for Network Management) is not supported.
7. The provisioned remote DNs are not validated. It is the responsibility of the craftsperson to ensure that the remote DNs provided are valid.
8. The provisioning of all remote DNs is mandatory.
9. No software restriction is provided to prevent other trunks besides National ISDN (NI2) and NTNA PRI trunks from being provisioned in the routelist to the base DN. However, testing is performed with NI2 and NTNA PRI trunks only.
10. The calls forwarded as the result of CFIB should be terminated on ISUP trunks only.
11. The provisioned billing DN in Table DNROUTE must be a 10-digit number.
12. A maximum of 255 tuples can be provisioned in table CFIBDATA.
13. A maximum of 10,000 DNs are allowed to have CFIB provisioned in table DNROUTE.
14. AIN interactions prior to CFIB are supported. However, after CFIB is encountered, No AIN trigger should be engaged at the local switch. This restriction is not enforced in software.
15. The capability of displaying information on the origination and termination display sets is not supported.
16. Packet mode calls are not supported for CFIB.
17. If the forwarded call is released by the originator, before completion of the call only CFIBATT OM is pegged. In such scenarios, CFIB attempts will not be equal to the sum of CFIB success and CFIB failures.

2.5 Feature Interactions

2.5.1 Redirection Features Interaction

When Call Forward (CFW - all flavors), AIN redirections, Key Short Hunt (KSH) or Line Overflow to DN (LOD) occurs **before** CFIB, the Original Called Number (OCN) and the Original Redirecting Reason (ORR) are provided by these redirection features, and RedirectinG Number (RGN) and RidirectinG Reason (RGR) are provided by the CFIB. In these scenarios, the RGN is the base DN provisioned with CFIB. The RGR is user busy.

The calls forwarded as the result of CFIB should be terminated on ISUP trunks only. Because of this restriction, CFIB will always be the last redirection in the local switch.

2.5.2 Super Trunk Group

If Super Trunk Group (SG selector) is used in the routelist to the base DN, CFIB will be attempted after the maximum number of attempts (ATTEMPTS for SG selector in routing tables) has been reached for the Super Trunk Group.

If Virtual Facility Groups (VFG) is used to route calls to base DN, then CFIB will be attempted if a route exhaust occurs because of the limit of outgoing calls being reached on the VFG.

2.6 Logs (LG)

2.6.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)
ISDN	404	NEW	SOS

For detailed information, refer to the LG section of this document.

2.7 Data schema (DS)

2.7.1 New/modified tables

A new table CFIBDATA is introduced by this feature to store a set of remote DNs based on the bearer capability. The index of this table is provisioned in table DNROUTE.

CFIB option is provisioned against a DN as an option on the **FEAT SELECTOR** in table **DNROUTE**.

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
DNROUTE	CHANGED	UNCHANGED
CFIBDATA	NEW	NEW

For detailed information, refer to the DS section of this document.

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

Not Applicable

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

CFIB can be provisioned/de-provisioned against a DN or a block of DNs using NEWDN/OUTDN commands in SERVORD interface. For detailed information, refer to the SO section of this document.

2.10 Alarms (AL)

Not Applicable

2.10.1 New/modified directories

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

2.11.1 New/modified commands

QDN command is updated to display CFIB and its related informtion for DNs provisioned with CFIB feature.

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN
QDN	Changed	Not Applicable	CI level	Non-menu

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

A new OM group, RTESVCS, is introduced by this feature to collect the number of CFIB attempts, CFIB success and CFIB failures. For detailed information, refer to OM section of this document.

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason
RTESVCS	RouTElist SerViCeS	NEW	New OM group is created to gather operational measurements for routelist services, such as CFIB.

2.13 AMA/Billing information (AM)

Not Applicable.

2.13.1 New/changed AMA/billing information

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

Not Applicable.

Table 8 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.15 Glossary

Term	Description
AMA	Automatic Message Accounting
Base DN	A DN which subscribes to CFIB. It is also known as the Called DN and the Redirecting Party DN.
Base SPCS	The SPCS that serves the base DN.
Billing DN	A default DN assigned for the Base DN for Billing purpose
BRI	Basic Rate Interface
DMS	Digital Multiplexed Switch
DN	Directory Number
FSD	Functional Specification Document

ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
ISUP	ISDN User Part
OM	Operational Measurement
Originating DN	The DN from which the call originates. It is also known as the Calling Party DN.
Originating SPCS	The SPCS that serves the originating DN
PRI	Primary Rate Interface
Remote DN	The DN to which a call is forwarded as the result of CFIB feature. It is also known as the Terminating Party DN
Remote SPCS	The SPCS that serves the remote DN.
SCP	Service Control Point
SPCS	Stored Program Controlled System

2.16 References

REF #	Description of Reference
PRICFIB	PRI CFIB FSD
GR-2993-CORE, Issue 1	ISDN Primary Rate Call Forwarding Interface Busy Generic Requirements
GR-394, Issue 1	Switching System Requirements for IEC
GR-1100, Issue 1	BAF Requirements
TR-NWT-001268, Issue 1	ISDN Primary Rate Interface Call Control Switching Signalling Generic Requirements for Class II Equipment

2: Functional description (FN)

2.1 Feature name

Event Driven Termination for MADN (Multiple Appearance Directory Number).

2.2 Description

The purpose of this feature is to modify the implementation of the MADN terminator function. The terminator function will now be launched in response to events, rather than being handled through in-line code.

This feature should not add, remove or impact any existing functionality. Therefore, no functional documentation is required.

2.3 Hardware requirements

None.

2.4 Limitations and restrictions

None.

2.5 Interactions

None.

2.6 Logs (LG)

None.

2.7 Data schema (DS)

None.

2.8 Office parameters (OP)

None.

2.9 Service orders (SO)

None.

2.10 Alarms (AL)

None.

2.11 Command interface (CI)

None.

2.12 Operational measurements (OM)

None.

2.13 AMA/Billing information (AM)

None.

2.14 Glossary

Term	Description
MADN	Multiple Appearance Directory Number

2.15 References

None.

2: Functional description (FN)

2.1 Feature name

Messaging Services Functional Component (FC) Re-engineering (A59010576)

2.2 Description

This feature is for **013** release of DMS-100 software. The Messaging Services FC covers following functionalities/services. Note that these are the existing services:

- DMS to remote system link for 1X67, HS1X67, 1X89 (MPC)
- DMS to remote system link for SMDIDATA, SMDRRPT, ACDRPT and MGTRPT software
- Simplified Message Desk Interface (SMDI) software support based on BELLCORE TR-TSY-00283
- Station Message Detail Recording (SMDR) Reporting software
- Various message waiting indication (MWT) software
- Executive message waiting (EMW) software
- Network message system (NMS) software for network MWT and network EMW
- Call Retrieval (CRR/CAR) software
- Class Message Waiting Indication (CMWI) software

The FC software was originally developed around BCS23 and gradually expanded with various features in past 10+ years. At the same time the software was just maintained for its functionalities. The software was never build for a generic functionality and interactions with other features. Therefore, this software does not have any clear architectural design for future support, expansion and generic service for other features.

Due to complexity of the FC software a re-engineering is necessary to reduce the incoming SR arrival rate and provide more robust and manageable software which will provide a service without any major churn.

The architecture and re-engineering related work does not impact the behavior of the FC software. However, this feature adds following new functionalities and improvements to the FC software.

- Development of IOM support for SLLNKDEV link.
- Robustness improvements in Table SLLNKDEV links for Datafill, Warnings and Alarms.
- Real-time improvement for AUXCP usage. Current, SMDI link 6% AUXCP allocation will be reduced.
- Currently SMDI supports 63 message desks. This needs to be expanded to 999 message desks according to BELLCORE requirements.
- Conversion of software from NA DN system format to E.164 - Universal DN system format.
- Improvement in the usage of FTRQs for MWT/EMW - Removal of SWACT problems.
- Currently, in EMW software the Keylist check is performed in Table write procedures. This check will now also be done at SERVORD level.

This document describes above new functionalities and appropriate architectural improvement which impacts external customers. The following subsections describes each new functionality in further details.

2.2.1 Development of IOM support for SLLNK Link

The IOM is designed as an alternative to 1X89 IOC card. Presently, the IOM MPC datafilled in Table SLLNKDEV as 1X89 and it uses MPC software for 1X89 to support SMDI. This feature adds FX30 PEC (Product Engineering Code) in the Table SLLNKDEV so that the correct PEC code is represented for our customers. It also helps in troubleshooting the SMDI link.

The existing provisioning and functionality of 1X89 MPC is not changed.

2.2.2 Robustness improvements in Table SLLNKDEV links for Datafill, Warnings and Alarms

Adding, changing or deleting a link in Table SLLNKDEV requires a very strict sequence. This datafill does not provide appropriate Alarms, Warnings or logs if the strict sequence is not followed. The design here will improve the robustness of the Table SLLNKDEV links and datafill.

The ALARM will be generated in following cases:

1. If the link goes down or fails to comeup with no reason, then an ALARM will be generated. But in this case, BSY/RTS from MAP will not generate the ALARM.
2. Incoming/Outgoing processes dies with no reason. The forced kill of the processes will not generate the ALARM.
3. High usage of CPU by incoming/outgoing processes. In this case, if incoming/outgoing processes uses more then allocated AUXCP (Max 6%) then process will die automatically and an ALARM will be generated.

2.2.3 Real-time improvement for AUXCP usage

The feature AF2471 design increased the AUXCP requirement in SMDI processes. Under normal circumstances, the SMDI processes does not require 6% AUXCP. But in extreme cases it does need 6% AUXCP to process the messaging to and from voicemail.

Parameter AUXCP_CPU_SHARE in Table OFCENG indicates what percentage of CPU realtime is used for the scheduler class AUXCP. The SMDI process requires this value to be set at 6%. However, from real-time perspective this value is too high and a real-time recovery is required.

The customer wants to use this extra real-time to improve the performance of their network. To improve the real-time usage by SMDI process in AUXCP class, real-time improvement techniques need to be deployed and software change is required.

2.2.4 Expansion of 999 Message Desks in SMDI Software

The existing software in Table SLLNKDEV, Table UCDGRP and SMDI supports only 63 message desk. The Bellcore TR-TSY-000283 requires that the SMDI software should support 999 message desks.

The existing software was developed based on old requirements before TR was published. It was never changed due to resource issues and support for old voicemail systems. This is a compliancy issue for SMDI software. Due to new hardware (BRISC or XA-CORE) and more memory, the resource issue is no longer applicable.

This work item will expand number of message desks support from 63 message desk to 999 message desks. The SLLNK framework will be expanded to support this expansion. After this change, the customer will be able to provision upto 999 message desks.

2.2.5 Conversion of software from NA DN system format to E.164 - Universal DN system format

The current software in ArchIDs SLLNK, MSGSRV and MSGSRVNA is developed based on Bellcore requirements which requires to support fixed 3-3-4 format North American DN system. As a result of this requirement, many data types and hard-coded assumptions became imbedded in the DMS software. But as the scope of the DMS100 software extended to support markets outside North America like Germany and Brazil these data types and hard-coded assumptions of DNs needed enhancement to support the variable length DNs for the international markets.

ITU now requires to support a variable length DN based on E.164 requirements. It is necessary to change the software such that the variable length DNs are supported without digit manipulations. This activity will change the 3-3-4 DN assumptions within the SLLNK, MSGSRV and MSGSRVNA ArchID Software such that the lengths of area code, office code and station code comply with the E.164 requirements.

2.2.6 Improvement in the usage of FTRQs for MWT/EMW - Removal of SWACT problems

There are some deficiencies in FTRQ procedures in module MSGWAITI. These deficiencies always lead to side effects of FTRQ problems on MSGSRV ArchID software during ONP and NORESTART SWACT.

These FTRQ procedures can be improved and decoupled for various services of message waiting such that the service specific code resides in service specific area and the reported SWACT problems from field are minimized.This also isolates the side effect to appropriate service other then impacting the message waiting software in general.

2.2.7 Changes introduced by EMW Keylist changes

A bug related to EMW keylist changes was existing prior to CCM11 decoupling activity of EMW software. During datafill through servord, an appropriate check is missing for VID LIST. Because of this, the error message for an invalid DNLIST is given at the time of validation i.e when the user enters the first ‘Y’ during addition of the option. The design improvement can fix this bug so that the error message is given when the user enters an invalid value for the DNLIST.

2.3 Hardware requirements

There is no new hardware requirement for this feature.

2.4 Limitations and restrictions

- If voicemail system only able to support 2 digit message desk number, then datafill in the DMS should use two digit message desk numbers. The DMS does not have any specific checking about message desk number assignment in voicemail system. Also the DMS will not be able to convert 3 digit message desk numbers. For 2 digit message desk numbers, 0 will be prefixed as per SMDI requirements. For 3 digit message desk numbers, all 3 digits will be sent to the VMS.

2.5 Interactions

This feature supports all existing interactions. Due to architectural changes what ever interactions are changed will not be visible to external customers.

2.6 Logs (LG)

This feature changes/updates/adds logs. For details please refer to LG section of this feature.

2.7 Data schema (DS)

This feature changes/updates data schema for the FC software. For details please refer to DS section of this feature.

2.8 Office parameters (OP)

This feature does not add any new office parameter.

2.9 Service orders (SO)

During datafill through servord, if the user enters an invalid value for the DNLIST while assigning the EMW option using NEW or CHF command, then the error message is given even before the validation done by servord i.e before the first ‘Y’. For more information on this modification please refer to SO section of this feature.

2.10 Alarms (AL)

This feature does not change/update existing alarms. This feature generates existing alarms(SMDIERROR , SLNKERR) along with log SLNK108 whenever SMDI process dies due to software or hardware(link) problems.

2.11 Command interface (CI)

This feature does not change CI. However, it modifies MWQ CI tool for enhance troubleshooting.

2.12 Operational measurements (OM)

This feature does not change OMs.

2.13 AMA/Billing information (AM)

This feature does not impact AMA or Billing.

2.14 Software optionality control (SOC)

This feature is not SOCed.

2.15 Glossary

Term	Description
CCM	DMS-100 Common DRU
CI	Command Interface
CPU	Central Processing Unit
CRA	Call-Request Activation
CRR	Call Request Retrieval
CSR	Customer Service Request
DMS	Digital Multiplexed System
DN	Directory Number
DRU	Developmental Release Unit
EMW	Executive Message Waiting
FC	Functional Component
FTRQ	Feature Queue
IOC	Input/Output Controller
MAP	Maintenance and Administration Position
MWI	Message Waiting Indicator
MWQ	Message Waiting Queue

MWT	Message Waiting
MPC	Multi-Protocol Controller
NMS	Network Message Service
PEC	Product Engineering Code
RES	Residential Enhanced Services
SLLNK	SL-100 link
SMDI	Simplified Message Desk Interface
SMDR	Station Message Detail Recording
SR	Service Request
SWACT	Switch Activity
VID	Virtual TID
VMS	Voice Mail System

2.16 References

REF #	Description of Reference
TR-TSY-000283	Bell Communications Research Technical Reference, Issue 1, July 1985
GR-866-CORE	ISDN Message Services Generic Switching and Signaling Requirements, Issue 1, July 1985
ITU-T E.164 Recommendations	E.164 Recommendations
AD0367	MWT for SMDI
AD0369	SMDI Data Link Interface
AD0370	Call Forwarding for SMDI
AD8431	CCM Changes to Support MSMWI
AF2471	SMDI Conversion to use MPC
AF2473	MPC PP Asynchronous Support Level-1
AF2475	MPC CC Asynchronous Support
AF3893	SMDI Robustness
AF5725	Simplified Message Desk Interface Data Link Reengineering
AF6189	Compucall Message Waiting and DN Query

AF6300	Flexible Line Identity Delivery on SMDI
AF6781	DNCT CPID base for Shared DN
AF7333	Audible Message Waiting Indication
AF7776	Base MWI Control Using NI-PRI
AG4408	CC Software Support for IOM (Part I Base)
AG4487	Terminating Office Number Range Expansion
AG1626	Call Request Call Processing Enhancement
AG4902	Base MWI Control Using NI-PRI
AL0524	SMDI Call Retrieval Billing
AU2903	Update Message Enhancement
AU3192	ICM Message Waiting Activation/Deactivation
AU3220	Update Message MWI/Display Text
AX0386	Message Waiting LCD Indication on IVD Sets
AX0428	MSMWI for IBN CLASS Sets
AX1221	IVD Decoupling
BC0814	Attendant Message Waiting
BC0815	Station Message Waiting
BC0816	PPhone Message Waiting
BC1256	VMX interface
BV0601	UCD (to 500/2500 sets)
BC0953	Stuttered Dial Tone for MWT
BC0979	Message Waiting Lamp Update - Link Phone
BC0952	UCD Re-write
BC1564	ACD Management Reports Application Layer
CM70384	CSR related to AUXCP usage
CT82588	CSR related to datafill warnings, alarms
CV70900	CSR related to IOM card
CV81211	CSR related to SWACT problems
UV80934	CSR related to table SLLNKDEV dependency on table UCDGRP and SWACT problems
50109728	SR related to incorrect notification type displayed for EMW

50110903	SR related to an existing bug prior to EMW decoupling
BR42337	SR related to AUXCP usage
BX85542	SR related to TCAPTRID
BY70136	SR related to IOM card
AN0777	International 15 Digit Dialing
AN1387	International 15 Digit Dialing for Business Services
CARTWKBK.AB02	Cart Workbook (FSD)
Cart Workbook (FSD)	Line Option Framework Enhancement
DNUG.AC01	Designer’s Guide to DNs
LNOPTUG.AD03	Line option framework - User guide
ODPUG.AB01	Open Dialing Plan User-Guide

2: Functional description (FN)

2.1 Feature name

OSNC - ISUP Support for Operator Services

2.2 Description

ISUP signaling has been utilized within telephony networks for some time, however, it has not been highly used for operator services. Although ISUP along with carefully orchestrated translations can provide some basic operator services, features such as Connection (operator) Hold and coin control services are not available. *GR-1277-CORE Operator Services: Switching System Generic Requirements using Integrated Services Digital Network User Part (ISUP)* provides the specifications that will allow the full spectrum of operator services to be deployed over ISUP. This form of ISUP signaling is called Operator Services Signaling 7 (OSNC).

- **Operator Services Originating Connection**

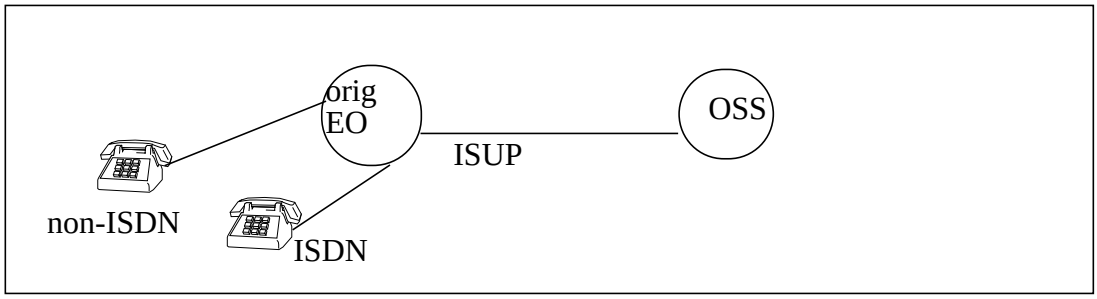
Routing origination operator services and intercept services from the originating office to the Operator Services System (OSS) is aligned with ANSI basic call control procedures and is referred to as the Basic NOA Field Option. The Basic NOA Field Option allows the Called Party Number Nature of Address (NOA) field operator requested codepoints to indicate whether or not a ‘0’ was dialed. This option is consistent with the basic call control procedures defined in GR-317-CORE and GR-394-CORE.

— **Call Origination**

Call origination is an operator service connection between an originating end office and an OSS. The end office initiates this type of connection to access an originating operator service, such as toll and assistance services. The OSS may or may not be within the end office’s exchange network.

Figure 1 depicts an operator service connection supporting call origination from an originating end office and an OSS.

Figure 1 Operator Services Connection- Call Origination

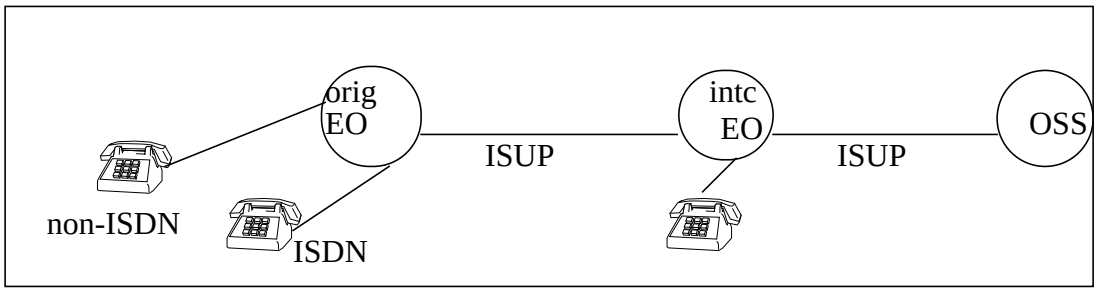


— **Call Origination with Intercept Services**

Call origination with Intercept Services is also a connection between the originating end office through an intercepting office to an OSS. The originating and intercepting office may be in the same or different exchange networks, as may be the intercepting office and OSS.

Figure 2 depicts an operator service connection supporting intercept services.

Figure 2 Operator Services Connection- Intercept



- **Connection Hold**

The OSS remains in control of the call after the calling party hangs up. The OSS can request the call to be disconnected or invoke ringback to the originator.

- **Network Recall**

During Connection Hold, a switch hook flash is interpreted as an operator recall signal.

- **Coin Station Control**

The OSS can send coin station control messages to the end office. Upon receipt of these messages, the end office would send the appropriate signals to the coin station.

2.3 Feature Implementation

2.3.1 New Option for Trunk Group

As a means of activating the operator services functionality, a new per-trunk option, OSNC, is added to ISUP Intertoll (IT) or ISUP Access to Carrier (ATC) two-way and outgoing trunks in the TRKOPTS table. In the case where dialed digits indicate operator services are requested, but the OSNC option is not on the outgoing trunk, the functionality that is provided for the call will be consistent with GR-317-CORE and GR-394-CORE.

Figure 3 Example of adding OSNC option in table TRKOPTS

```
TABLE: TRKOPTS
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y

>ISUP2WIT OSNC

OPTION:
>OSNC

TUPLE TO BE ADDED:
    ISUP2WIT OSNC OSNC
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

The following network configurations are valid for this feature.

Figure 4 Operator Services Connection-using Outgoing IT trunk

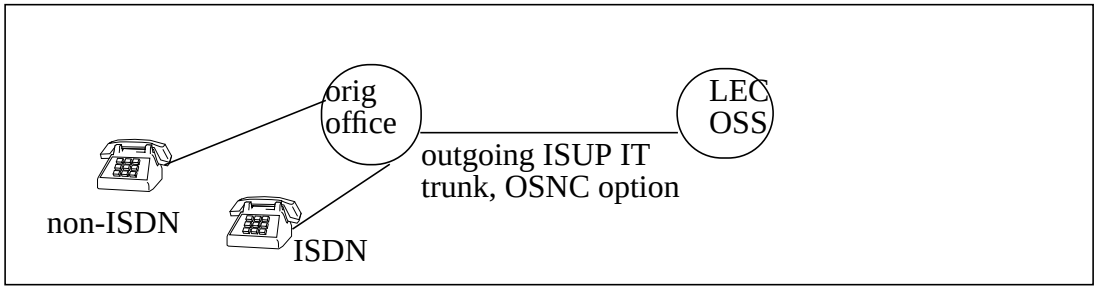


Figure 5 Operator Services Connection-using Outgoing ATC trunk

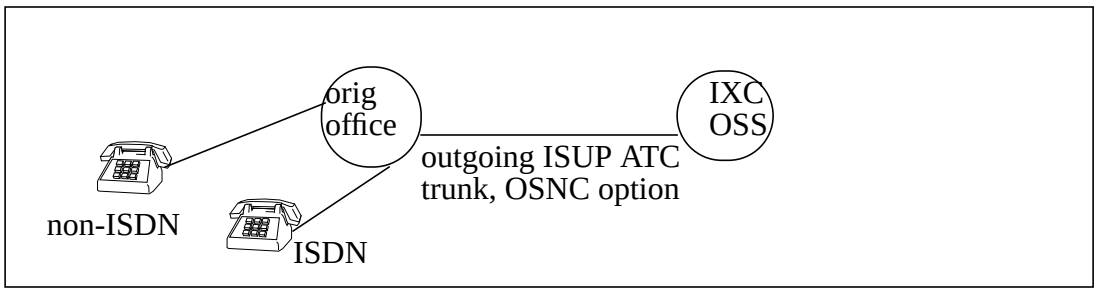


Figure 6 Operator Services Connection-using a two-way IT trunk

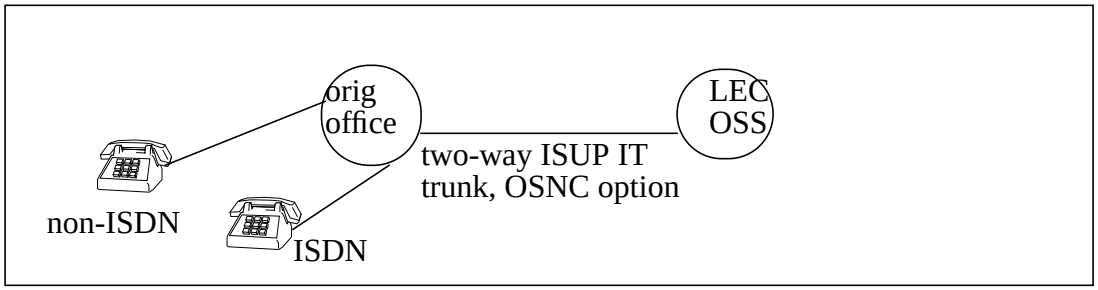


Figure 7 Operator Services Connection-using a two-way ATC trunk

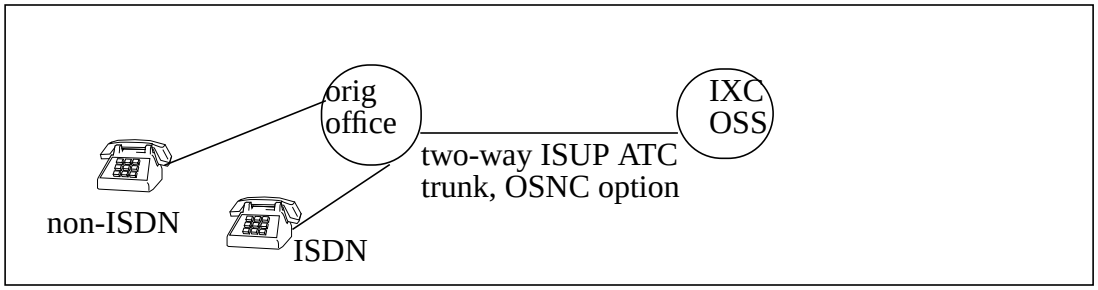


Figure 8 Operator Services Connection-Intercept using an Outgoing IT trunk

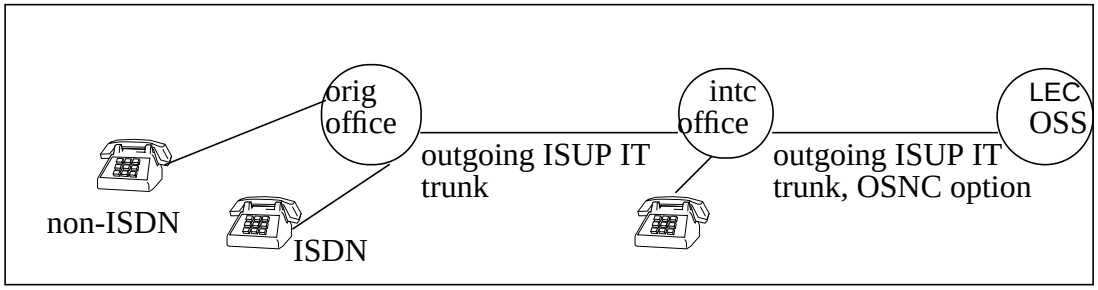


Figure 9 Operator Services Connection-Intercept using a two-way IT trunk

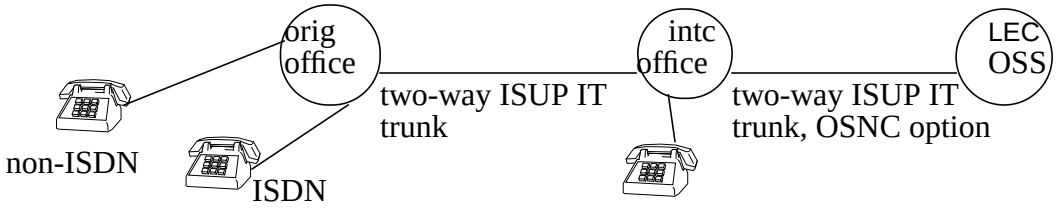
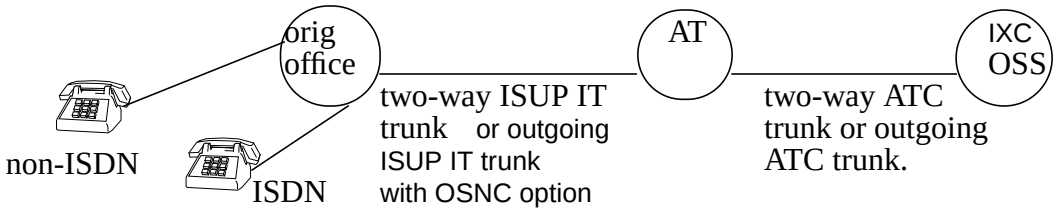


Figure 10 Operator Services Connection- via Access Tandem



Note: When an Access Tandem is involved, the new OSNC option does not have to be added to the ATC trunk leaving the tandem. This is because all the parameters sent to the Access Tandem from the incoming IT trunk, will still be passed on the outgoing ATC trunk to the IXC OSS.

2.3.2 Operator Services Connection Originating Services

In establishing and handling operator services connections for call originations, the basic call control requirements of GR-317-CORE and GR-394-CORE will be adhered to and revised when necessary.

2.3.2.1 Called Party Nature of Address

Invoking operator service for call originations is based on the digits dialed by the calling party and/or the calling party line's class of service. The nature of address (NOA) will be encoded as described in the following table:

Table 1 Nature of Address for Basic NOA Field Option

Calling Line Class	Dialing	CdPN/NOA
ALL	(101XXXX)+01+CC+NN	"international number, operator requested"
	(101XXXX)+0+NPA+NXX+ XXXX (NXX is not 555)	"national (significant)number, operator requested"
	0+NXX+XXXX	"subscriber number, operator requested"
	0, 00, or 101XXXX+0	"no number present, operator requested "
	(101XXXX)+0+NPA+555+ XXXX	"national (significant) number, operator requested"

Calling Line Class	Dialing	CdPN/NOA
	0+411, 0+555+XXXX	“subscriber number, operator requested”
Restricted or special lines (e.g. coin, hotel, motel)which are determined by LCC codes or what’s in the CCB.	(101XXXX)+011+CC+NN	“international number”
	(101XXXX)+1+NPA+NXX+XXXX (NXX is not 555)	“national (significant) number”
	NXX+XXXX	“subscriber number”
	(101XXXX)+1+NPA+555+XXXX	“national (significant) number”
	(1)+411, 555+XXXX	“subscriber number”
Non-restricted or non-special lines (e.g POTS lines)	(101XXXX)+1+NPA+555+XXXX	“national (significant) number”
	(1)+411 555+XXXX	“subscriber number”

When signaling the call, the originating office shall be capable of combining intercept and 1+screened (e.g. 1+hotel/motel and 1+coin sent paid) connections on one trunk group while all other operator services traffic shall be routed on a different trunk group along with direct dial (non-operator) traffic. However, when an intermediate tandem is involved, separation of traffic cannot be done because the tandem does not translate the Nature of Address. Therefore, the End Office will have to datafill accordingly to distinguish the traffic.

2.3.2.2 Providing Charge Number and OLI Parameters

As mentioned in “2.3.1 New Option for Trunk Group” on page 107, the OSNC option will be required to provide the functionality described by this feature. When an Interexchange Carrier (IXC) is not involved in the call, the outgoing ISUP Intertoll trunk must also have the existing CHGNUM ALL option assigned in table TRKGRP to provide the Charge Number and Originating Line Information (OLI) parameters. The CHGNUM ALL option is NOT required on the ISUP ATC trunk. Basic call control requirements found in GR-317-CORE and GR-394-CORE are adhered to for supporting these parameters.

2.3.2.3 Providing Information on the carrier

When GR-394 signalling occurs, in order to provide traffic separation at an intermediate tandem for Interexchange Carrier operator calls that are to be served by a Local Exchange Carrier (LEC) OSS, the end office must signal a unique 0ZZ (i.e. circuit code) for operator calls versus direct dialed calls. This can be accomplished by provisioning a different office route for the IXC’s

operator calls versus the IXC's direct dialed calls. In the office route table, a different 0ZZ shall be datafilled for the operator route versus the direct dialed route.

2.3.3 Operator Services Connection Intercept Services

In establishing and handling operator services connection for intercept services, the basic call control requirements of GR-317-CORE will be adhered to and revised when necessary. Intercept calls should not be routed to IXC networks. The routing of intercept calls is supported only on ISUP IT trunks.

2.3.3.1 Calling Party information

If the calling party line and the intercept line are within the same office, the Calling Party Parameter, Charge Number Parameter, and the Originating Line Information Parameter of the outgoing IAM are associated with the calling line and not the intercept line. Likewise, if the calling party line and the intercept line are in different offices, the outgoing IAM from the intercept office will contain the Calling Party Parameter, Charge Number Parameter, and the Originating Line Information Parameter that was signaled in from the originating office. If this information is not received from the originating office, it is not included in the IAM outgoing to the OSS.

2.3.3.2 Intercepting Line Information

The outgoing IAM from the intercept office will include information regarding the intercepted line in the Feature Code Indicator (FCI) of the optional Service Activation Parameter (SAP). See "Appendix A: Service Activation Parameter" on page 123 for a list of all the Feature Code Indicator values.

Table 2 Feature Code Indicator Values for Intercept Services

FCI	Description	Treatment
Intercept-blank number	The Intercepted number is a blank number.	Blank Director Number (BLDN)
Intercept-trouble	A trouble exists on the line to which the intercepted number is assigned.	Trouble Intercept
Intercept-regular	All other intercept calls.	Regular Intercept

The Called Party Number (CdPN) parameter of the outgoing IAM will be encoded as a ten digit intercepted number. The Nature of Address field for the CdPN will be "national (significant) number".

2.3.3.3 Jurisdiction Information Parameter (JIP)

If the JIP is to be included in the outgoing IAM from the intercepted switch, it will be encoded as the JIP of the intercepting office, not the JIP of the originating office.

2.3.3.4 Connection Information

When formulating an IAM to establish an intercept service call for which there is an incoming circuit at the intercepting office, the Forward Call Indicator and the Nature of Connection Indicator parameters of the outgoing IAM will be encoded according GR-317-CORE requirements for a tandem office.

Upon sending the IAM to the OSS, the intercepting switch shall cut-through the forward voice path to the incoming circuit. Thereafter, the intercepting office shall follow the tandem office requirements according to GR-317-CORE, GR-394-CORE and TR-NWT-000444.

2.3.4 Connection Hold

Connection Hold allows the OSS to remain in control of the call after the calling party goes on hook. The ability to provide this functionality is based on three things: 1) The call has been deemed an OSNC call based on the dialed digits and the OSNC option of the outgoing trunk; 2) The originating agent is not an ISDN line or a trunk; 3) The call is not an Intercept call.

The originating office indicates connection hold is available to the OSS by adding a SAP to the outgoing IAM that has a Feature Code Indicator of “hold available” (See “” on page 122 for additional FCI values). This action does not automatically place the call in connection hold. It is up to the OSS to send a SAP parameter with a “hold request” or “hold request, with acknowledgment” FCI in an ACM or FAC message to invoke connection hold. If an acknowledgment is requested, a FAC with a SAP Feature Code Indicator of “hold acknowledge” is sent after the connection hold has been activated. If the originator goes on hook before the request for hold is received, the call is not placed in connection hold and the originator is in control. In addition, if a connection hold request is received but the originating office has not indicated connection hold is available for the call, the request is ignored.

Once connection hold is active, if the originator goes on hook, the call is not immediately released. A FAC message containing a SAP with a FCI indicating “disconnect request” is sent to the OSS. A new datafillable timer, CONNECTION_HOLD_TIMER_IN_MINS as described in section “2.9.1 New/modified office parameters” on page 119, is started. If the timer expires and the originator has not gone off hook or the OSS has not released the call, the originator releases the call using normal calling party disconnect procedures and a TRK921 log is produced. (For more information see “New/

modified logs" on page 117.) The REL message is coded as follows: Coding Standard encoded "ITU-T-standard;" General Location encoded "Local Local Network;" Extension bit in octet 2 encoded "Diagnostic is not included after octet 2;" Cause Value Class encoded "Normal Event;" and Cause Value encoded "Normal-Unspecified."

In the case where the timer has not expired, the OSS may perform one of the following procedures: Send a FAC message with the FCI of the SAP indicating a "hold continuation request" that will reset the timer and keep the call active; send a FAC message with the FCI of the SAP indicating "ringback request" that will apply ringing to the originator; or, send a REL message to take down the call. If the originator goes off hook before the expiration of the timer, the call is upheld and a FAC message containing a SAP FCI value of "reconnect request" is sent to the OSS.

At any time during connection hold, the OSS may deactivate the feature by sending a "hold release request" or "hold release request, with acknowledgment" in the FCI field of the SAP in a FAC, ANM, or CPG message. This causes connection hold to be removed but the call is not taken down. An acknowledgment is sent in the SAP of a FAC encoded as "hold release acknowledge" when one is requested after connection hold has been removed as well as when one is requested yet connection hold was not active.

> ***Note:*** Calls with IXC involvement, hold is available always. Therefore, no option will be needed for calls with IXC involvement.

2.3.5 Network Recall

A flash from the originator during connection hold is interpreted as an operator recall signal. A FAC message containing a SAP FCI of "network service recall" is formulated and sent to the OSS.

2.3.6 Feature Interaction

As indicated in section "2.3.5 Network Recall", flash messages will be interpreted as a recall to the operator when a call is in connection hold. This prevents the activation of any flash initiated feature.

2.3.7 Coin Control

The end office will have the capability to interpret and act upon the coin control signals received from the OSS via the Feature Code Indicator of the SAP parameter located in an ACM or a FAC message before the release of the connection. The coin control requests that may be recognized are listed in the following table.

Table 3 Feature Code Indicators for Coin Control Service

FCI	Description
Network Service Attached	This request is equivalent to the Operator Attached requests used with MF trunking. When an operator is attached to a coin call, it is necessary to disable the key-pad. This prevents pad interference with, or simulation of, coin tones so that coin deposits can be recognized by the OSS office.
Network Service Released	This request is equivalent to the Operator Released MF request. Upon receipt of this request, the EO will re-enable the key pad on the coin phone allowing the user to dial additional digits if required.
Coin Collect	Upon receipt of this request, the EO will send a request to the coin phone to collect money that was already deposited for the call. Coins will drop from the hopper, the temporary storage area, into the coin vault.
Coin Return	Upon receipt of this request, the EO will send a request to the coin phone to return money to the originator.

2.3.8 Receipt of the Address Complete Message (ACM)

The ACM is expected to contain the Optional Backward Call Indicator parameter with the User-Network Interaction indicator set to “User-network interaction; cut through in both directions.” This will provide a two-way voice channel between the calling party and the OSS. This change will be a Base ISUP change.

2.3.9 Tandem Procedures

In operator service calls, when the Nature of Address is coded “no number present, operator requested” there are no digits in the Called Party Number Parameter (CdPN) of the IAM. In order to properly route the call, the tandem will prefix a ‘00’ to be used as the translation digits. Each telco should ensure that the translation tables are setup to route on ‘00’ digits appropriately.

Please refer to “Figure 11 Traver Example for Tandem” on page 116 for as an example for a Equal Access Zero at the tandem.

Figure 11 Traver Example for Tandem

```
>traver tr isup2witea 00 b
TABLE TRKGRP
ISUP2WITEA IT 0 ELO NCRT 2W NIL MIDL 519 PEA NSCR 919 000 N N (CELL 2A)
   (BILLNO 5551234567) $
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
TABLE STDPRTCT
PEA ( 1) ( 0) 2
 . SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
DOCUMENTATION.
 . 00 00 T OA 6 OFRT 895 2 2 NONE
 .  . TABLE OFRT
 .  .  895 N D OGEAITT 15 D121 N
 .  .      N D ISUP2WITT 0 D121 N
 .  . EXIT TABLE OFRT
 . SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   NONE OVRNONE  N
LNP00100 SOC Option is IDLE.
AIN Info Collected TDP: no subscribed trigger.
AIN Info Analyzed TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++


DIGIT TRANSLATION ROUTES

1 OGEAITT                       STP
2 ISUP2WITT                      STP

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 T120

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

2.4 Hardware requirements

None

2.5 Limitations and restrictions

- The feature implements the Basic NOA Field Option call control procedures outlined in GR-1277-CORE. Intercept Connections and 1 + screened calls can be routed on one trunk group while all other operator service calls can be handled along with non operator calls on a separate trunk group. However, when an intermediate tandem is involved, separation of traffic cannot be done because the tandem does not translate the Nature of Address. Therefore, the End Office will have to datafill accordingly to distinguish the traffic.
- In order to obtain the functionality provided by this feature, the end office should be connected directly to the OSS or the IXC OSS. Otherwise, any DMS tandem office between the originating/intercepting office must be upgraded to NA013 in order to provde the functionality mentioned in 2.3.8 and 2.3.9. A non DMS tandem office must be GR-1277 compliant.
- In order to obtain the functionality provided by this feature, the OSS serving the originating/intercepting office must be capable of providing the signaling requirements of GR-1144-CORE.
- The feature will not support identifying the operator IXC. The End Office will only identify the call IXC.

2.6 Interactions

- If Connection Hold is in effect, all flash messages will be interpreted as a recall to the operator.
- Feature AF7479-“Charge Number and Originating Line Information Parameters” is required. The CHGNUM ALL option provided by this feature must be available in table TRKGRP for the outgoing ISUP Intertoll trunk in order to add the OSNC option for the trunk in table TRKOPTS.
- When routing an OSNC trunkgroup to the IXC, billing still occurs with no change.

2.7 Logs (LG)

2.7.1 New/modified logs

Table 4 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)
TRK	921	NEW	SOS

This log is generated to indicate that the CONNECTION_HOLD_TIMER_IN_MINS has expired during Connection

Hold. The ISUP trunk associated with the call has been cleared and the calling party has been disconnected. No maintenance is required.

TRK921 log report format:

TRK921 mmmdd hh:mm:ss ssdd INFO Connection Hold Control Timer Expired
CKT <trkid>
CLINO <calling party number>

TRK921 log report example:

TRK91 APR09 12:32:22 8100 INFO Connection Hold Timer Expired
CKT ISUP2WIT 8
CLINO 919-870-6124

Table 5 Description of fields for TRK921Log Report

Field	Value	Description
Connection Hold Timer Expired	Constant	Indicates the Connection Hold Timer has expired.
CKT	Symbolic text	Provides an equipment identification for the trunk that was cleared.
CLINO	Integers	Provides the directory number that originated the call and has now been disconnected.

2.8 Data schema (DS)

2.8.1 New/modified tables

Table 6 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
TRKOPTS	CHANGED	UNCHANGED

Option OSNC will be added to table TRKOPTS. This option indicates that OSNC type calls are allowed on the outgoing or two-way ISUP Access to Carrier (ATC) or ISUP Intertoll (IT) trunks. In order to apply the option to the ISUP IT trunk group, the TRKGRP option CHGNUM ALL must be applied. The CHGNUM ALL option is not required for the ATC trunk group.

2.9 Office parameters (OP)

2.9.1 New/modified office parameters

Table 7 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED
OFCENG	CONNECTION_HOLD_TIMER_IN_MINS	NEW

Timer value that will control how long a call in Connection Hold will remain in service after the originator has gone on hook. The end office shall allow the value to be set to 1, 2, 3 or 4 minutes. The default value will be 2 minutes.

2.10 Service orders (SO)

2.11 Alarms (AL)

2.11.1 New/modified directories

Table 8 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.12 Command interface (CI)

2.12.1 New/modified commands

Table 9 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.13 Operational measurements (OM)

2.13.1 New/modified OM groups

Table 10 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.14 AMA/Billing information (AM)

2.14.1 New/changed AMA/billing information

Table 11 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.15 Software optionality control (SOC)

Table 12 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.16 Glossary

Term	Description
New term	definition
ACM	Address Complete Message
ANM	Answer Message
ATC	Access to Carrier
CdPN	Called Party Number
CPG	Call Progress Message
FAC	Facility Message
FCI	Feature Code Indicator
IAM	Initial Address Message
ISDN	Integrated Services Digital Network
ISUP	Integrated Services Digital Network User Part
IT	Intertoll
IXC	Interexchange Carrier
JIP	Jurisdiction Information Parameter
LEC	Local Exchange Carrier
MCC	Maintenance Call Clearing
NOA	Nature of Address
OLI	Originating Line Information Parameter
OSS	Operator Services System
OSNC	Operator Services Signaling 7
REL	Release Message
SAP	Service Activation Parameter

2.17 References

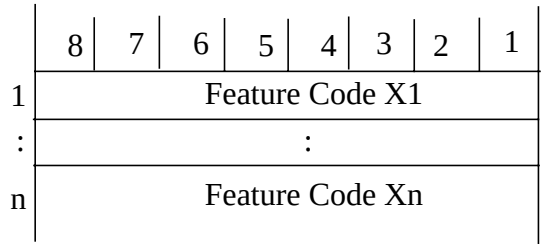
GR-1277-CORE, *Operator Services: Switching System Generic Requirements Using ISUP*, Issue 1 (Bellcore, December 1998).

GR-317-CORE, *Switching System Generic Requirements for Call Control Using ISDNUP*, Issue 1 (Bellcore, February 1998) and Revision 3, November 1996.

GR-394-CORE, *Switching System Genetic Requirements for Interexchange Carrier Interconnection Using ISDNUP*, Issue 1 (Bellcore, February 1994) and Revision 3, November 1996.

TR-NWT-000444, *Switching System Requirements Supporting ISDN Access Using the ISDN User Part*, Issue 3 (Bellcore, may 1993).

Appendix A: Service Activation Parameter



(Parameter name code: 0011 0011)

1000 0000	network service attached
1000 0001	network service released
1000 0010	coin collect
1000 0011	coin return
1000 0100	network service recall
1000 0101	billing verification
1000 0110	hold available
1000 0111	hold not available
1000 1000	hold request
1000 1001	hold acknowledge
1000 1010	hold release request
1000 1011	hold release acknowledge
1000 1100	hold continuation request
1000 1101	disconnect request
1000 1110	reconnect request
1001 0000	intercept-regular
1001 0001	hold request, with acknowledgment
1001 0010	hold release request, with acknowledgment
1001 0011	resume operator services
1001 0101	ringback request
1001 0110	intercept-blank number
1001 0111	intercept-trouble

2: Functional description (FN)

2.1 Feature name

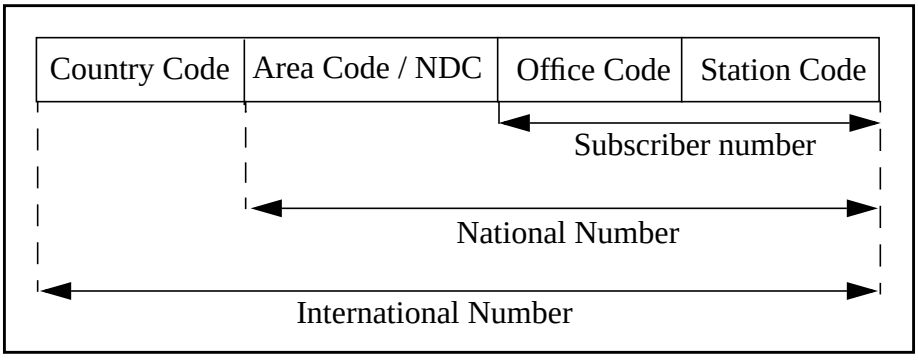
Centrex E.164 part II (59011676)

2.2 Description

2.2.1 Introduction

This feature enhances centrex translation and routing selectors and public routing selector OFRT DN on the DMS100 to be compliant with open dial plan.

A directory number (DN) consists of 4 parts :



Originally, the DMS100 software was built for the North American (NA) market. In the NA dial plan, DNs are of a fixed format :

- The area code has 3 digits
- The office code has 3 digits
- The station code has 4 digits.

Therefore, the national number is of a fixed length of 10 digits and the subscriber number is of a fixed length of 7 digits.

Many of the translation and routing selectors and features on the DMS100, make assumptions about the DNs / dial plan, which restrict their capability to the NA market. This project is part of a large effort undertaken to enhance these components for an open dial plan.

In the Open Dial Plan (ODP), as described under the ITU-T recommendation E.164 and E.165, a directory number (known as the universal directory number) is of variable format :

- The country code has 1 to 3 digits
- The National Destination Code (NDC), which is the equivalent of the area code, has 1 to 7 digits
- The office code has 0 to 7 digits
- The station code has 1 to 8 digits.

The recommendation for combinations of these components are :

- The subscriber number has 1 to 13 digits
- The national number has 2 to 14 digits
- The international number has 3 to 15 digits.

ODP enhancement in this activity is provided for the following centrex components :

- Abbreviated dialing (IBNXLA / XLANAME EXTN sel, AMBI sel)
- Direct Outward Dialing (IBNXLA / XLANAME NET DOD sel)
- Network calls (IBNXLA / XLANAME NET GEN sel : LATTR, RTE and ESN options)
- DN terminations (IBNRTE DN sel)
- Retranslation (IBNRTE RX sel)

Under this activity, ODP enhancement is also provided for the following public component :

- DN terminations (OFRT DN)

Of the above components, NET DOD and RX selectors are already ODP compliant. Also, with the NET GEN sel, LATTR and RTE options are ODP compliant. Therefore, these selectors and options remain unaffected by this activity.

The enhancements made to the remaining components are described below.

2.2.2 Abbreviated dialing

2.2.2.1 IBNXLA / XLANAME EXTN sel

Table Control

In the **old system**, an EXTN sel tuple in table IBNXLA looks as follows :

Xlator	Digits	Selector	SMDR	Intragroup	NPA	NNX	Diginext	Filldigs	Optns
tstxla1	1	extn	y	y	613	721	2	10	$

The following enhancements are made under this activity :

- The ***NNX*** field is enhanced from a fixed 3-digit format to a variable format which accepts between 0 and 7 digits. It is renamed appropriately as ***OFCCODE***.
- The ***filldigs*** field is enhanced from a 3-digit type to a variable type capable of taking between 1 and 7 digits.
- A new ***option*** is introduced called ***SFMM***. This option has 3 fields associated with it : ***station fence***, ***minimum*** digits and ***maximum*** digits. Each of these fields takes a value between 0 and 30. These three fields together work like the SF and MM options in the universal translations tables.

So, the **new tuple** looks as follows :

Xlator	Digits	Selector	SMDR	Intragroup	NPA	ofccode	Diginext	Filldigs	Optns
tstxla1	1	extn	y	y	6664	3564	5	10	(SFMM 2 3 9)

When the user does not use the SFMM option, the **old functionality** continues. This is meant for NA format DNs and so, the following rules apply :

- When the user enters a value greater than 3 for DIGINEXT, filldigs are ignored. A WARNING message as is displayed informing the user : “*** Warning : DIGINEXT > 3, FILLDIGS are ignored”.
- When the user enters a value less than 4, the user is prompted for exact no. filldigs equal to (4 - DIGINEXT).

When the user uses the **new** SFMM option, the following rules apply :

- The DIGINEXT field is ignored. A WARNING message is printed informing the user : “*** Warning : SFMM option present, DIGINEXT is ignored.”

- When the user enters a non-zero value for the station fence field (first field with the new option), the filldigs are ignored. A WARNING message is displayed informing the user : “***Warning : STATION_FENCE is non-zero, FILLDIGS are ignored.”
- The value entered for min has to be greater than the value entered for the station fence. If not, an ERROR message is displayed and the entry is disallowed : “***Error : MIN must be greater than STATION_FENCE.”
- The value entered for max has to be greater than or equal to min. If not, an ERROR message is displayed and the entry is disallowed : “***Error : MAX must be greater than or equal to MIN.”

Call Processing and Traver

When the SFMM option is not used (NA format DNs), the **old functionality** prevails :

- The station code is taken to be the last 4 dialed digits.

The traver example for the above case is given below

>traver l 4290001 0002 b

TABLE IBNLINES

HOST 00 0 02 01 0 DT STN IBN 4290001 TSTPUB 0 0 103 $

TABLE DNATTRS

TUPLE NOT FOUND

TABLE DNGRPS

103 429 0001 0001

(PUBLIC (ADDRESS DNN NNN NNNN) (NAME PUBLIC) $)$

TABLE IBNFEAT

TUPLE NOT FOUND

TABLE CUSTSTN

TUPLE NOT FOUND

TABLE OFCVAR

AIN_OFFICE_TRIGGRP NIL

INAP Info Collected TDP: no subscribed trigger.

TABLE NCOS

TSTPUB 0 0 0 $ (XLAS PUBXLA NXLA NDGT) (CRL 0 ALLOWED)

(CBQ 1 1 Y 2)$

TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,

VACTRMT, AND DIGCOL

```
TSTPUB NXLA PUBXLA FEATXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME PUBXLA
PUBXLA 0002 EXTN N N 103 429 4 $ $
TABLE TOFCNAME
103 429 $
TABLE DNINV
103 429 0002 L HOST 00 0 02 02
TABLE DNFEAT
103 429 0002 (MOG LNMOG0) $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
103 429 0002 0002
   (PUBLIC ( ADDRESS DNN NNN NNNN) (NAME PUBLIC) $)$
INAP Info Analyzed TDP:  no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++


DIGIT TRANSLATION ROUTES

1 LINE              1034290002        ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
.
```

- When the no. of dialed digits is less than extension digits (DIGINEXT), the call is routed to partial dial treatment.The traver is given below.
- When the no. of dialed digits is in excess of DIGINEXT, the call is routed to vacant treatment. If the excess digits dialed is less than 7 , an attempt is made to route the call by ignoring the excess digits. If this is unsuccessful, the call is routed to vacant treatment. The given traver example has 3 excess digits.

```
>traver l 4290001 0002123 b
TABLE IBNLINES
HOST 00 0 02 01 0 DT STN IBN 4290001 TSTPUB 0 0 103 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
103 429 0001 0001
   (PUBLIC ( ADDRESS DNN NNN NNNN) (NAME PUBLIC) $)$
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Info Collected TDP:  no subscribed trigger.
TABLE NCOS
TSTPUB 0 0 0 $ ( XLAS PUBXLA NXLA NDGT) ( CRL 0 ALLOWED)
( CBQ 1 1 Y 2)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,
VACTRMT, AND DIGCOL
TSTPUB NXLA PUBXLA FEATXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME PUBXLA
PUBXLA 0002 EXTN N N 103 429 4 $ $
TABLE TOFCNAME
103 429 $
```

TABLE DNINV
103 429 0002 L HOST 00 0 02 02
TABLE DNFEAT
103 429 0002 (MOG LNMOG0) $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
103 429 0002 0002
(PUBLIC (ADDRESS DNN NNN NNNN) (NAME PUBLIC) $)$
INAP Info Analyzed TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 LINE 1034290002 ST

TREATMENT ROUTES. TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

When the **new** SFMM option is present, the following rules apply for call processing :

- The station code is taken from the station-fence position to the end of of the digits dialed. The traver example is given below.

>traver l 4290001 10002 b

TABLE IBNLINES

HOST 00 0 02 01 0 DT STN IBN 4290001 TSTPUB 0 0 103 $

TABLE DNATTRS

TUPLE NOT FOUND

TABLE DNGRPS

103 429 0001 0001

(PUBLIC (ADDRESS DNN NNN NNNN) (NAME PUBLIC) $)$

TABLE IBNFEAT

TUPLE NOT FOUND

TABLE CUSTSTN

TUPLE NOT FOUND

TABLE OFCVAR

AIN_OFFICE_TRIGGRP NIL

INAP Info Collected TDP: no subscribed trigger.

TABLE NCOS

TSTPUB 0 0 0 $ (XLAS PUBXLA NXLA NDGT) (CRL 0 ALLOWED)

(CBQ 1 1 Y 2)$

TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,

VACTRMT, AND DIGCOL

TSTPUB NXLA PUBXLA FEATXLA 0 NDGT

TABLE DIGCOL

NDGT specified: digits collected individually

TABLE IBNXLA: XLANAME PUBXLA

PUBXLA 10002 EXTN N N 103 12345 5 $ (SFMM 0 3 7)$

TABLE TOFCNAME

103 12345 $

TABLE DNINV

103 12345 10002 L HOST 00 0 02 02

TABLE DNFEAT

103 12345 10002 (MOG LNMOG0) $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
INAP Info Analyzed TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 LINE 1031234510002 ST
TREATMENT ROUTES. TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

- When the no. of dialed digits is less than the minimum value, the call is routed to partial dial treatment.
- When the no. of dialed digits exceeds the maximum value, the excess digits are ignored and an attempt is made to route the call with max. digits. If this is unsuccessful, the call is routed to treatment.The traver given below has 3 excess digits.

>traver l 4290001 510002234 b
TABLE IBNLINES
HOST 00 0 02 01 0 DT STN IBN 4290001 TSTPUB 0 0 103 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
103 429 0001 0001
(PUBLIC (ADDRESS DNN NNN NNNN) (NAME PUBLIC) $)$
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND

TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Info Collected TDP: no subscribed trigger.
TABLE NCOS
TSTPUB 0 0 0 $ (XLAS PUBXLA NXLA NDGT) (CRL 0 ALLOWED) (CBQ 1 1 Y 2)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
TSTPUB NXLA PUBXLA FEATXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME PUBXLA
PUBXLA 510002 AMBI 2 37 N N 103 12345 4 $ (SFMM 1 3 6)$
Route to Extension
TABLE TOFCNAME
103 12345 $
TABLE DNINV
103 12345 10002 L HOST 00 0 02 02
TABLE DNFEAT
103 12345 10002 (MOG LNMOG0) $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
INAP Info Analyzed TDP: no subscribed trigger.
+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 LINE 1031234510002 ST

TREATMENT ROUTES. TREATMENT IS: GNCT

1 *OFLO

2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

Note: The software does not restrict the use of the new SFMM option to the users in any way. The user needs to understand whether he / she wants to use the option or not. For a North American type dial plan, the option is not to be used.

2.2.2.2 IBNXLA / XLANAME AMBI sel

Introduction (Background on old functionality)

The AMBI selector is a combination of the ATT (attendant console) and EXTN selectors. Originally, dialing beginning with 0 was used to access attendant services only. Now, it is possible both to setup attendant services access using other digits and also for extensions beginning with zero. This is done using the AMBI selector. It is determined if the dialed digits are for attendant services or for an extension based on the NOAMBDGS (no. of ambiguous digits field). If the no. of dialed digits is more than NOAMBDGS, the call is treated as an extension call. Processing proceeds exactly as for a normal extension call. If the no. of dialed digits is the same as NOAMBDGS, it is treated as attendant services access. If no. of dialed digits is less than NOAMBDGS, the call is routed to partial dial treatment.

Given below is an example traver for AMBI selector with SFMM option.

```
>traver l 4290001 510002 b
TABLE IBNLINES
HOST 00 0 02 01 0 DT STN IBN 4290001 TSTPUB 0 0 103 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
103 429 0001 0001
   (PUBLIC ( ADDRESS DNN NNN NNNN) (NAME PUBLIC) $)$
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Info Collected TDP:  no subscribed trigger.

TABLE NCOS
```

TSTPUB 0 0 0 $ (XLAS PUBXLA NXLA NDGT) (CRL 0 ALLOWED) (CBQ 1 1 Y 2)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
TSTPUB NXLA PUBXLA FEATXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME PUBXLA
PUBXLA 510002 AMBI 2 37 N N 103 12345 4 $ (SFMM 1 3 7)$
Route to Extension
TABLE TOFCNAME
103 12345 $
TABLE DNINV
103 12345 10002 L HOST 00 0 02 02
TABLE DNFEAT
103 12345 10002 (MOG LNMOG0) $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
INAP Info Analyzed TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 LINE 1031234510002 ST

TREATMENT ROUTES. TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

New functionality

All enhancements made for the EXTN selector are applicable in the same manner to the EXTN part of the AMBI selector.

2.2.3 Network calls : IBNXLA NET GEN sel, ESN option

No enhancements are made to table control.

The new functionality offered here is for call processing for users of the universal translation system (E.164 markets). For such markets, when the ESN option is used, Local Call Area (LCA) screening and Class of Service screening are completely bypassed (similar to universal public translations).

The criteria used to determine whether the current market is an NA market or a universal market is based on the line attribute at this point of the call. It is determined if one of the universal translation systems is associated with the line attribute index. If so, it is treated as a E.164 market. If not, it is treated as an NA market.

The way the line attribute index itself is determined is explained below. With the NET GEN selector, the presence of one of the two options - LATTR or RES - is mandatory. When the LATTR option is present, a line attribute index is present along with the option and this index is used. When the RES option is present, no line attribute is specified as part of the tuple. Instead, the line attribute of the originating agent is used.

For NA users, the same screening rules still apply (as in the old system)

.

2.2.4 IBN DN terminations : IBNRTE / IBNRT2 / IBNRT3 / IBNRT4 DN sel

Table Control

A DN sel tuple in the **old system** is as follows :

rteidx	selector	NPA	NXX	EXP	DMI	selector (next route in the route list)
1	dn	613	621	n	2	$

The **enhancements** made are explained below :

- The office code field (***NXX***) is upgraded to handle 0 to 7 digits. It is appropriately renamed as ***OFCCODE***.
- A new field called ***STNLEN*** (station length) is added. It takes a value between 1 and 8.

The **new** tuple is as shown below :

rteidx	selector	NPA	OFCCODE	EXP	DMI	STNLEN	selector (next route in the route list)
1	dn	613	621	n	2	5	$

One Night Process : Table Transfer

During table transfer, while transferring data from an old type table to the new type, a default value of 4 (applicable to NA dial plan) is put into the STNLEN field in tuples using the DN selector.

Call Processing and Traver

The last ‘n’ digits of the called number are treated as the station code, where ‘n’ is the value specified for station length (STNLEN field). Traver supports display of variable length and format numbers at every stage. A typical traver example is given below.

>traver l 4290010 1234510012 b

TABLE IBNLINES

HOST 00 0 02 10 0 DT STN IBN 4290010 TSTPUB 0 0 103 $

TABLE DNATTRS

TUPLE NOT FOUND

TABLE DNGRPS

103 429 0010 0010

(PUBLIC (ADDRESS DNN NNN NNNN) (NAME PUBLIC) $)$

TABLE IBNFEAT

TUPLE NOT FOUND

TABLE CUSTSTN

TUPLE NOT FOUND

TABLE OFCVAR

AIN_OFFICE_TRIGGRP NIL

INAP Info Collected TDP: no subscribed trigger.

TABLE NCOS

TSTPUB 0 0 0 $ (XLAS PUBXLA NXLA NDGT) (CRL 0 ALLOWED) (CBQ 1 1 Y 2)$

TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIG
COL
TSTPUB NXLA PUBXLA FEATXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME PUBXLA
PUBXLA 123 NET N Y 0 Y NDGT Y N GEN (LATTR 10 103_NPRT_7 NLCA_NILLA_6)$ $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
10 IBN NONE NT 0 0 NILSFC 0 PX PUBXLA NIL 00 103_NPRT_7 NLCA_NILLA_6 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
103_NPRT_7 NSCR 103 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_6 NLCA NIL NILLATA $
TABLE PXHEAD
PUBXLA DFLT TRMT (OFC VACT)$ DFOP (CLASS NATL)$ NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 12345 10012
TABLE PXCODE
PUBXLA 123 123 RTE (MM 7 10) (DEST 500) (CLASS NATL) (LNET LOCAL)(MZONE 0)$
TABLE: PXRTE
KEY: PUBXLA 500
. T IBNRTE 100
. . TABLE IBNRTE
. . 100 DN 103 12345 N 0 5
. . . TABLE TOFCNAME
. . . 103 12345 $
. . . TABLE DNINV

```
. . . 103 12345 10012 L HOST 00 0 02 12
TABLE DNFEAT
TUPLE NOT FOUND
. . . TABLE DNATTRS
. . . TUPLE NOT FOUND
. . . TABLE DNGRPS
. . . 103 12345 10012 10012
. . .    (PUBLIC ( ADDRESS DNN NNNNN NNNN) $)$
. . EXIT TABLE IBNRTE
EXIT TABLE PXRTE
TABLE CODEBLK
TUPLE NOT FOUND
INAP Info Analyzed TDP:  no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++


DIGIT TRANSLATION ROUTES

1 LINE              1031234510012      ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 *OFLO
2 LKOUT


+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

If the called number is manipulated by specifying a non-zero digit manipulation index, the STNLEN field is used to determine the terminator’s

station code length after all the digit manipulation is completed (the final stage of routing). A typical traver is given below.

```
>traver l 4290001 1234512310002 b
TABLE IBNLINES
HOST 00 0 02 01 0 DT STN IBN 4290001 TSTPUB 0 0 103 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
103 429 0001 0001
   (PUBLIC ( ADDRESS DNN NNN NNNN) (NAME PUBLIC) $)$
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Info Collected TDP:  no subscribed trigger.
TABLE NCOS
TSTPUB 0 0 0 $ ( XLAS PUBXLA NXLA NDGT) ( CRL 0 ALLOWED)
( CBQ 1 1 Y 2)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,
VACTRMT, AND DIGCOL
TSTPUB NXLA PUBXLA FEATXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME PUBXLA
PUBXLA 123 NET N N 0 N NDGT N N GEN (LATTR 10 102_NPRT_6
NLCA_NILLA_6)$ $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
10 IBN NONE NT 0 0 NILSFC 0 PX PUBXLA NIL 00 103_NPRT_7
NLCA_NILLA_6 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
```

```
TABLE XLAPLAN
102_NPRT_6 NSCR 102 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_6 NLCA NIL NILLATA $
TABLE PXHEAD
PUBXLA DFLT TRMT (OFC VACT)$ DFOP ( CLASS NATL)$ NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
1234512310002
TABLE PXCODE
PUBXLA 123 123 RTE ( MM 3 15) ( DEST 200)$
TABLE: PXRTE
KEY:   PUBXLA  200
 . T IBNRTE 100
 . . TABLE IBNRTE
 . .  100 DN 103 12345 N 10 5
 . . . TABLE DIGMAN
 . . .    10 (REM 3)
 . . . EXIT TABLE DIGMAN
 . . . TABLE TOFCNAME
 . . . 103 12345 $
 . . . TABLE DNINV
 . . . 103 12345 10002 L HOST 00 0 02 02
TABLE DNFEAT
103 12345 10002 (MOG LNMOG0) $
 . . . TABLE DNATTRS
 . . . TUPLE NOT FOUND
 . . . TABLE DNGRPS
 . . . TUPLE NOT FOUND
 . . EXIT TABLE IBNRTE
EXIT TABLE PXRTE
INAP Info Analyzed TDP:  no subscribed trigger
.
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

DIGIT TRANSLATION ROUTES

1 LINE 1031234510002 ST

TREATMENT ROUTES. TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

2.2.5 Office wide (public) DN terminations : OFRT / OFR2 / OFR3 / OFR4 DN sel

Table Control

A DN sel tuple in the **old system** is as follows :

rteidx	selector	NPA	ofccode	selector (next route in the route list)
1	dn	613	621	$

The **enhancements** made are explained below :

- A new field called ***STNLEN*** (station length) is added. It takes a value between 1 and 8.

The **new** tuple is as shown below :

rteidx	selector	NPA	ofccode	STNLEN	selector (next route in the route list)
1	dn	613	621	5	$

When a tuple is added or changed, a warning message is dispalyed to the user as follows : 'WARNING: Values other than 4 should only be used for the OFRT/2/3/4 tables.'. This means that, the enhancements provided by this activity are applicable for tables OFRT/2/3/4 only. For the other tables using the same tuple structure (RTEREF, INWORIRT and INWTERTE), the user is advised to use a value of 4 for this new field.

One Night Process : Table Transfer

During table transfer, while transferring data from an old type table to the new type, a default value of 4 (applicable to NA dial plan) is put into the STNLEN field in tuples using the DN selector.

Call Processing and Traver

The last ‘n’ digits of the called number are treated as the station code, where ‘n’ is the value specified for station length (STNLEN field). Traver supports display of variable length and format numbers at every stage. An example traver is given below.

>traver l 4290010 3456780012 b

TABLE IBNLINES

HOST 00 0 02 10 0 DT STN IBN 4290010 TSTPUB 0 0 103 $

TABLE DNATTRS

TUPLE NOT FOUND

TABLE DNGRPS

103 429 0010 0010

(PUBLIC (ADDRESS DNN NNN NNNN) (NAME PUBLIC) $)$

TABLE IBNFEAT

TUPLE NOT FOUND

TABLE CUSTSTN

TUPLE NOT FOUND

TABLE OFCVAR

AIN_OFFICE_TRIGGRP NIL

INAP Info Collected TDP: no subscribed trigger.

TABLE NCOS

TSTPUB 0 0 0 $ (XLAS PUBXLA NXLA NDGT) (CRL 0 ALLOWED)

(CBQ 1 1 Y 2)$

TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,

VACTRMT, AND DIGCOL

TSTPUB NXLA PUBXLA FEATXLA 0 NDGT

TABLE DIGCOL

NDGT specified: digits collected individually

TABLE IBNXLA: XLANAME PUBXLA

PUBXLA 34 NET N Y 0 N NDGT Y N GEN (LATTR 10 103_NPRT_7

NLCA_NILLA_6)$ $
TABLE DIGCOL

NDGT specified: digits collected individually

TABLE LINEATTR
10 IBN NONE NT 0 0 NILSFC 0 PX PUBXLA NIL 00 103_NPRT_7
NLCA_NILLA_6 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
103_NPRT_7 NSCR 103 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_6 NLCA NIL NILLATA $
TABLE PXHEAD
PUBXLA DFLT TRMT (OFC VACT)$ DFOP (CLASS NATL)$ NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 34567
80012
TABLE PXCODE
PUBXLA 34 34 RTE (MM 3 15) (DEST 500)$
TABLE: PXRTE
KEY: PUBXLA 500
. T OFRT 10
. . TABLE OFRT
. . 10 DN 103 345678 4
. . . TABLE TOFCNAME
. . . 103 345678 $
. . . TABLE DNINV
. . . 103 345678 0012 L HOST 00 0 02 12
TABLE DNFEAT
TUPLE NOT FOUND
. . . TABLE DNATTRS
. . . TUPLE NOT FOUND
. . . TABLE DNGRPS
. . . TUPLE NOT FOUND
. . EXIT TABLE OFRT

EXIT TABLE PXRTE
TABLE CODEBLK
TUPLE NOT FOUND

INAP Info Analyzed TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 LINE 1033456780012 ST

TREATMENT ROUTES. TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

2.3 Hardware requirements

There are no other special hardware requirements.

2.4 Limitations and restrictions

- All enhancements provided under this activity are fully E.164 compliant for the national number (14 digit, variable format). However, the user should be aware of the following restrictions imposed by other DMS100 components :

  a. The Bellcore Automatic Message Accounting (AMA) system supports DNs only upto a maximum length of 10 digits. This restriction would be reflected in some / all of the DN fields in the AMA logs and records.

  Note: The Universal AMA system supports upto 20 digits (or 18 digits, depending on factors related to CallP).

  b. The E.164 SOC imposes a max length on DN tables (such as IBNLINES, DNROUTE etc..). When the SOC is ON, a max length of 12 is allowed for DNs in these tables. When the SOC is IDLE, the max length allowed is 10.

- Enhancements made to EXTN selector are not available in the Emergency Stand Alone (ESA) mode of operation. For further details refer to Section 2.5.1 EXTN - ESA interaction.
- ACD MIS supports only NA format routing data. For further details, refer to section 2.5.2 IBNRTE / OFRT DN - ACD MIS interaction
- Calling-extension display to IBN attendant consoles does not support variable length extensions. For details, refer to section 2.5.3 EXTN - ATT interaction

2.5 Interactions

2.5.1 EXTN - ESA interaction

Emergency Stand Alone (ESA) is the mode in which the peripheral (XPM) operates when it is unable to communicate with the CM for some reason (such as network problems). Some basic call types (including extension dialing) are supported in the ESA mode. This is done by periodically (every night) downloading translation data (in the translation tables such as IBNXLA) for the basic call types from the CM to the XPM (the data required for translation is stored on the XPM).

Enhancement to the EXTN selector for ESA mode of operation is beyond the scope of this activity. Therefore, for ESA, the existing functionality continues : support for abbreviated dialing of the NA dial plan (where the new SFMM option is not used). This is done by downloading to the XPM, only those EXTN tuples which do not have the SFMM option. Support for open dial plan may be done in a separate activity at a later date.

2.5.2 IBNRTE / OFRT DN - ACD MIS interaction

Automatic Call Distribution (ACD) is a variant of Uniform Call Distribution (UCD) developed for p-phones. UCD is typically used in service industries and catalog sales applications where any one of a number of answering positions may equally serve incoming calls and the intention is to provide an equal distribution of calls to all available positions.

ACD Management Information System (MIS) provides facilities to the administrator for the management of ACD groups. A DownStream Processor (DSP) maybe used to analyze ACD related data which is used to improve the efficiency of the functioning of ACD groups. For e.g., the load distribution (of incoming calls) on members of the group is determined and reconfiguration of parameters related to the group maybe done to achieve a desired distribution. For this purpose, the DSP may request specific information from the DMS in order to carry out its analyses. One such information is routing data. The DSP may give the DMS a routing index and request for data pertaining to this index. The DMS retrieves this data from the appropriate tables and transmits it to the DSP. In this instance, currently the system supports only NA format routing data - 3 dig area and 3 dig office codes. This remains the same.

Support for ODP for ACD MIS is beyond the scope of this activity. So, the functionality continues as before with no enhancements or changes.

2.5.3 EXTN - ATT interaction

An IBN customer group can have attendant consoles (ACs). They are attached to subgroups in the customer group. Data pertaining to this is stored in table SUBGRP. When an extension in the subgroup calls the AC, it is necessary to display the calling extension to the AC. Here, it is necessary to determine the length of the calling extension. This information is stored in the STNEXTLN field of table SUBGRP. This field takes a value between 1 and 7. As may be seen, it is necessary for all extensions in a subgroup to be of the same length and for this length to be between 1 and 7.

Support for ODP for attendant console display is beyond the scope of this activity. The extension length value specified in this table field is used for all extensions in the particular subgroup (both in NA and E.164 markets).

DDOC section summaries

2.6 Logs (LG)

2.6.1 New/modified logs

None.

2.7 Data schema (DS)

2.7.1 New/modified tables

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
IBNXLA	changed	unchanged
IBNRTE / IBNRT2 / IBNRT3 / IBNRT4	changed	unchanged
OFRT / OFR2 / OFR3 / OFR4	changed	unchanged

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

None.

2.9 Service orders (SO)

No changes.

2.10 Alarms (AL)

None.

2.10.1 New/modified directories

None.

2.11 Command interface (CI)

2.11.1 New/modified commands

Table 2 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN
RESCONCI	CHANGED	--	CI	NON-MENU

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

None.

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

None.

2.14 Software optionality control (SOC)

Not applicable.

2.15 Glossary

Term	Description
AC	Attendant Console
ACD	Automatic Call Distribution

AMA	Automatic Message Accounting
DMS	Digital Multiplex System
DN	Directory Number
DOD	Direct Outward Dialing
DSP	DownStream Processor
ESA	Emergency Stand Alone
ESN	Electronic Switched Network
LCA	Local Call Area
MIS	Management Information Systems
MM	Min-Max
NA	North American
NDC	National Destination Code
ODP	Open Dial Plan
SF	Station Fence
SOC	Software Optionality Control
STNLEN	Station Code Length
UCD	Universal Call Distribution

2.16 References

- DMSE164 : ODP Feature Specification Document (FSD)
- NTP 297-8021-350 : Meridian Digital Centrex translations
- ITU-T E.164 and E.165 recommendations
- BF0493FN : ESA central control
- BF0494FN : RLCM - ESA Translation
- BF0495FN : RLCM - ESA Table Control
- BF0614FN : RSC - ESA Translation
- BF0615FN : RSC - ESA Table Control
- BF0940FN : RSC - ESA Static Data handling in XPM
- AD0622FN : DMS user interface to ACD MIS
- AD0623FN : ACD MIS Interface
- AD0766FN : ACD MIS Protocol Specification

- BV0601FN : Uniform Call Distribution
- BZ0557FN : Automatic Call Distribution

2: Functional description (FN)

2.1 Feature name

Call Transfer Fraud Prevention (CTFP)

2.2 Description

2.2.1 Background

The call Transfer Fraud Prevention (CTFP) feature enhances the existing call transfer capability by helping prevent fraudulent use of the service. This situation can be prevented by imposing a restriction on the two legs (original and added) of a call prior to allowing call transfer to take place. When either leg does not comply to the call restrictions, all parties are dropped upon transferring, i.e. when the conference controller hangs up.

2.2.1.1 MDC and RES Call Transfer Background

The Call Transfer feature allows a subscriber to perform the following features:

- call a third party
- be called by a third party

For MDC and RES agents, the Call Transfer feature is assigned to an entire customer group with option CXFER in table CUSTSTN. The default customer group configuration can be overridden by assigning the CXR option to specific lines. The call transfer configuration is used to restrict the calls that can be transferred based on their intragroup or intergroup nature.

End-users with the Three-Way Call (3WC) option are subject to the call transfer restriction of the customer group. The restrictions apply to the two call

transfer modes of 3WC, namely consultation and conferencing. End-users with the CXR option can specify a configuration that overrides the restrictions of the customer group.

Depending on its configuration, the CXR feature can provide three-way calling capability (i.e. consulting and conferencing) between the controller and the two other parties prior to the transfer.

Currently, Call Transfer does not impose any limitation on the DN of the other parties nor on the number of calls which are transferred by an agent.

The CXR feature is currently available on RES and MDC IBN and MBS agents. POTS agents with 3WC options cannot transfer calls.

2.2.2 Feature Operation

With the Call Transfer Fraud Prevention (CTFP) feature, the operating company can enable CTFP through a new office parameter, CTFP_INFO, in table OFCENG. This office parameter allows the operating company to turn the service on and off without losing the CTFP datafill. CTFP_INFO also specifies the throttling characteristics of CTFP on an office-wide basis.

Once the operating company enables the service, CTFP validates any call transfers that an agent initiates. CTFP performs the following two functions in order to validate call transfers:

- dial plan screening
- call transfer throttling

CTFP performs dial plan screening to validate that none of the legs of a call transfer were dialed to or from a restricted dial plan. The operating company can define the CTFP dial plan restrictions on an office-wide basis in the new Dial Plan Screening (DPLNSCRN) table. The following table provides the dial plan codes that the operating company can restrict on an office-wide basis.

Table 1 Dial plan codes and their associated dial plans

Dial plan code	Dial plans
OP	Operator assisted 0+/0-, 00-, 01+
IDDD	011+ International calls
FGB	1+950+WXXX
CUT-THROUGH	101+CIC#
INTERTOLL	InterLATA toll calls

Table 1 Dial plan codes and their associated dial plans

Dial plan code	Dial plans
INTRATOLL	IntraLATA toll calls
COIN	Any dial plans used in a call leg that corresponds to a coin line on the same switch as the CTFP feature, with any one of the following LCCs: CCF, CDF, CSP, CFD,ZMD,ZMZPA
Digit Sequence (PREXLA)	Any pre-translation digits, for example 1800, 911
Digit Sequence (POSTXLA)	Any post-translation digits, for example NPA, NPANXX

CTFP validates each leg of a call transfer against the restricted dial plans and then allows or blocks the call transfer based on the entries in table DPLNSCRN. The following table indicates the possible datafill for the IDDD_OUT and INTER/ INTRATOLL fields and their expected results.

Table 2 Combination results of fields IDDD_OUT and INTER/INTRATOLL

IDDD_OUT (present in table DPLNSCRN)	**INTER/ INTRATOLL** (present in table DPLNSCRN)	**CTDR behavior**
Y	Y	blocks all inter/intraLATA toll calls, which includes international calls
N	N	allows inter/intraLATA toll calls, which includes international calls
Y	N	blocks all international inter/intraLATA toll calls, and allows national inter/intraLATA toll callls
N	Y	blocks all national inter/intraLATA toll calls, and allows all international inter/intraLATA toll calls

The following table indicates the possible datafill for the FBG and INTER/ INTRATOLL fields and their expected results.

Table 3 Combination results of fields FBG and INTER/INTRATOLL

FBG (present in table DPLNSCRN)	**INTER/ INTRATOLL** (present in table DPLNSCRN)	**CTDR behavior**
Y	Y	blocks all inter/intraLATA toll calls, which includes FBG calls
N	N	allows inter/intraLATA toll calls, which includes FBG calls
Y	N	blocks all FBG interLATA toll calls, and allows other national inter/intraLATA toll calls
N	Y	blocks all national inter/intraLATA toll calls, and allows all FBG interLATA toll calls

When CTFP is validating a leg of a call transfer for ‘Dial Plan Screening’, it follows an order of precedence. First, the COIN, INTRATOLL, INTERTOLL, CUT-THROUGH, FGB, IDDD & OP codes are checked. If this validation is accepted, dial plan screening precedes to check the PREXLA digit sequence and then the POSTXLA digit sequence. For more information about table DPLNSCRN see “Data schema (DS)” on page 62.

If the call is successfully validated by dial plan screening, CTFP then performs call throttling to ensure that the agent has not exceeded the call transfer limits. The operating company can use the CTFP_INFO office parameter in table OFCENG to specify a limit for the number of call transfers that an agent initiates during a specific time period.

Note: Throttling is only performed on the call if one of the legs in the call is one of the dial plan code types (i.e. COIN, INTRATOLL, INTERTOLL, CUTTHRU, FGB, IDDD_IN, IDDD_OUT, & OP_OUT).

The time period and number of transfers are controlled by the values in the DURATION and MAXTRANSFER fields of CTFP_INFO. The DURATION field specifies a time period between 30 to 240 minutes. The MAXTRANSFER field specifies the number of transfers that can occur during the specified time period. The valid range for this field is 1 to 30, or 0 to disable throttling.

During throttling, CTFP checks the timer and the counter against the values in the DURATION and MAXTRANSFER fields of the CTFP_INFO office parameter. When the counter is within the limits specified in CTFP_INFO, then CTFP increases the counter and allows the call to transfer. If the counter exceeds the value specified in CTFP_INFO, then CTFP blocks the call transfer.

note: After any type of restart, all throttling counters and timers are reset.

When CTFP blocks a call transfer, the system generates the new CTFP log. The CTFP600 log contains the call identification number, the subscriber's DN, the Transfer-To DN, and the reason. For more information about the CTFP600 log, see "Logs (LG)" on page 61.

When CTFP blocks a call transfer, it causes one of the registers in the new CTFP operational measurements (OM) group to peg. The Call Transfer Fraud Prevention Screening (CTFPSCRN) register pegs when the call drops due to dial plan screening and the Call Transfer Fraud Prevention Throttling (CTFPTHRO) register pegs when the call drops due to call throttling. For more information about the CTFP OM group, see "Operational measurements (OM)" on page 65.

To customize the application of CTFP for a specific customer group, the operating company can use the new option, CTFP, in table CUSTSTN. This option overrides the office-wide settings of CTFP on a per customer group basis. For more information about the CTFP option, see "Data schema (DS)" on page 62.

The operating company can also disable CTFP functionality on a per line basis with the DENYCTFP line option.This line option will disable CTFP dial plan screening, CTFP call throttling, or both functions. For more information about the DENYCTFP line option see "Service orders (SO)" on page 63.

The CTFP feature supports the following agents:

- Meridian Digital Centrex (MDC) Integrated Business Network (IBN)
- Meridian Digital Centrex (MDC) Meridian Business Set (MBS)
- Residential Enhanced Services (RES)/ 1 Flat Rate (1FR)
- Residential Enhanced Services (RES)/ 1 Message Rate (1MR)
- Residential Enhanced Services (RES)

2.2.2.1 Feature Flow Diagram

The following figures show the logic of the CTFP feature. Figure 1 depicts the operation of the CTFP office option and Figure 2 depicts the operation of the CTFP customer group option.

Figure 1 CTFP feature flow diagram (office-wide basis)

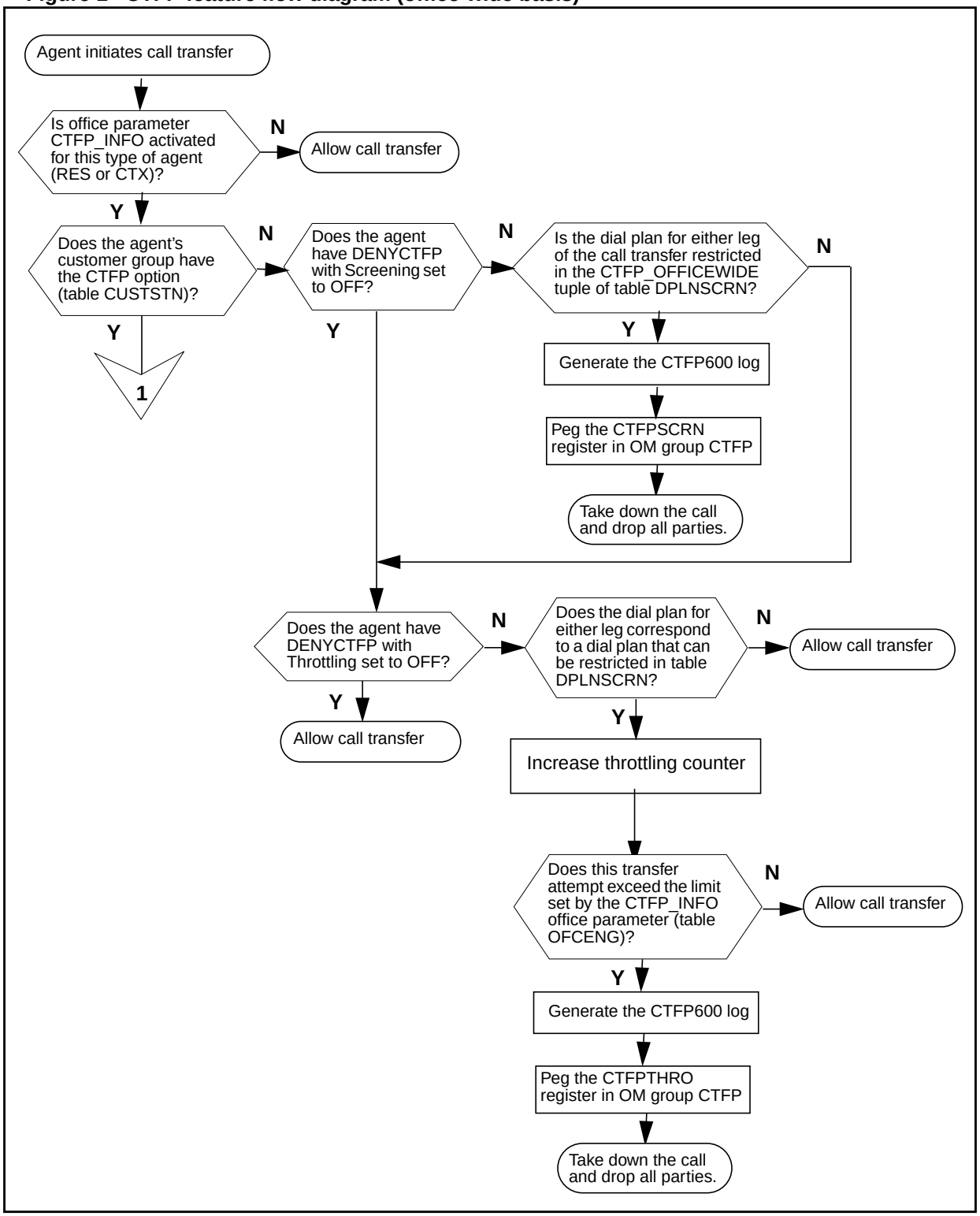
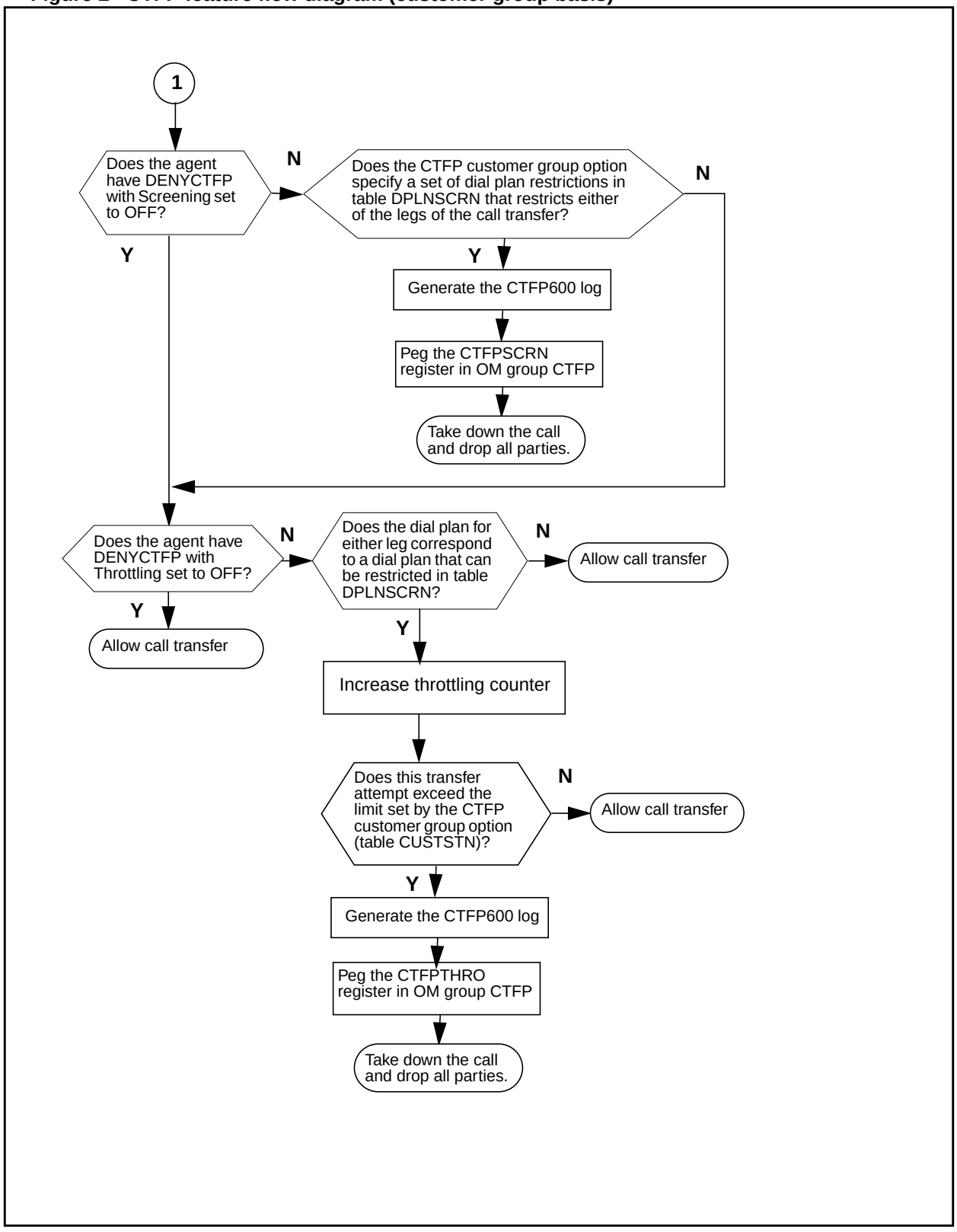


Figure 2 CTFP feature flow diagram (customer group basis)



2.3 Hardware Requirements

Not Applicable

2.4 Limitations and Restrictions

The following restrictions and limitations apply to the Call Transfer Fraud Prevention (CTFP) feature:

- CTFP does not screen call transfers initiated using Compucall
- CTFP does not apply to POTS agents as this type of agent cannot transfer calls.
- CTFP does not apply to ISDN agents.
- CTFP only validates incoming call legs for International Direct Distance Dialing (IDDD).
- CTFP requires end-to-end Integrated Services Digital Network User Part (ISUP) for the IDDD.
- CTFP will not be doing POSTXLA verification for a specific call leg when the leg is an outgoing international call (IDDD).
- CTFP will not be doing POSTXLA verification for 7 digits inter-switch calls.

2.5 Interactions

Advanced Intelligent Network (AIN0.0, AIN0.1, AIN0.2)

AIN enhances the switch call processing capabilities to use centralized operating company provided service logic programs placed at the Service Control Points (SCP). The service logic determines how AIN calls should proceed for further call processing.

If an agent initiates a call transfer before an AIN query takes place, CTFP validates the digits that the agent dialed against the entries in the PREXLA field of the table DPLNSCRN. If and agent initiates a call transfer after an AIN query, CTFP validates the post-query post-translation digits against the entries in the POSTXLA field of table DPLNSCRN.

Dial plan screening options apply to the terminating agent currently involved in the call when the actual call transfer occurs (it can be either pre-query or post-query depending on the scenario).

Call blocking features

The call blocking features screen and block calls at the time that the agent places the call. There are different types of call blocking, for example Carrier Toll Denied (CTD), Full Carrier Toll Denied (FCTD), and Toll Denied (TDN).

There is no interaction between CTFP and call blocking features.

Call forward

The call forwarding feature allows a subscriber to have incoming calls to the directory number of a station forwarded to a predetermined DN.

CTFP validates the original called number against the dial plans in the POSTXLA field of table DPLNSCRN if the call has not forwarded when the transfer is initiated.

Dial plan screening options apply to the terminating agent currently involved in the call when the actual call transfer occurs (it can be either before the call is forwarded or after the call has been forwarded depending on the scenario).

Call transfer

The call transfer feature allows a subscriber to instruct the switching equipment or operator to transfer incoming calls to another station.

CTFP does not modify the functionality of the Call Transfer (CXFER) customer group option apart from its implicit functionality of preventing fraudulent use of call transfers.

CTFP does not modify the functionality of the Call Transfer (CXR) line option apart from its implicit functionality of preventing fraudulent use of call transfers.

CTFP does not modify the functional of the Fast Transfer (FXR) line option apart from its implicit functionality of preventing fraudulent use of call transfers.

Local Number Portability (LNP)

The LNP feature allows end users to change their location, service provider, or service while maintaining their directory numbers and access to advanced calling features. A ported DN is a DN that is no longer served by the original switch and so requires an AIN SCP database query for routing information.

When an agent dials a call leg that activates an LNP query in the originating office, CTFP validates the DN that the agent dialed against the dial plan restrictions in the PREXLA field of table DPLNSCRN. CTFP validates the post-query post-translation digits against the dial plan restrictions in the POSTXLA field of table DPLNSCRN.

Speed Calling (SC1, SC2, SC3)

Speed Calling allows subscribers to assign a short code (from one to four digits) used to reach a directory number (DN). The subscriber then dials the speed code instead of the DN. The switch uses the DN for translation of the call.

When a subscriber dials a speed code instead of the DN to initiate a leg of a call, CTFP validates the DN.

Three-Way Calling (3WC)

The 3WC feature allows a subscriber to add a third party to an active call without help from the operator.

CTFP does not modify the functionality of 3WC.

Fast Transfer (FXR)

Fast transfer allows subscribers to transfer a call without conferencing all the parties first (available on keyset only). This option is similar to CXR (call transfer option) however, when the FXR ‘button’ is pushed a second time, the call is immediately transferred without going into 3 way call mode.

When a call is being screened by CTFP, after the controller has pressed the FXR ‘button’ for a second time, the second leg of the call is released while the first leg remains on hold.

Call Pick-Up (CPU)

The CPU option allows a station to answer calls incoming on another station within the same pickup group.

CTFP only screens on the original called station, not the station that performs the pickup.

Series Completion (SCMP)

The SCMP option redirects calls to a busy DN to another designated DN within the same office.

CTFP only screens on the original called number (the busy DN) and not on the DN of the redirection.

Directory Number Hunting (DNH)

Each line in the hunt group has its own unique DN. By dialling any one of those designated DNs, one is enter into the hunt group. Once in the hunt group, one traverses through the group in either a circular or sequential hunting fashion.

CTFP only screens on the original called hunt group member regardless of which station answers within the hunt group.

Automatic Call Back (ACB)

The ACB option allows a subscriber to place a call to the last station that the subscriber called. If the destination line is busy, ACB monitors the line until the line becomes idle and can accept the call.

PREXLA screening on a called agent reached using the ACB feature is not performed. However, POSTXLA screening and all other DPLNSCRN call option screening is still performed on the called agent.

Automatic Recall (AR)

The AR option allows a subscriber to call the last station that calls the subscriber. If the destination line is busy, AR monitors the line until the line becomes idle and can accept the call.

PREXLA screening on a called agent reached using the AR feature is not performed. However, POSTXLA screening and all other DPLNSCRN call option screening is still performed on the called agent.

Direct Inward System Access (DISA)

The Direct Inward System Access (DISA) feature enables authorized outside callers to access internal private network facilities. The user is prompted to enter their telephone number followed by a personal identification number (PIN). Once the PIN is entered, a dial tone is provided and the user proceeds normally with their call.

During interswitch calls, CTFP does all screening on the DISA's DN. Once the dial tone is obtained from DISA on an intraswitch call, CTFP performs PREXLA screening on the DISA's DN, POSTXLA, and call option screening on the DN dialed after the dial tone.

Logs (LG)

The CTFP feature introduces one new log, CTFP600.

The system generates the CTFP600 log each time a call transfer attempt is denied due to CTFP dial plan screening or throttling.

The format for the CTFP600 log is as follows:

```
logoffid       CTFP600 mmmdd hh:mm:ss nnnn INFO ATTEMPT BLOCKED
Call_ID             : ffff ffff
Subscriber DN       : xxxxxxxxxx
Transfer-to DN      : xxxxxxxxxxxxxxxxxxxxxxx
Reason              : TEXT REASON
```

An example of the CTFP600 log is as follows:

```
MTL2112AN      CTFP600 APR22 15:25:38 4400 INFO ATTEMPT BLOCKED
Call_ID             : 0A2 0003
Subscriber DN       : 5145425541
Transfer-to DN      : 5148547855
Reason              : INTERTOLL RESTRICTED
```

2.5.1 New/modified logs

Table 4 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)
CTFP	600	NEW	SOS

2.6 Data schema (DS)

The CTFP feature introduces the Dial Plan Screening (DPLNSCRN) table. DPLNSCRN enables the operating company to define multiple dial plan restrictions.

The Call Transfer Fraud Prevention (CTFP) feature checks each leg of a call transfer against the restricted dial plans in table DPLNSCRN. CTFP then blocks or allows the call transfer based on the information in the table.

The DPLNSCRN table contains a default office wide tuple, CTFP_OFFICEWIDE: $ $ $. The operating company can use CTFP_OFFICEWIDE to define the CTFP dial plan screening restrictions on an office-wide basis. When the CTFP_INFO office parameter is set to Y, CTFP restricts call transfers on an office-wide basis based on the information in CTFP_OFFICEWIDE. This tuple cannot be deleted.

CTFP screens call transfers according to the dial plan codes in the CALLOPT subfield of table DPLNSCRN. If a call passes the dial plan screening in subfield CALLOPT, CTFP then screens the call against the dial plans in the Pre-translation (PREXLA) and Post-translation (POSTXLA) subfields. The PREXLA and POSTXLA subfields allow the operating company to screen calls based on dialed digits and translated digits.

For POSTXLA call transfer screening, screening is done against a 10 digit dial plan (datafilled in table DPLNSCRN). However, it is possible for a user to make a 7 digit number call to another switch (inter-switch) making it difficult to determine the NPA of the called number for POSTXLA translation purposes. Therefore, CTFP does not perform POSTXLA screening for 7 digit inter-switch calls.

note: CTFP screening is not performed against POSTXLA if a specific call leg is an outgoing international call.

When the office parameter is set to ‘N’, all the CTFP functionality is turned off for those agents.

2.6.1 New/modified tables

Table 5 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
DPLNSCRN	NEW	NEW
CUSTSTN	CHANGED	UNCHANGED
IBNFEAT	CHANGED	UNCHANGED
KSETFEAT	CHANGED	UNCHANGED

2.7 Office parameters (OP)

CTFP introduces a new office parameter, Call Transfer Fraud Prevention Information (CTFP_INFO), in table Office Engineering (OFCENG). This office parameter allows the operating company to control the office-wide application of CTFP. If the value of the DURATION field is changed, the new value only takes effect for new timers. Current timers are unaffected. When the value of the MAXTRANSFER field is changed, the new value takes effect immediately.

2.7.1 New/modified office parameters

Table 6 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED
OFCENG	CTFP_INFO	NEW

2.8 Service orders (SO)

DENYCTFP line option

The DENYCTFP line option allows the operating company to disable CTFP on a per line basis. The operating company can assign the DENYCTFP line

option to disable either CTFP dial plan screening, CTFP call throttling, or both functions.

Table 7 DENYCTFP line option in tables IBNFEAT and KSETFEAT

LEN	DNNO	DF	FEATURE	DATA	
				Screening	Throttling
Host 01 1 01 20	0	DENYCTFP	DENYCTFP	OFF	ON
Host 01 0 01 20	0	DENYCTFP	DENYCTFP	ON	ON

The ADO, DEO, and NEW commands of the service order (SERVORD) tool are modified to accept the new DENYCTFP line option.

The query directory number (QDN) and query line equipment number (QLEN) commands are modified to display the new DENYCTFP line option.

2.9 Alarms (AL)

Not applicable

2.9.1 New/modified directories

Table 8 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.10 Command interface (CI)

Not applicable

2.10.1 New/modified commands

Table 9 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.11 Operational measurements (OM)

The CTFP feature introduces the CTFP OM group. This OM group pegs each time all parties of a conference call are dropped when a call transfer is blocked due to CTFP. The CTFP OM group contains the following registers:

- CTFPSCRN - pegs when the call drops due to dial plan screening
- CTFPTHRO - pegs when the call drops due to call throttling

2.11.1 New/modified OM groups

Table 10 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason
CTFP	Call Transfer Fraud Prevention	NEW	This OM group pegs each time all parties of a conference call are dropped due to CTFP

2.12 AMA/Billing information (AM)

Not Applicable

2.12.1 New/changed AMA/billing information

Table 11 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.13 Software optionality control (SOC)

Not Applicable

Table 12 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.14 Glossary

Term	Definition
1FR	One-party Flat Rate Line
1MR	One-party Message Rate Line
3WC	Three-Way Calling
AIN	Advanced Intelligent Network
CTD	Carrier Toll Denied
CTFP	Call Transfer Fraud Prevention
CXFER	Call Transfer (customer group option)
CXR	Call Transfer (line option)
DN	Directory Number

FCTD	Full Carrier Toll Denied
IBN	Integrated Business Network
IDDD	International Direct Distance Dialing
ISDN	Integrated Service Digital Network
LATA	Local Access and Transport Area
LNP	Local Number Portability
MBS	Meridian Business Set
MDC	Meridian Digital Centrex
OM	Operational Measurements
OP	Operator
POTS	Plain Old Telephone Services
RES	Residential Enhanced Services
SCP	Service Control Point
SOC	Software Optionality Control
TDN	Toll Denied

2.15 References

- FSD Audience ‘Call Transfer Fraud Prevention (CTFP)’ FAS9735FSD 2.0 approved
- Advanced Intelligent Network Service Enablers ‘Service Implementation Guide. (Product release: NA011 version AE13).

Appendix A: Frequency limit paradigm

The MaxTransfer value can at times allow the end user to program at most (2*MaxTransfer)-1 occurrences. This paradigm is explained in further detail below and illustrated in Figure B-1.

For example, assume the operating company has defined a limit of 10 times. That is, the controller cannot perform valid call transfers more than 10 times within a time period of 60 minutes (as specified by the Duration field).

The following scenario can then take place:

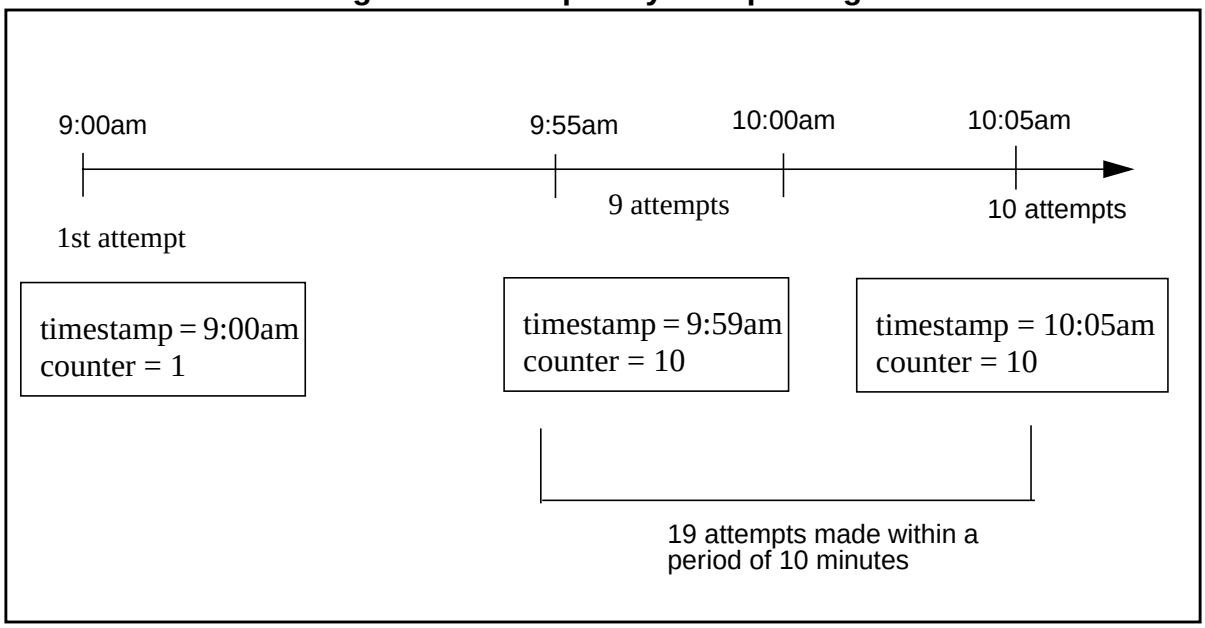
1) At time t=9:00am:
   - The controller makes a first attempt at transferring a call.
   - A timestamp is taken of the time when the transferring attempt occurred, that is, timestamp = 9:00am.
   - The counter to track the number of times the controller attempts transfers is set to 1.
2) At time t=9:55am (fifty-five minutes later):
   - The controller makes nine attempts to transfer a call within a 4 minute time frame. These are all considered valid transfer attempts.
   - The timestamp of when the first transferring attempt occurred remains the same.
   - The counter to track the number of times the controller transfers a call is set to 10.
3) Thus within 60 minutes, the controller has made the maximum allowable call transfer attempts of 10.
4) At time t=10:05am (6 minutes later):
   - The controller makes ten attempts to transfer a call within a 5 minute time frame. Since the originally allotted 60 minutes has expired, these transferring attempts are all considered valid.
   - A new timestamp is taken of the time this transferring attempt occurred, that is, timestamp = 10:05am.
   - The counter to track the number of times the controller transfers a call is set to 10.

Upon review of this scenario, we can see from the time line depicted in Figure B-1 that the controller has made a total of nineteen attempts to transfer a call within a ten minute time frame.

This pattern can only be reproduced in the call scenario depicted above. As such, it constitutes a limitation of the CTFP feature.

Unless end-users are aware of the operating company-selected time period, and the upper change limit on a particular line, they cannot take advantage of the call scenario described above.

Figure B-1: Frequency limit paradigm



Appendix B: Dial plan code descriptions

This section describes all the dial plan codes, and indicates how they are determined by the CTFP feature.

OP: These are operator calls, namely 0+/0-, 00- and 01+.

IDDD: These calls are international-type calls. In order to be flagged as International Direct Distance Dialing (IDDD) calls, the type of call in the translations must be DD (direct dialed), and the translation system must be IN (international). Casual calls that are international calls are flagged as IDDD: If international calls are restricted, the restriction applies regardless that the calls are casual calls or not.

FGB: These are Feature Group B directory numbers, which can be identified as such by the characteristic digits pattern: 1+950+WXXX, where WXXX is 0/1+CIC (carrier identification code). The CTFP feature determines whether a DN belongs to dial plan code FGB through the NXX.

CUT-THROUGH: A cut-through call is when an end-user gets through to the operator of another carrier by dialing 101+Carrier Identification Code (CIC)#. It differs from a casual call which is considered a call when an end-user dials 101+CIC+10 digits. Thus if a cut-through call is restricted, the restriction does not apply to casual calls.

INTERTOLL: These are calls that originate in one local access and transport area (LATA) and terminate outside that LATA. The CTFP feature only applies restrictions to interLATA toll calls. If INTERTOLL calls are restricted, the restriction applies regardless that the calls are casual calls or not.

These types of calls are identified according to how the call was dialed and how the called digits are marked in table LATAXLA. There are three different call types associated with InterLATA calls:

- **Standard:** The operating company has no special capabilities for completing the call. The call is routed by an interexchange carrier (IEC).
- **Corridor:** A Corridor call is an interexchange call that is routed through the operating company rather than the IEC. A corridor call can be routed through the operating company if the end-user dials the 101XXXX digits of the operating company, or if the end-user has selected the operating company as the primary interLATA carrier (PIC). Each call is screened to ensure that it is an interexchange call within the corridor. If the call is an interexchange call, but is outside the corridor, the call is routed to invalid corridor call (IVCC) treatment. Local exchange calls complete normally using the operating company's facilities.

  Restrictions apply to the following corridor calls:

  - 00-
  - 0+10 digit
  - 1+10 digits
  - 101XXXX+ 0

- 101XXXX+00
- 101XXXX+0+7 digits
- 101XXXX+0+10 digits
- 101XXXX+1+7 digits
- 101XXXX+1+10 digits

The operating company is defined as an operating telephone company (OTC) carrier access type (an operating company that can handle corridor calls) by entering OTC in the ACCESS field of table OCCINFO. It then specifies the EATYPE as CORRIDOR in table LATAXLA for each LATACODE defined as a corridor call.

The CTFP feature only applies restrictions to corridor calls that are toll.

- **Privilege:** Privilege calls are interexchange calls dialed without a 101XXXX prefix or PIC, and are completed by the operating company. A PIC can be specified for these types of calls, but is not used. These calls are translated as non-Equal Access, local exchange calls.

  The following interexchange call types can be privilege calls:

  - 0+10 digits
  - 1+10 digits

  The operating company defines privilege calls by specifying the EATYPE as PRIVILEGE in table LATAXLA for each LATACODE that the operating company decides to be a privilege call. Calls datafilled as PRIVILEGE and dialed with a 101XXXX prefix are routed as Equal Access interexchange calls using the dialed IEC. There is no entry in table OCCINFO associated with a privilege call.

  The CTFP feature only applies restrictions to privilege calls that are toll.

INTRATOLL: These are calls that originate and terminate in the same LATA. The CTFP feature only applies restrictions to intraLATA toll calls. Also, if INTRATOLL calls are restricted, the restriction applies regardless that the calls are casual calls or not.

These types of calls are identified according to how the call was dialed and how the called digits are marked in tables LATAXLA and LCASCRN. There are three types of calls associated with intraLATA calls:

- **Standard:** The operating company has no special capabilities for completing the call. The call is routed by the primary intraLATA carrier (LPIC) specified on the end-user's line, or by casual dialing (101XXXX).
- **Privilege:** Privilege calls are interexchange calls dialed without a 101XXXX prefix or LPIC, and are completed by the operating company. An LPIC can be specified for these types of calls, but is not used.

  Calls datafilled as Privilege and dialed with a 101XXXX prefix are routed as Equal Access (EA) interexchange calls using the dialed IEC.
- **Non-Equal Access:** A non-EA call always completes through the operating company, even when the line originating the call has the LPIC option.

COIN: These DNs correspond to coin stations with a line class code (LCC) of CCF, CDF, CSP, CFD, ZMD, and ZMZPA. Only intraswitch calls that terminate at a coin station with any one of the aforementioned LCCs can be screened by the CTFP feature, regardless of whether the DN is local or long distance. The descriptions of these coin LCCs are found in Appendix C.

2: Functional description (FN)

2.1 Feature name

59011907 - Create Call Message Processing

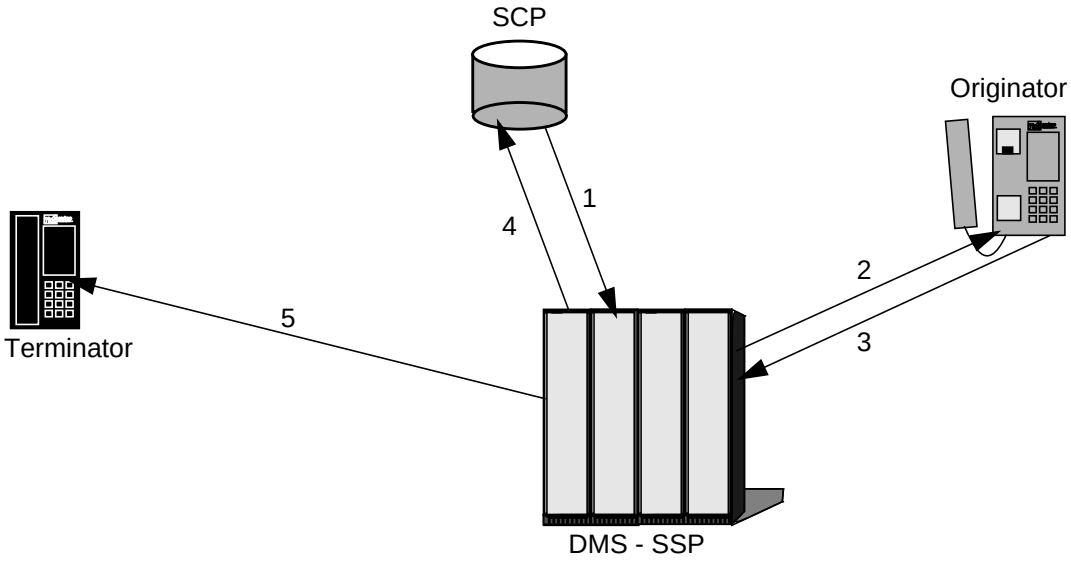
2.2 Description

AIN Create Call functionality allows the SCP to request on behalf of the originator to establish a call between the originating agent and the terminating agent. A Create Call Message is an SCP event message. It is an SCP Call Related Message sent to the SSP asynchronously, rather than in reply to a Switch Request Message.

Please refer to “AIN Create Call” on page 118. for a Create Call scenario:

1. The SCP sends the SSP a Create Call message, with no NEL component
2. The SSP provides notification (ringing) to the originator
3. The originator goes off hook
4. The SSP sends a Close message to the SCP
5. The SSP routes the call to the terminator, which may or may not reside on the same SSP

Figure 1 AIN Create Call



This activity implements the functionality to enable AIN to process the Create_Call message, which is an unsolicited, call-related message sent to the SSP asynchronously, rather than in reply to a switch request message. What stimulates the SCP to send the Create_Call message is not necessarily known to the SSP.

The AIN create call functionality allows the SCP to request the SSP to create a connection between a particular entity served by the SSP and a destination identified by a DN. The create call operation permits the SCP to initiate a call based on trigger independent service logic.

2.2.1 Create Call Initiation

The Create Call TCAP message in a query package can be received at any time from the SCP. A TCAP transaction is established between the SCP and the SSP. The Create Call message is not correlated with any other message. The message is parsed to ensure it does not contain any protocol errors.

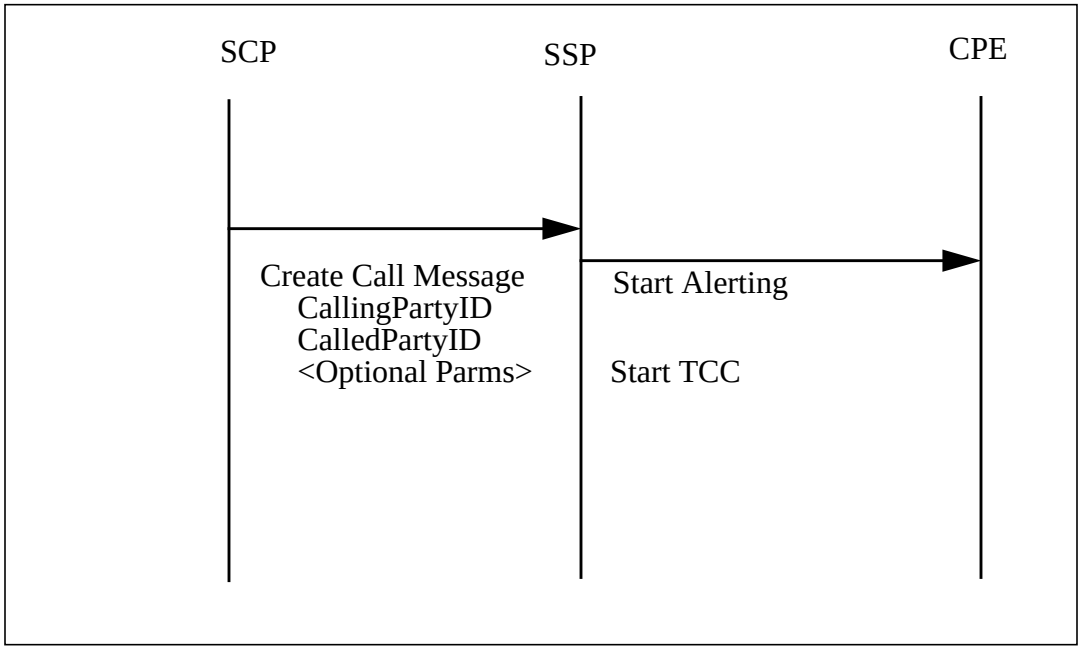
If the create call is requested for an analog calling party that is resident on the switch then the SSP will determine if the line is idle. If it is then it will start power ringing the calling party's equipment. At that time it will also start the Create Call timer (TCC). This timer is set to either the default value of 24 seconds (4 ring cycles) or to the value specified by the Notification Duration optional parameter if present. The Notification Duration Parameter can be set from 1 to 99 seconds.

If the Controlling Leg Treatment parameter is present then it will be used to determine the alerting pattern used to alert the user. Values of "on-hook TR-30 with wake-up indication" and "on-hook TR-30 without wake-up indication"

are not supported. If received they are discarded and the default alerting pattern 0 is applied.

During the notification of a user of a Create Call request, all AIN terminating triggers are ignored.

Figure 2 Analog Create Call User Notification



If the calling party is an NI-2 BRI interface then the SSP sends an ISDN NOTIFY message to alert the user of a create call request. This message will cause the set to start alerting the user of the Create Call request. To the set, this NOTIFY message is identical to the message it will receive during ACBAR when the user becomes idle. Please refer to “Figure 3 ISDN Create Call User Notification” on page 120

The NOTIFY message includes the following codings:

- Protocol discriminator = Q.931
- Call reference = Null
- Message type = NOTIFY
- Bearer capability = value received in Create Call message, if available, or a default value of 3.1 KHz. Only 3.1KHz and Speech are supported for a Create Call request.
- Notification indicator = “111 1000”

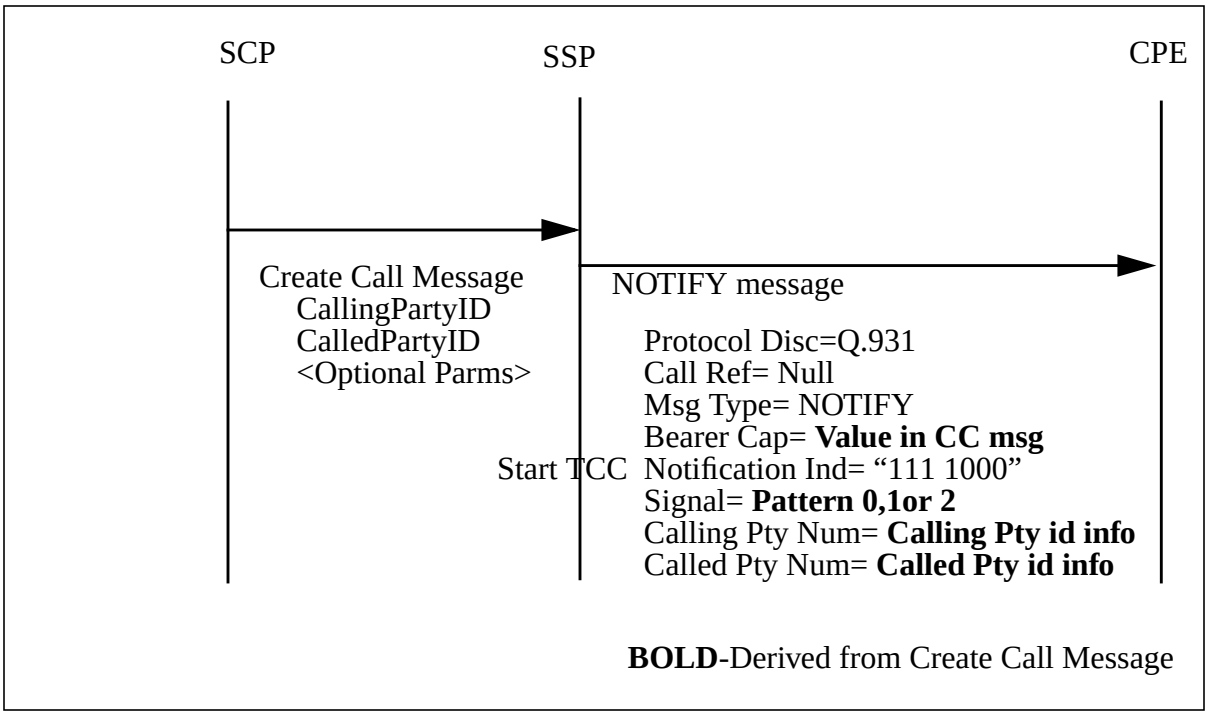
— Signal = pattern 0, pattern 1, or pattern 2, if available from the Create_Call message or a default value of pattern 0

— Calling party number = Calling party identification information from the Create_Call message

— Called party number = Called party identification information from the Create_Call message

The NOTIFY message is broadcast at layer 2 on the BRI.

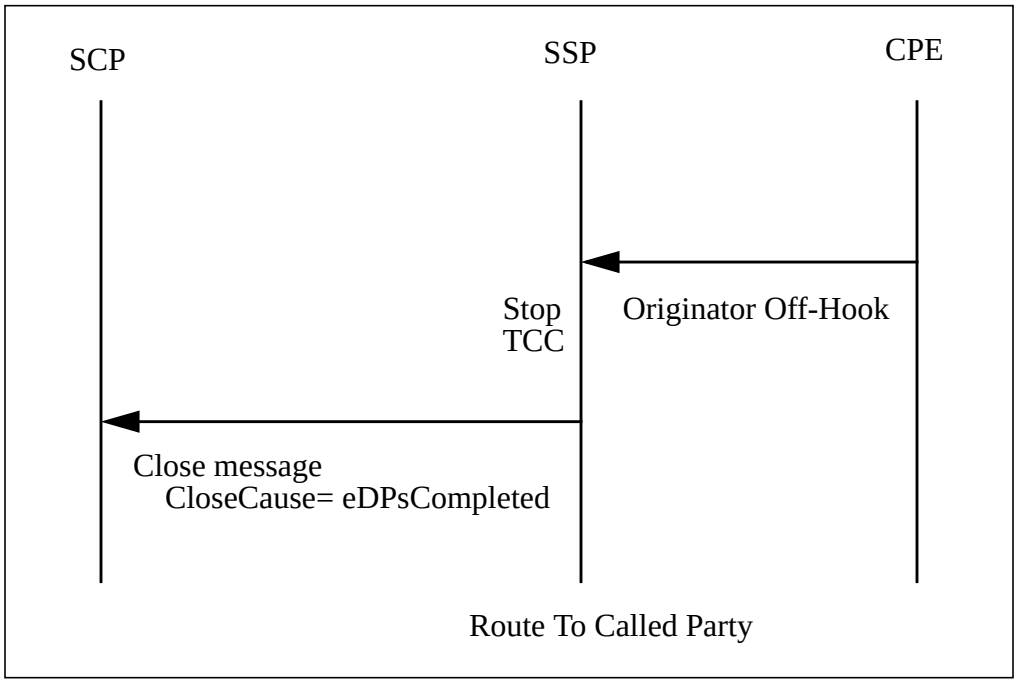
Figure 3 ISDN Create Call User Notification



2.2.2 Create Call Acceptance

A Create Call request is accepted by an analog user going off hook. It is rejected by the user not responding to the notification before the TCC timer expires. (For more information see "TCC Timeout" on page 127.) When the switch detects an off-hook, it sends a Close message to the SCP with a close cause of eDPsCompleted. It stops the TCC timer and routes the call to the Called Party ID.

Figure 4 Analog Off-Hook Message Flow



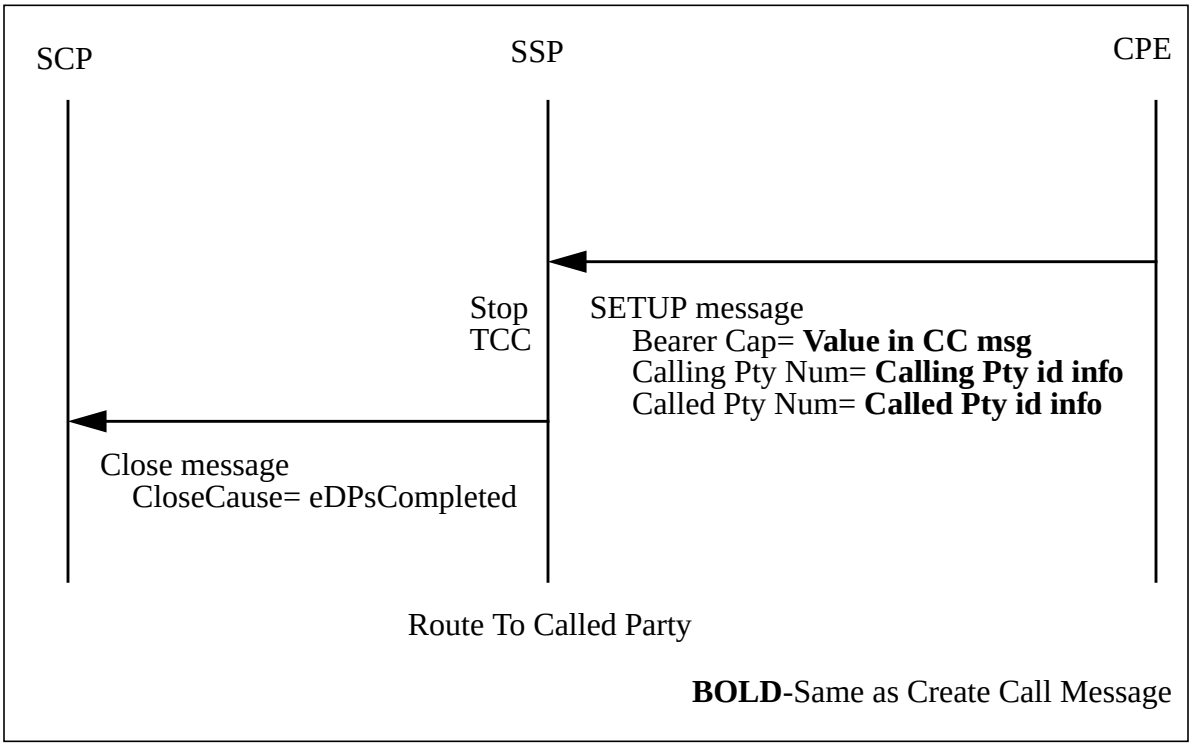
If the Calling Party ID is an ISDN BRI interface, then the user accepts the Create Call request by sending an ISDN SETUP message which contains no called information (bearer capability or Called Party ID) in conflict with the NOTIFY message. Any ISDN terminal on the BRI on which the NOTIFY was broadcast that is allowed to use the DN provided as the Calling Party Identification Information may respond to the create call request. The DN associated with the call request is determined by processing described in TR-TSY-00860 for calling numbers; that is the DN may be included in the SETUP message and is valid; or it can be a default value.

If the SETUP message contains called information (DN or bearer capability) that conflicts with the Create Call request, or processing of the calling number information in the SETUP message conflicts with the Create Call request or default calling number information conflicts with the Create Call request, then it is assumed to not be an acceptance of the Create Call request. Please refer to “2.2.7.9 Conflicting SETUP Message received in Response to Create Call Request” on page 142 for handling of this scenario.

Typically, the set will generate a SETUP message when the key that is lit for Create Call is hit. The user will not have to manually generate the SETUP message, it will be programmed into the set to respond correctly. However, note that this is terminal dependant, and outside the scope of this feature.

In addition, a user can override the acceptance of a Create Call request by entering digits and then sending them enblock to the SSP. This will not be treated as an acceptance, since the called number will be different from the one specified by the Create Call request.

Figure 5 ISDN Setup Message Flow



2.2.3 Routing to Called Party ID

Once the call has been accepted the call is routed to the Called Party ID. This is done by taking up call processing from the Analyze_Information PIC of the Originating BCM. No triggers prior to Analyze_Information PIC are processed in this call.

At this point, if the call is cleared from the Calling Party then normal user abandon procedures are followed,

If there is no carrier selection information included with the create call request then routing to the Called Party ID uses the carrier presubscription information associated with the Calling Party ID. When the CalledPartyID results in an interLATA call, the PIC is used as the carrier. When the call is intraLATA toll call then the LPIC is used. If carrier selection information is provided then routing is attempted via the primary carrier. If it cannot be used then the secondary and tertiary carriers will be tried in order, if they have been provided.

If the call fails to select a carrier, or is blocked by a feature then normal rejection treatment is applied.

Since Create Call routing is handled similarly to Analyze Route routing the following sections have been pulled from "AIN Service Implementation Guide, Nortel Networks" and updated for Create Call to illustrate how routing occurs.

To determine the carrier used to carry the call if no carrier is provided in the query please refer to “Table 1 Result carrier determination rules” for details.

Table 1 Result carrier determination rules

Nature of the response (INTER, INTRA, LOCAL) (Note 1)	User presubscription status (Y/N) (Note 2)		Result carriers
	LPIC	PIC	
LOCAL	X	X	None
INTER	X	X	Office default carrier
INTER	X	Y	User’s PIC
INTRA	Y	X	User’s LPIC
INTRA	N	X	RBOC
INTRA	X	X	RBOC default carrier
Note 1: INTER: INTERLATA calls, INTRA: INTRALATA calls.			
Note 2: Y: Option is subscribed, N: Option is not subscribed			
Note 3: X: Value is ignored			

There are many carrier and CDN combinations that may be received in a Create Call query. When routing on a carrier, a CDN, or a carrier with a CDN, the following routing characteristics may be used to route a call:

- CDN (nature of number in the Called PartyID) values can be either NA (national), IN (international), L (subscriber) and UNK (unknown). The default is UNK.
- OSA (operator service access) values can be PUBP (public principle, send call to operating company operator), or PUBA (public alternate, send call to an interexchange carrier operator), or NIL (the default).
- TNS (transit network selector) values can be either NA (national) or NIL (the default).
- When the DMS-100 switch has package NTX767 or NTX768, the bearer capability (BC) should also be considered.

Table 2 summarizes different carrier and CDN combinations and their corresponding routing characteristics that can be received in Create Call query.

Table 2 Carrier and Called Party Number combination, and the corresponding routing characteristics

Nature of number in CalledPartyID	Digits (CDN)	Carrier ID	CDN	OSA	TNS
Subscriber	7D	XXXX	L	NIL	NA
National number	10D	XXXX	NA	NIL	NA
International Number	7-15D	XXXX	IN	NIL	NA
No address present, operator requested	0D	XXXX	UNK	PUBA	NA
National number, operator requested	10D	XXXX	NA	PUBA	NA
International number, operator requested	7-15D	XXXX	IN	PUBA	NA
Subscriber	7D	Not Present	L	NIL	NIL
National number	10D	Not Present	NA	NIL	NIL
International number	7-15D	Not Present	IN	NIL	NIL
No address present, operator requested	0D	Not Present	UNK	PUBP	NIL
National number, operator requested	10D	Not Present	NA	PUBP	NIL
International number, operator requested	7-15D	Not Present	IN	PUBP	NIL
Carrier cut-through	Not present	XXXX	UNK	NIL	NA
Note 1: If one of the carrier parameters contains a LEC (identified by 110), the DMS translates as though the carrier were not present. Note 2: The last row of the table is allowed in an end office only.					

“Table 3 Digits used in translation” summarizes the digits used in translation for various carrier and Called Party Number combinations. Both simplified and non-simplified values are

shown. Once the call is in the POTS environment, the fields FROMDIGS and TODIGS in subtable STDPRT of table STDPRTCT must be set according to the digits in the translation.

Table 3 Digits used in translation

Nature of number in CalledPartyID	Digits (CDN)	Carrier ID	Digits used in translations for an end office (Unsimplified)	Digits used in translations for an end office (Simplified)
National number	10D	XXXX	101XXXX+(10)D	Please refer to “2.2.3.1 Simplified Translations for National Numbers”.
International number	7-15D	XXXX	101XXXX+(7-15)D	101XXXX+011+(7-15)D
No address present, operator requested	0D	XXXX	10XXXX0	101XXXX0
National number, operator requested	10D	XXXX	101XXXX0+(10)D	101XXXX+0+(10)D
International number, operator requested	7-15D	XXXX	101XXXX0+(7-15)D	101XXXX+01+(7-15)D
National number	10D	Not Present	(10)D	Please refer to “2.2.3.1 Simplified Translations for National Numbers”.
International number	7-15D	Not Present	(7-15)D	011+(7-15)D
No address present, operator requested	0D	Not Present	0	0
National number, operator requested	10D	Not Present	0+(10D)	0+(10D)
International number, operator requested	7-15D	Not Present	0+(7-15)D	01+(7-15)D
Carrier cut-through	Not present	XXXX	101XXXX	
Note: A national number is supported only if it is a 10-digit number, an N11 number, or a 950-XXXX number.				

2.2.3.1 Simplified Translations for National Numbers

For National Direct Dial (where CDN=NA & TNS=UNK & OSA=UNK) and National Carrier Direct Dial (where CDN=NA & TNS=NA & OSA=UNK) SCP responses, the conversion of the 10D number into a format for dialing is based on existing translation datafill in tables LCASCRCN and HNPACONT. The resulting digits are in 7D, 1+7D, 10D, or 1+10D format, being consistent with the originator’s dialing plan.

Note: When carrier ID is returned in the response, the carrier access digits 101XXXX are prefixed before the converted digits.

The National Number conversion process is based on the following logic:

1. Table HNPACONT datafill is used to determine when the 10D number should be converted to 7D or 10D. The conversion produces 7D (by removing the NPA) when one of the following conditions are met:

- Indexing HNPACODE with the 10D called number results in VCT HNPI.
- Originator's NPA is equal to the NPA of the 10D called number, and the HNPACODE subtable contains no entry for the NPA of the called number.

2. Table LCASCRCN datafill is used to determine when a call is local or toll.

- When NPA and NXX of the called number are found in LCASCRCN then the call is considered as local.
- When NPA is not found but the originator's NPA is equal to the called number's NPA, a a check is made to see when the called NXX is datafilled in subtable LCASCR. When it is found, then it is local. This is to handle the case where a 7D local dialling plan exists within a NPA, and the NPA is not datafilled in LCASCRCN.
- Otherwise, it is toll.

3. Using PFXFOR10 of table LCASCRCN and the local/toll result from step 2, the called number is modified as follows:

Table 4 summarizes the digits used in translation after conversion when the calling number is a public line and for calltypes where (CDN=NA) or (CDN=NA & TNS=NA).

Table 4 Translation digits after conversion

Digits after step 1	Local or Toll	PFX FOR10	Originator's NPA = Called NPA	Result when no Carrier ID is present	Result when XXXX Carrier ID is present
7D	Local	Y	Not Applicable	7D	101XXXX+(7)D
7D	Local	N	Not Applicable	7D	101XXXX+(7)D
7D	Toll	Y	Not Applicable	7D	101XXXX+(7)D
7D	Toll	N	Not Applicable	1+7D	101XXXX+1+(7)D
10D	Local	Y	N	1+10D	101XXXX+1+(10)D
10D	Local	Y	Y	7D	101XXXX+7D
10D	Local	N	Not Applicable	10D	101XXXX+(10)D
10D	Toll	Y	Not Applicable	1+10D	101XXXX+1+(10)D

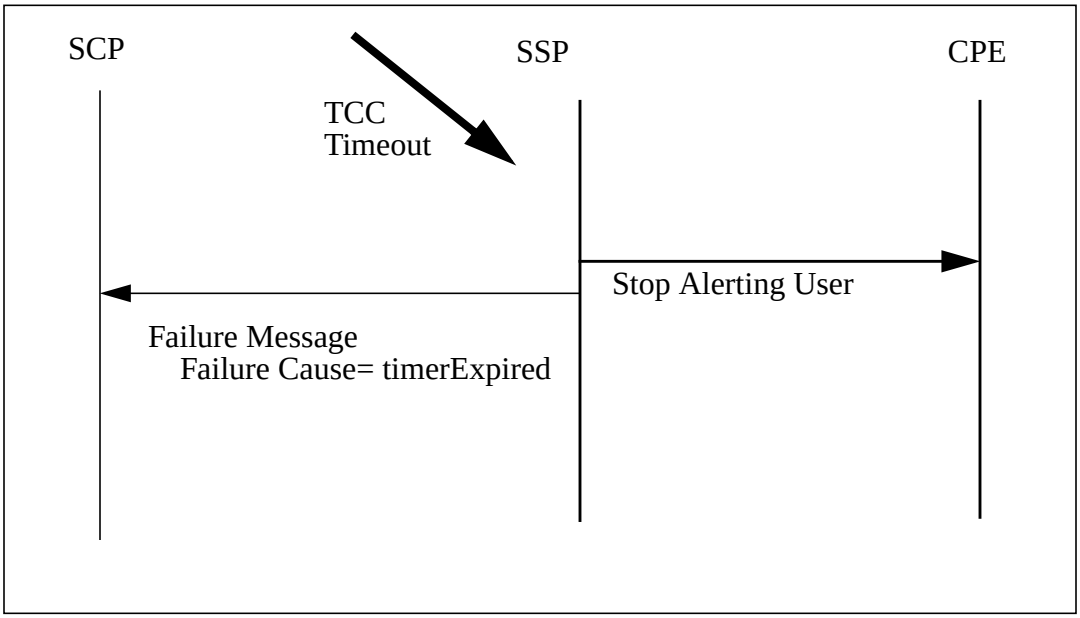
Table 4 Translation digits after conversion

Digits after step 1	Local or Toll	PFX FOR10	Originator's NPA = Called NPA	Result when no Carrier ID is present	Result when XXXX Carrier ID is present
10D	Toll	N	Not Applicable	1+10D	101XXXX+1+(10)D

2.2.4 TCC Timeout

When the Create Call Timer times out the create call request is no longer offered. The switch stops the alerting of the user and sends the SCP a Failure message with a failure cause of timerExpired. Any subsequent off-hooks (analog) or SETUP messages (ISDN) are treated as requests to originate a call, rather than an acceptance of a create call.

Figure 6 Analog Messaging for TCC Timeout



If the Calling party is an ISDN agent, then a NOTIFY as specified below is sent to stop the CPE from alerting the user. The same Failure message is returned to the SCP as in the analog case.

The NOTIFY message includes the following codings:

— Protocol discriminator = Q.931

— Call reference = Null

— Message type = NOTIFY

— Bearer capability = value received in Create_Call message, if available, or a default value of 3.1 KHz.

— Notification indicator = “111 0110”

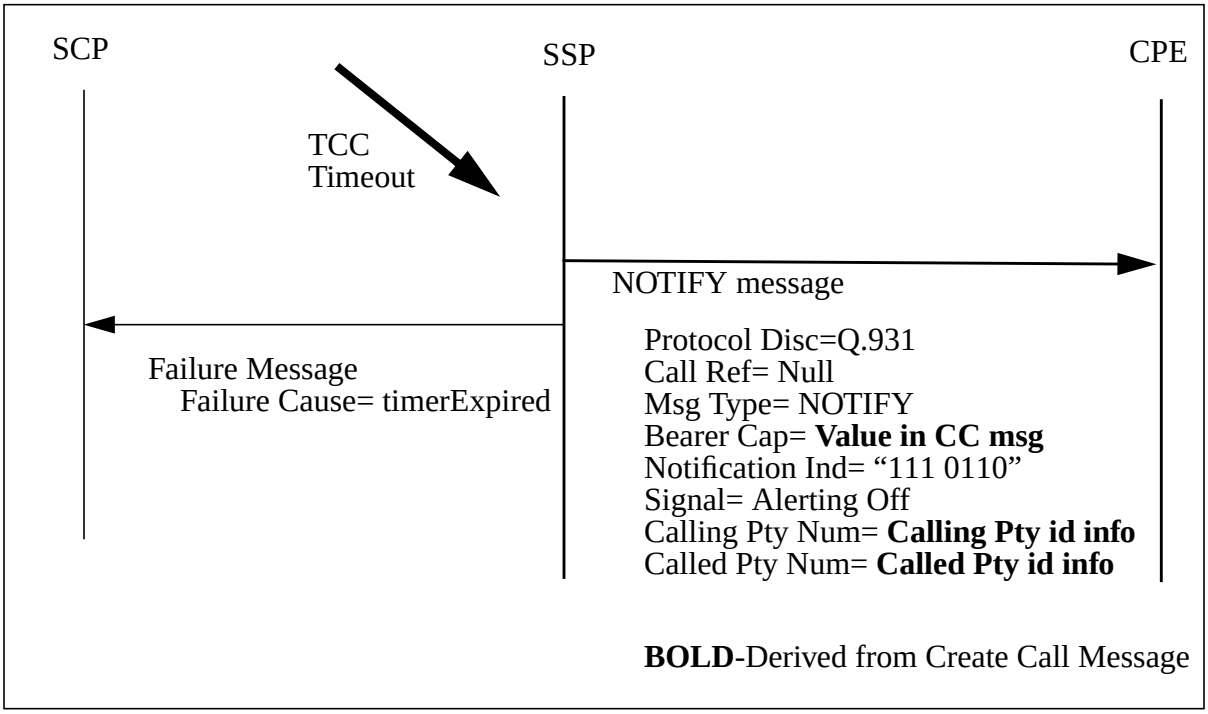
— Signal = alerting off

— Calling party number = Calling party identification information from the Create_Call message

— Called party number = Called party identification information from the Create_Call message

The NOTIFY message is broadcast at layer 2 on the BRI.

Figure 7 ISDN Messaging for TCC Timeout

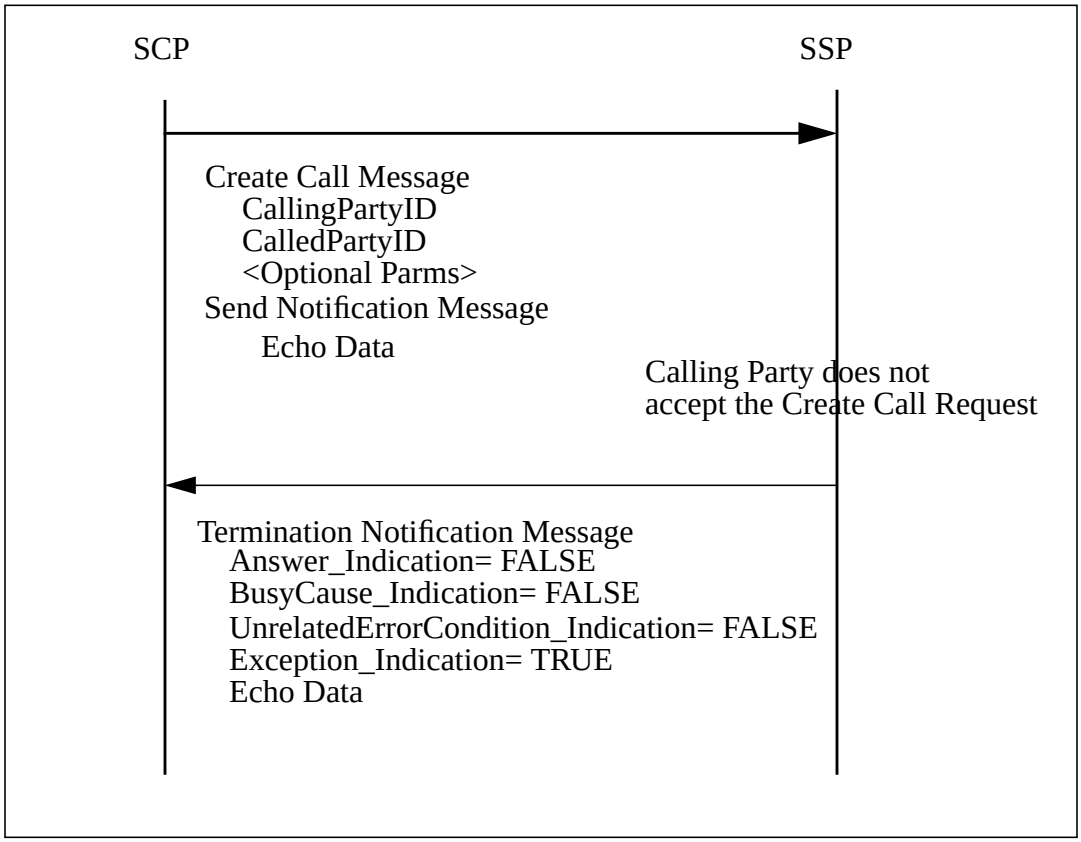


2.2.5 Send Notification/ Termination Notification Handling

If a Send Notification message is included with a Create Call message then the SSP will return a Termination Notification when the Call returns to the Null PIC. If the Create Call request is NOT accepted by the Calling Party ID, for any reason (invalid Create Call message, invalid Calling Party ID, Calling Party ID busy, TCC timeout or any other condition that results in the Calling

Party ID not accepting the call) then the SSP returns a Termination Notification message with the Exception_Indication flag set to TRUE.

Figure 8 Create Call Send Notification



If the Create Call request is accepted by the Calling Party then the Send Notification is processed in the same way as a Send Notification received with a response to a query. That is, the SSP returns a Termination_Notification message when the call is cleared. This is true even if the call is forwarded, transferred, or redirected. One and only one of Answer_Indication, BusyCause_Indication, UnrelatedErrorCondition_Indication, or Exception_Indication is set to TRUE based upon the final disposition of the call. Please refer to “Table 5 Conditions for Setting Termination Notification

Parameters” on page 130 for details of the determination of how the various TN parameters are set.

Table 5 Conditions for Setting Termination Notification Parameters

TN Parameter	Value
Busy Cause	Only included if BusyCause_Indication= TRUE Contains the following contents:[a] - Cause Value, indicating reason of a busy call - Cause Class, categorizing the cause values - General Location, indicating the call type - Coding Standard, populated as CCITT.
Connect Time	Same value as Elapsed Time in AMA record
Echo Data	EchoData received in Send_Notification
TerminationIndicator: Answer_Indication BusyCause_Indication UnrelatedErrorCondition_Indication Exception_Indication 	 TRUE if Called Party answers the call TRUE if - Routing to Called Party results in Network Busy - Routing to Called Party results in Busy Reported - Routing to Called Party results in Busy Event TRUE if - Condition resulting in AIN Final Treatment being applied - Serial Triggering Count Exceeded TRUE if - Calling Party does not accept the Create Call request - Calling Party accepts the call, but call is not answered and an Exit Event related to Incomplete Calls other than Network Busy, Busy Reported or Busy is detected

a. Please refer to “Population of BusyCause Parameter” on page 130 for full details

2.2.5.1 Population of BusyCause Parameter

The Busy cause values associated with the events “Busy”, “Busy Report” and “Network Busy” are categorized as follows:

Table 6 Busy Cause Values

Cause Value	Description
Destination Out of Order	Termination station does not exist or cannot be terminated due to a hardware problem
User Busy	Termination station is not in idle state.

Table 6 Busy Cause Values

Cause Value	Description
No Route To Destination	Network is unable to route a call forward with the requested destination.
No Circuit Available	All circuits tried are busy.
Caller Abandon[a]	User abandoned call after a query was sent, but before the SSP received a response and before the T1 timer expired.

a. Not applicable to Create Call

The population of the Busy Cause parameter:

- INTERSWITCH calls:
  - — if the SSP receives an SS7 Release message with an ISUP Cause Indicators parameter, the BusyCause parameter is populated with the contents of the ISUP Cause Indicators parameter.

For ISUP calls that do not generate SS7 release messages because treatment procedure selector at the terminating office for the call is LOCAL, no Busy Cause is populated at the originating office. Instead, an Exception Indication is set for the busy call. At the terminating office a Busy Cause Indication is still received.

For ISUP calls that generate SS7 release messages because treatment procedure selector at the terminating office for the call is NOLOCAL, the BusyCause indication is populated at the originating office for a busy call. Since a busy treatment does not apply at the terminating office, no BusyCause is populated. Instead, an Exception indication is set at the terminating office for the busy calls.

For calls that are successfully routed over PRI and PTS trunks but cannot complete at the terminating office, the BusyCause parameter is not populated at the originating office. An exception indication is set at the originating office for a busy call. At the terminating office, the BusyCause indication is supported.

- INTRAswitch call
  - — the BusyCause parameter is populated according to the procedures for the ISUP Cause Indicators parameter.

"DMS treatment to Cause Value Mapping" on page 132 illustrates the mapping of DMS treatment to BusyCause values for INTRAswitch busy calls.

Table 7 DMS treatment to Cause Value Mapping

DMS Treatment	Termination Notification Busy Cause Value	Termination Notification Busy Cause Class
TROUBLE_INTERCEPT (TRBL)	Destination Out of Service	Normal Event
BUSY_LINE (BUSY)	User Busy	Normal Event
VACANT_CODE (VACT)	No Route to Destination	Normal Event
NO_CRKT (NCRT) GENERALIZED_NO_CIRCUIT (GNCT)	No Circuit Available	Resource Unavailable

The General Location field in the BusyCause parameter is defined in "General Location in Busy Cause Parameter" on page 132.

Table 8 General Location in Busy Cause Parameter

Originating and Terminating Agents	Termination Notification General Location
Line to Line Call	User
Line to (Public, Private) Trunk Call	(Public, Private) network serving the local user
(Public, Private) Trunk to Line Call	User[a]
Trunk to (Public, Private) Trunk Call	(Public, Private) network serving the local user[b]

a. Not applicable to Create Call
b. Not applicable to Create Call

If the SSP receives multiple Send Notification requests for the same call, and each is received in a separate TCAP transaction then the SSP sends one Termination Notification message per request.

2.2.6 Create Call with ACG

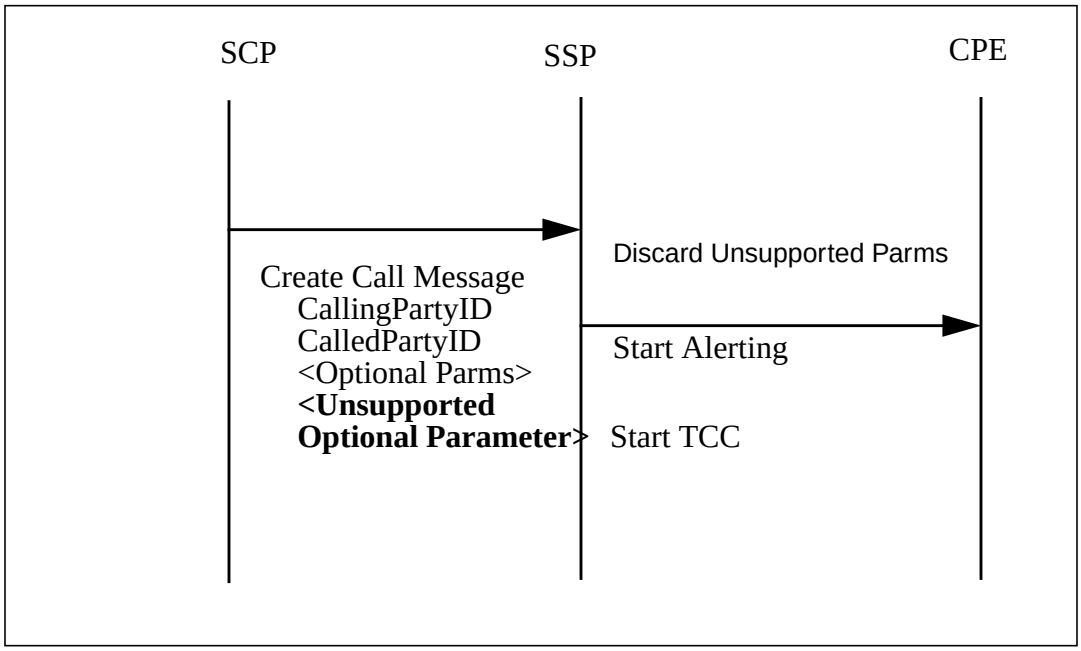
There is no change in the ACG functionality when it accompanies Create Call. It behaves the same way as an ACG message that accompanies any Call related AIN message.

2.2.7 Error Scenarios

Any failure to be reported to the SCP resulting from the Create Call message received in a query package is reported in a Response Package. A Return Error Component with an Error Code of Failure_Report is generated.

2.2.7.1 Create Call with Unsupported Parameters

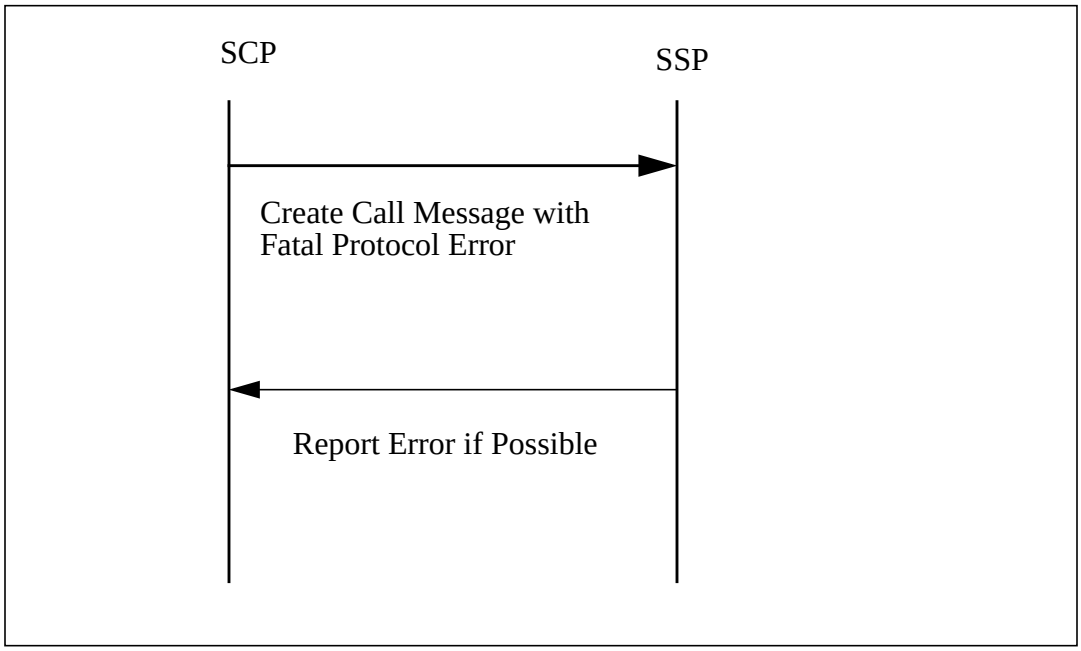
Figure 9 Create Call with Unsupported Parameters



If the SSP receives a create call query containing valid, but unsupported parameters then the SSP discards the unsupported parameters and continues processing the request. Please refer to “2.4.2 Parameter Support” on page 149 for full details on parameter support.

2.2.7.2 Create Call Message with Protocol Error

Figure 10 Create Call with Protocol Error



If a Create Call message contains a Protocol error, then it will be reported to the SCP if appropriate. No treatment is applied to any user, since there is no user at this time.

The following table lists protocol errors supported by AIN. The details of detection and causes of protocol errors are considered specific to the TCAP protocol and beyond the scope of this document. See Section 4 of GR-1299-CORE for more information on these errors. A list of protocol errors and their effect is shown in “Table 9 Protocol errors” on page 134.

Table 9 Protocol errors

Protocol error	Error type
Badly Structured Component Portion	fatal
Badly Structured Transaction Portion	fatal
Incorrect Component Portion	fatal
Incorrect Parameter	nonfatal
Incorrect Transaction Portion	fatal
Missing Mandatory Parameter	fatal (Note 1)

Table 9 Protocol errors

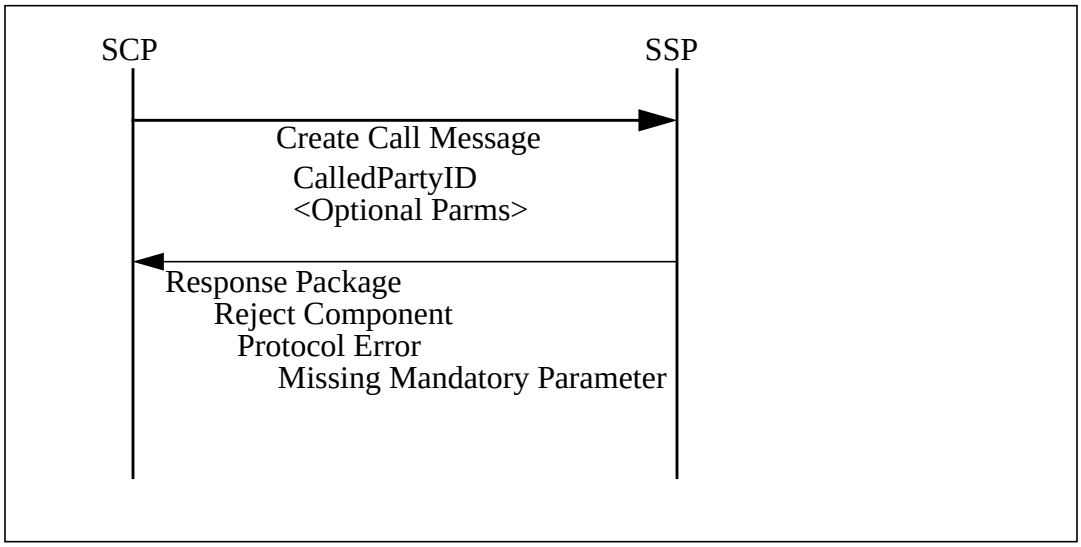
Protocol error	Error type
Underivable Transaction ID	fatal
Unrecognized Component Type	fatal
Unrecognized Correlation ID	fatal
Unrecognized Operation Code	fatal
Unrecognized Package Type	fatal
Unrecognized Transaction ID	fatal
Note 1: When a missing mandatory parameter fatal protocol error is detected by the SSP, the SSP maps it to incorrect parameter and reports the error as a fatal protocol incorrect parameter error. Note 2: Shading indicates areas which are not supported.	

When a fatal protocol error is detected anywhere in a received message, the SSP discards the entire received message. Note that AIN final treatment is not applied in a Fatal Protocol Error in a Create Call message, since there is no user to which the treatment can be applied. The SSP reports the error to the off-board processor since it was received in a Query package. The error is reported to the off-board processor in an Abort package if the fatal protocol error is detected in the transaction portion of the message, or in a Response package if the fatal protocol error is detected in the component portion of the message.

When a nonfatal protocol (incorrect parameter) error is detected by the SSP, the SSP discards the incorrect optional parameter and continue normal call processing.

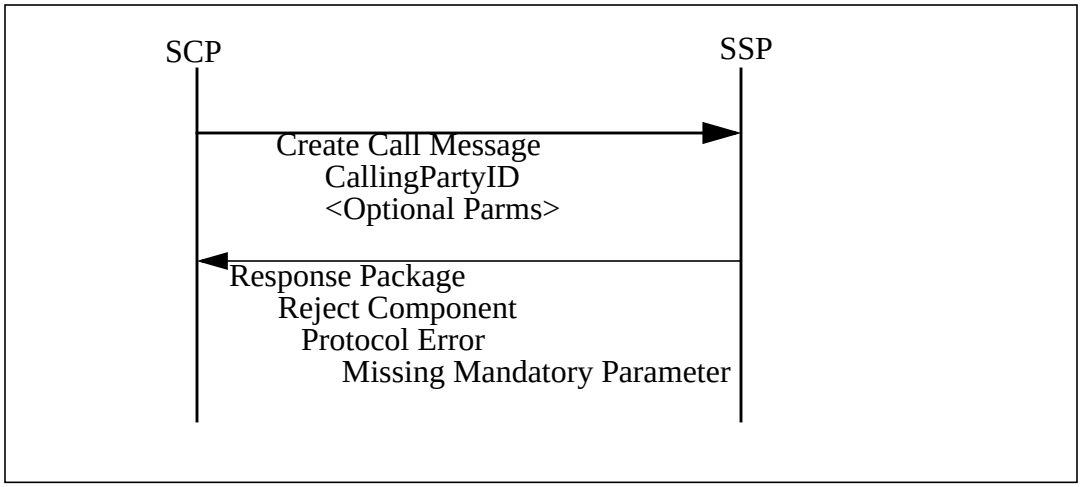
2.2.7.3 Create Call Message with Missing Mandatory Parameter

Figure 11 Create Call with No Calling Party ID



If a Create Call message contains no Calling Party ID, then it will be reported to the SCP as a fatal Protocol Error - Missing Mandatory Parameter via a Response Package with a Reject Component. No treatment is applied to any user, since there is no user at this time. Refer to “2.2.7.2 Create Call Message with Protocol Error” on page 134 for more details on protocol errors.

Figure 12 Create Call with No Called Party ID

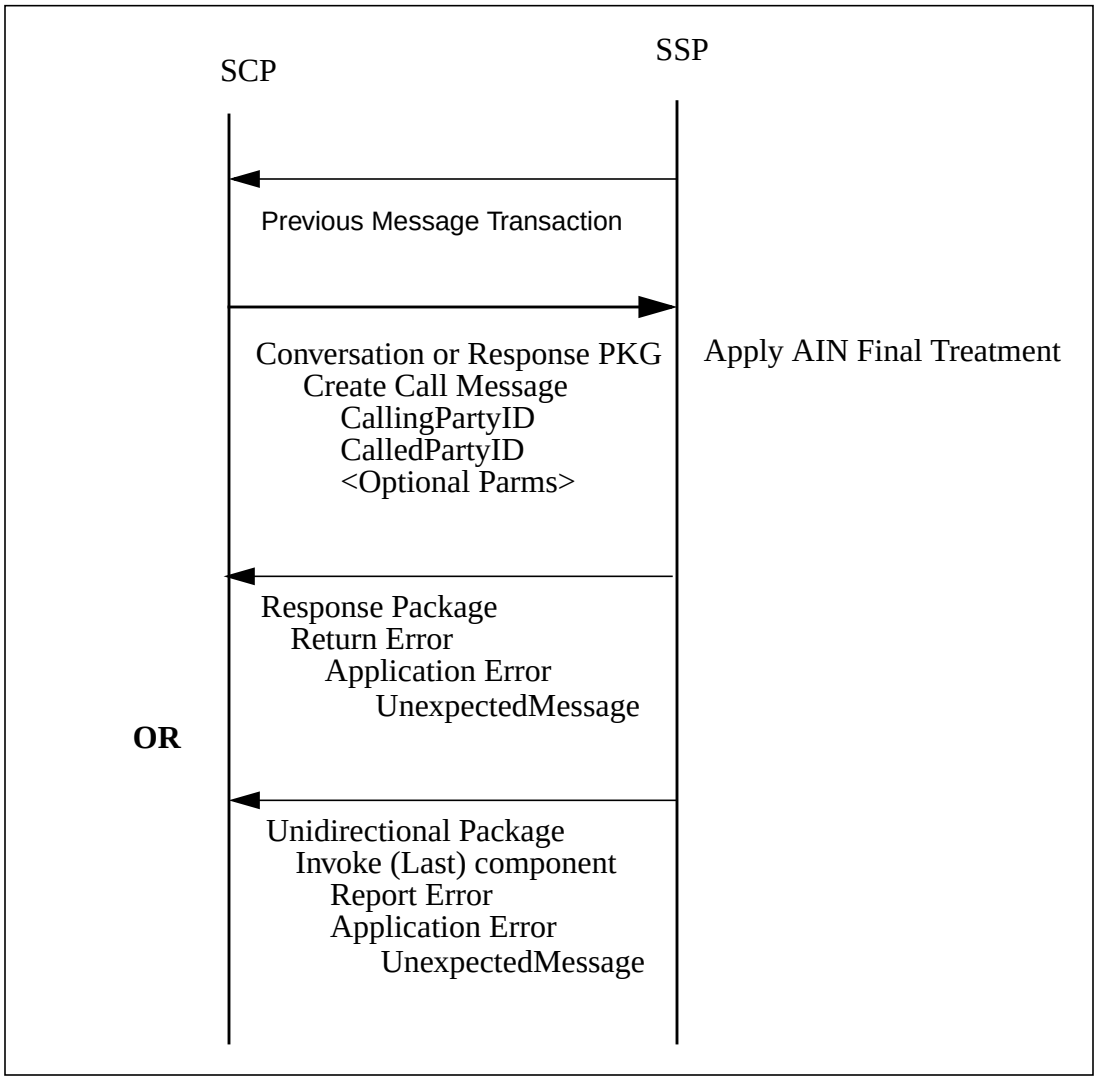


If a Create Call message contains no Called Party ID, then it will be reported to the SCP as a fatal Protocol Error - Missing Mandatory Parameter via a

Response Package with a Reject Component. No treatment is applied to any user, since there is no user at this time.

2.2.7.4 Create Call Received in Conversation or Response Package

Figure 13 Create Call Received in Conversation on Response Package

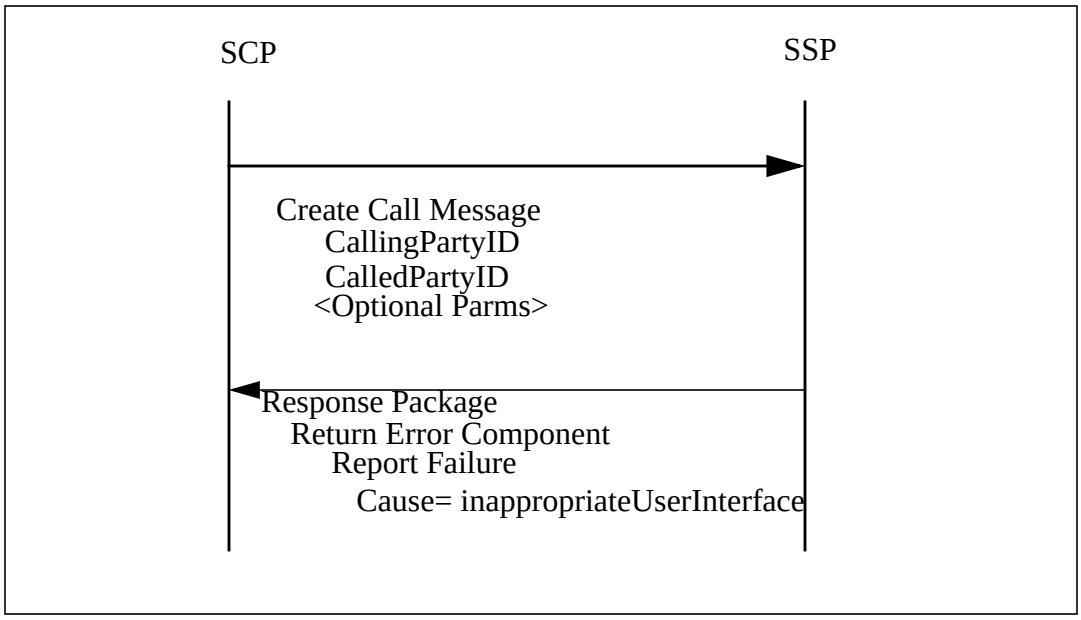


If a Create Call message is received in a Conversation or Response package in response to a previous query then the SSP treats this as a Fatal Application Error. A fatal application Error message with cause value UnexpectedMessage is returned to the SCP and the call from which the transaction was launched is sent to AIN final treatment.If the TCAP transaction is open then the error is reported in a Response package with a Return Error component. If the TCAP

transaction is closed, the fatal application error is reported in a Unidirectional package with an Invoke (Last) component and a Report Error operation code

2.2.7.5 Create Call Message with Invalid Calling Party ID

Figure 14 Create Call with Invalid Calling Party ID

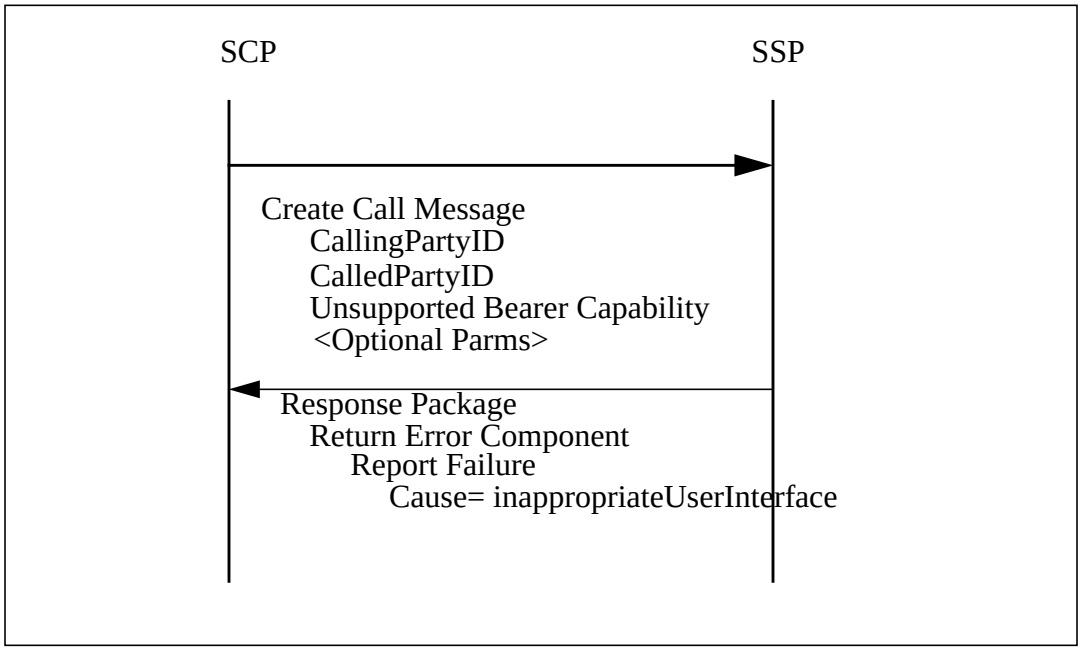


If a Create Call message contains a Calling Party ID that is not served by the SSP or is of an agent type that does not support Create Call, then it will be reported to the SCP via a Failure Message with FailureCause set to inappropriateUserInterface. No treatment is applied to any user, since there is no user at this time. For more details on agent support please refer to “Agent Support for Create Call” on page 146.

If the UserIdentificiationID is an unsupported value (that is, any value other than DN) then this failure message will also be returned.

2.2.7.6 Create Call Message with Incompatible Interface Characteristics or User Identification Information

Figure 15 Create Call with Incompatible Interface Characteristics

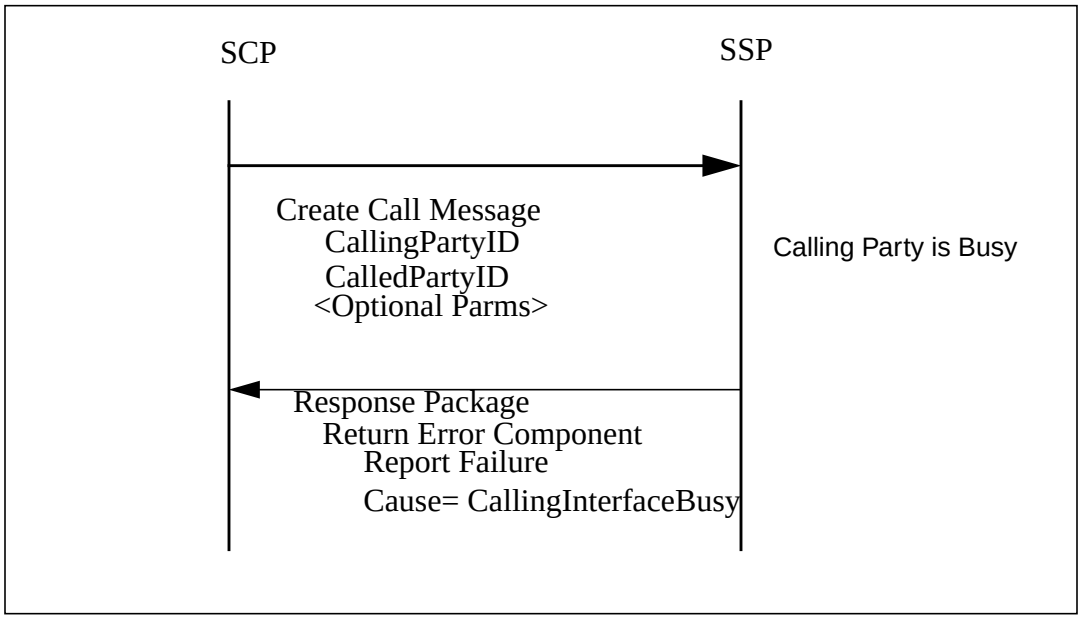


If a Create Call message contains characteristics incompatible with the interface, that is a bearer capability that is not supported by the Calling Party ID , or the SCP provided Bearer Capability is of value other than “speech” or “3.1 kHz audio”, then a Failure message with failureCause= inappropriateUserInterface is sent to the SCP. No treatment is applied to any user, since there is no user at this time. Incase of bearer capability values not supported by AIN (f7Khz, multiRate and packetModeData) an applicationError message with applicationErrorString encoded to ‘erronoeusDataValue’ is returned. This is consistent with the usual AIN behaviour for AIN-unsupported values of bearer capability.

If the UserIdentification Information is set to “DN” and the CallingPartyID is associated with an ISDN EKTS then this handling will also apply.

2.2.7.7 Create Call Calling Party Busy

Figure 16 Create Call with Busy Calling Party ID



When the Create Call message is received for a valid Calling Party ID we must determine if the line is busy. An analog line is considered busy if:

- End user is Off-Hook; either involved in a call or originating a call
- End user is being alerted to a terminating call
- End User is being rung-back after disconnecting with a call on hold, or by an operator, attendant or 911 system
- End user is being notified of an earlier Create Call request
- A feature is running which causes the line to be considered busy

  Please refer to “2.5.2.11 Features Treated as Interface Busy” on page 161 for more details on features and their influence on the busy status of a line.

An ISDN line is considered busy if

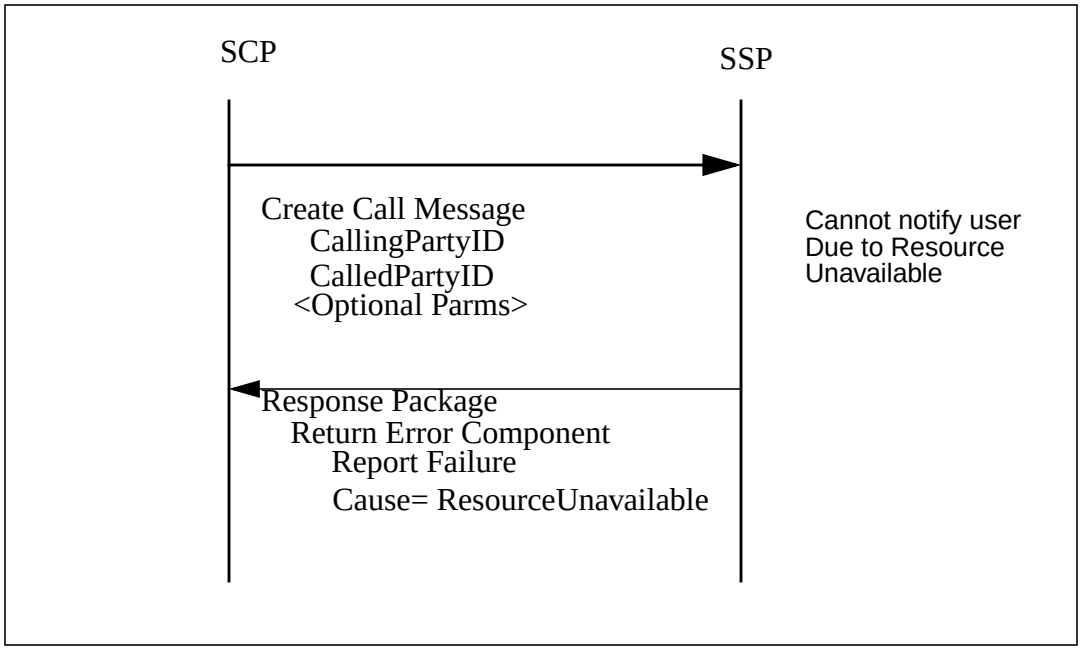
- Interface Busy
- Call reference Busy
- End user being notified under a switch based monitoring feature (for example. ACBAR)
- End user being notified of an earlier Create Call request
- A feature is running which causes the ISDN line to be considered busy

Please refer to “2.5.2.11 Features Treated as Interface Busy” on page 161 for more details on features and their influence on the busy status of an ISDN line.

If the line is determined to be busy then create call request will be rejected by sending the SCP a Failure message with FailureCause= CallingInterfaceBusy.

2.2.7.8 Create Call with Network Resource Unavailable

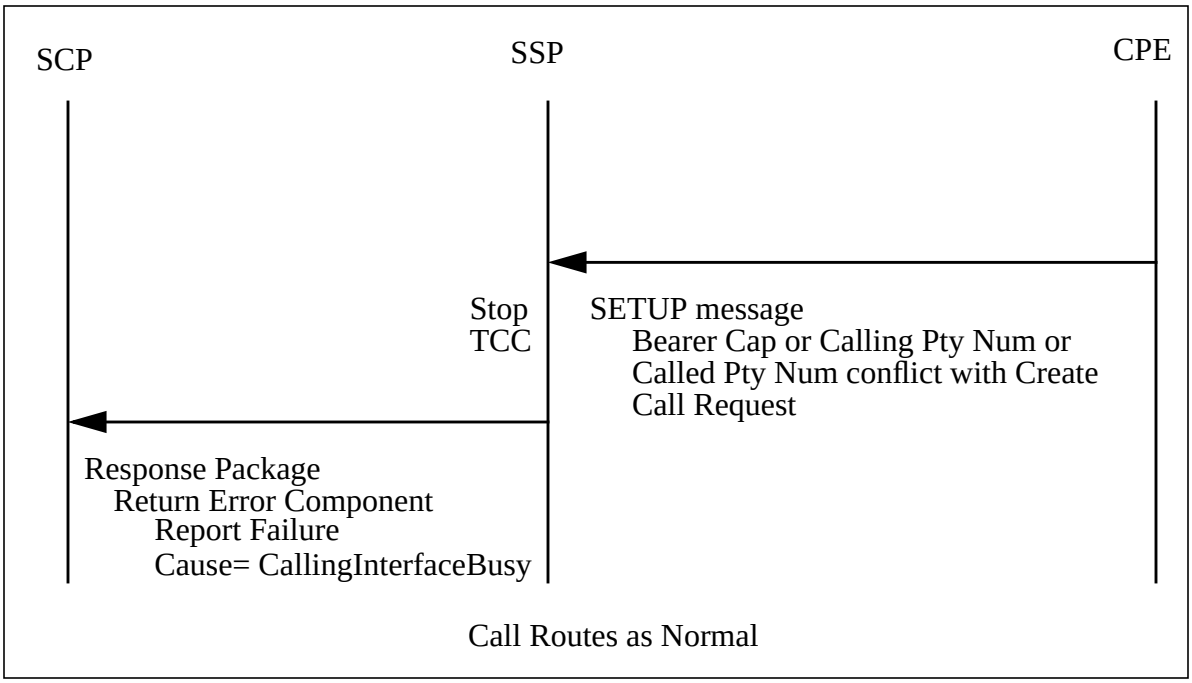
Figure 17 Create Call with Network Resource Unavailable



If a Create Call cannot proceed due to some network resource being available then the SCP is notified via a Failure Message with Failure Cause set to Resource Unavailable.

2.2.7.9 Conflicting SETUP Message received in Response to Create Call Request

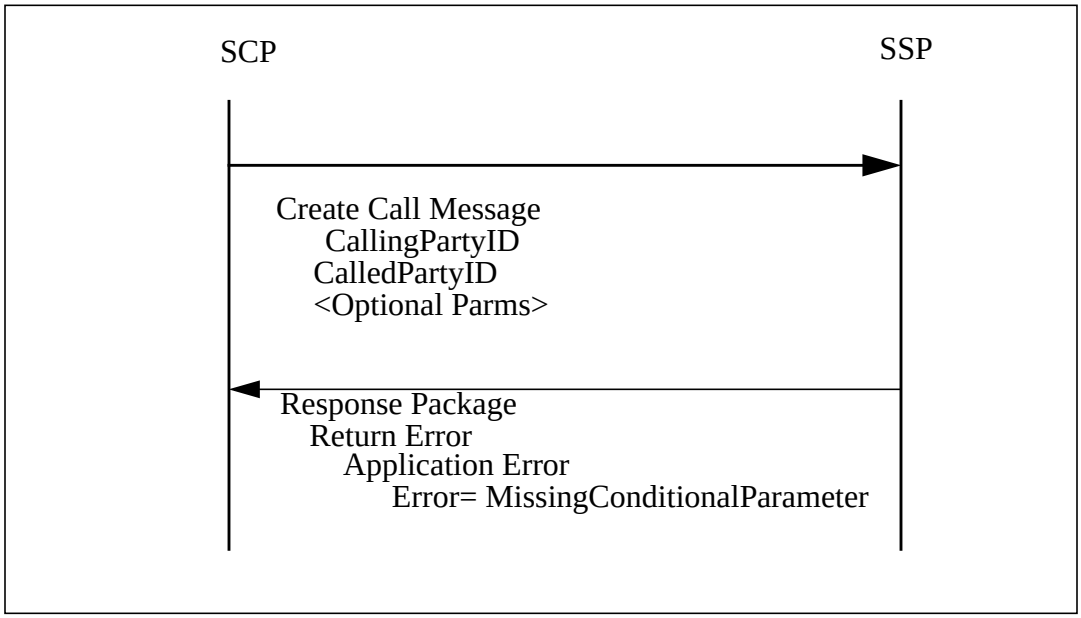
Figure 18 Conflicting SETUP Message received in Response to Create Call Request



If, while a Create Call request is outstanding on an ISDN BRI line, a SETUP message is received that conflicts with the original NOTIFY sent for Create Call then the Create Call Request is terminated. This is done by stopping the TCC timer and sending a Failure Message to the SCP with a cause value of.CallingInterfaceBusy. The SETUP routes as though no create call request was active. This includes any subsequent AIN triggering.

2.2.7.10 Create Call Message with Fatal Missing Conditional Parameter

Figure 19 Create Call with Fatal Missing Conditional Parameter



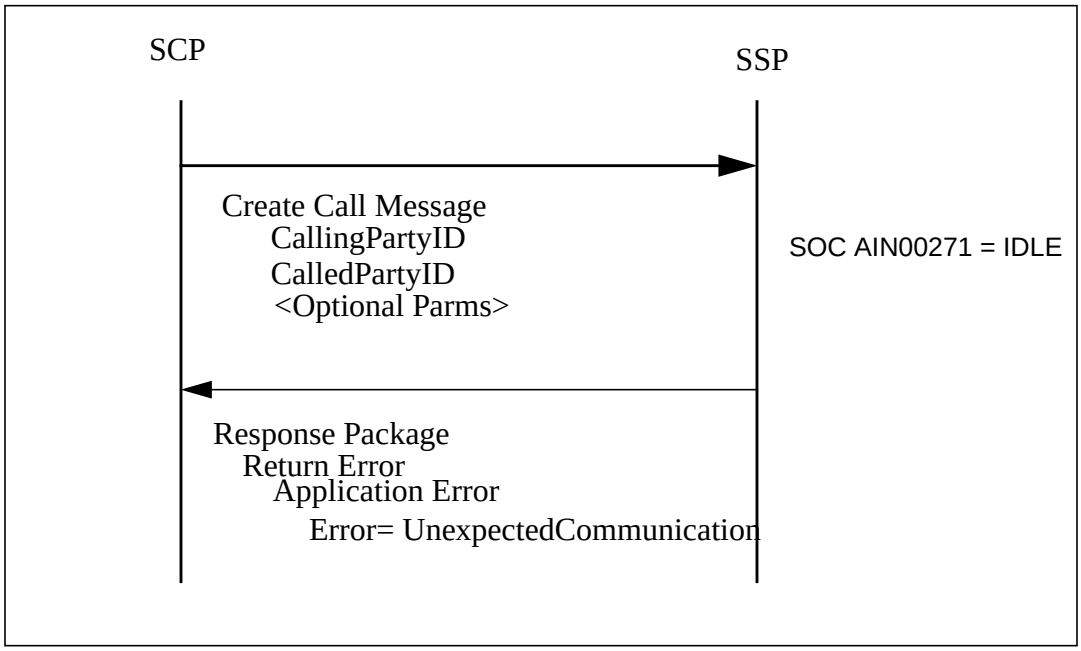
If a Create Call message is determined to be missing an Optional Parameter which is required then it is reported to the SCP as a fatal Application Error with application Error set to MissingConditionalParameter. No treatment is applied to any user, since there is no user at this time.

Cases of fatal Missing Condition parameter include

- the CalledPartyID contains 0 digits and the Nature of number field is set to “no address present, operator requested” and there is no Carrier parameter
- the CalledPartyID contains 0 digits and the Nature of number field is set to “no address present, Carrier Cut Through” and there is no Carrier parameter
- the CalledPartyID contains 0 digits and the Nature of number field is set to “no address present, Carrier Cut Through” and the Carrier parameter does not indicate XXXX (that is, 110 instead)

2.2.7.11 Create Call when SOC AIN00271 is IDLE

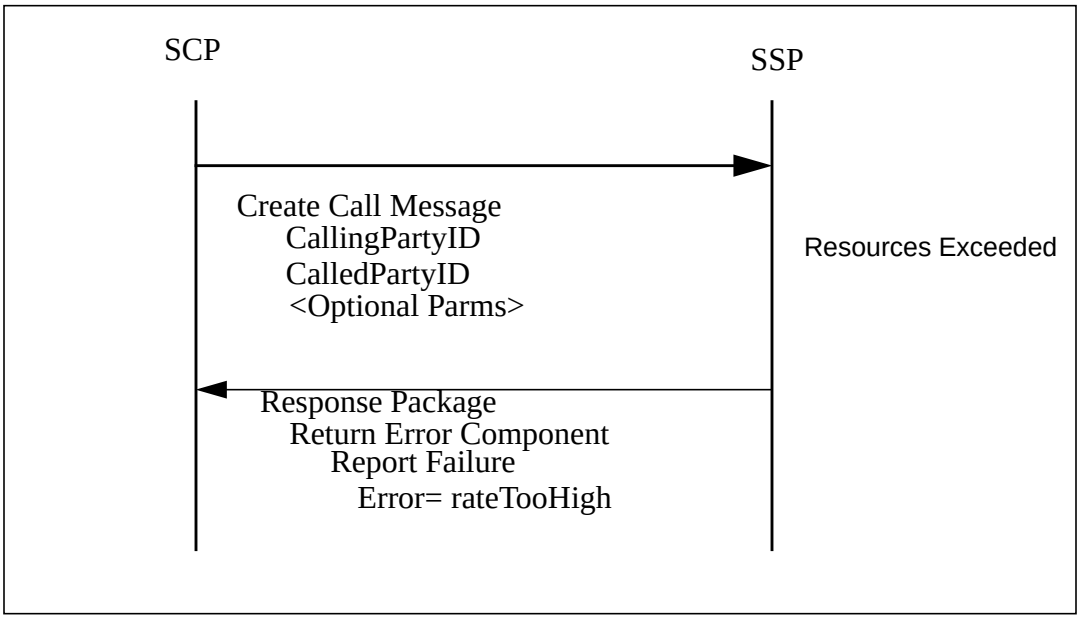
Figure 20 Create Call when SOC AIN00271 is IDLE



If a Create Call message is received when the SOC Option AIN0027 is IDLE then an Application Error with Error Cause set to Unexpected Communication is sent to the SCP. No treatment is applied to any user, since there is no user at this time.

2.2.7.12 Create Call Rate Too High

Figure 21 Create Call when Rate is Too High



If too many Create Call messages are received and the SSP cannot process them all, then it will return a Failure message with a failure cause set to rate Too High to the SCP. No treatment is applied to any user, since there is no user at this time.

2.2.7.13 Create Call during ONP/Restarts

Only Stable calls established using Create Call survive an ONP and restarts (warm,cold and reload) . Any Create call messages which arrive during the blackout period of the ONP shall be lost. This is consistent with the behaviour with other AIN messages.

2.3 Hardware requirements

No new hardware requirements are introduced by this feature.

2.4 Limitations and restrictions

This activity will implement the AIN Create Call functionality with the following limitations:

- The RRBCME message is not processed when it accompanies the create call message.
- No support for User ID info=”ISDN Info” or “ADSI CPE ID” is provided

- If the SETUP message conflicts with the information provided in the Create Call message, a Failure message with Failure Cause = CallingInterfaceBusy is sent the SCP to close the transaction
- Controlling Leg Treatment values of “on-hook TR-30 with wake-up indication” and “on-hook TR-30 without wake-up indication” are not supported.
- ADSI Service as specified by User ID info= “ADSI CPE ID” is not supported, however an ADSI terminal is supported as an Analog line agent.

2.4.1 Agent Support for Create Call

The Calling Number in a Create Call message must be a local line agent. This is by definition of the Create Call Message. Only agents supported by AIN may be the Calling Number. The following additional restrictions are placed upon which line agents are supported as Create Call Originators:

- ISDN PRI agents are not supported (PRI is considered to be a trunk)
- ISDN BRI agents are only supported for NI2 BRI and above
- Coin lines are not supported
- Attendant Consoles are not supported
- Virtual Agents are not supported.
- ADSI terminals are supported as an analog agent
- Party lines are not supported.
- Hunt group members are supported, but no hunting is done.

The following tables are the list of supported line agents for AIN. The level of support for each agent to be the calling party for Create Call is illustrated in the following tables.

Table 10 POTS support

Type	Line Class Code	Create Call
Basic	1FR	S
	1MR	S
PBX	PBX	S
	PBM	S

Table 10 POTS support

Type	Line Class Code	Create Call
Coin	CCF	N/S
	CDF	N/S
	CFD	N/S
	CSP	N/S
	ZMD	N/S
	ZMZPA	N/S
WATS	2WW	S
	EOW	S
	ETW	S
	INW	S
	OWT	S
Party	2FR	N/S
	4FR	N/S
	8FR	N/S
	10FR	N/S
Legend: N/S - not supported P - partially supported S - supported		

Table 11 RES support

Type	Line Class Code	Create Call
Basic	1FR	S
	1MR	S

Table 11 RES support

Type	Line Class Code	Create Call
Coin	CCF	N/S
	CDF	N/S
	CFD	N/S
	CSP	N/S
	ZMD	N/S
	ZMZPA	N/S
WATS	2WW	S
	EOW	S
	ETW	S
	INW	S
	OWT	S
Legend: N/S - not supported P - partially supported S - supported		

Table 12 IBN line support

Type	Line Class Code	Create Call
Basic	IBN	S
	M5009	S
	M5112	S
	M5209	S
	M5212	S
	M5312	S
	PSET	S

Table 12 IBN line support

Type	Line Class Code	Create Call
Other	DATA	N/S
	DISA	N/S
	PDATA	N/S
	VLN (for RCF)	N/S
	ISDNKSET-MFT	S
	ISDNKSET-BRI	P - Only NI2 and above is supported
	AC	N/S
Legend: N/S - not supported P - partially supported S - supported		

Table 13 DN Line support

Type	Class	Create Call
DISA	IBN	N/S
AIN VDN	IBN	N/S
	NONIBN	N/S
Legend: N/S - not supported P - partially supported S - supported		

2.4.2 Parameter Support

The following table lists all possible parameters for a create call message. Those parameters in **bold** are mandatory parameters. All others are optional.

The support for the optional parameters in this release are indicated in the table.

Table 14 Create_Call Parameter Support

Parameters supported by Create_Call Message(Bellcore)	Parameter supported by Create_Call Message (DMS) in NA13
CalledPartyId	Y
CallingPartyID	Y
ChargeNumber	Y
ChargePartyStationType	Y
Carrier	Y
AlternateCarrier	Y
SecondAlternateCarrier	Y
PassiveLegTreatment	Y
GenericAddressList	Y
CallingPartyBGID	Y
ForwardCallIndicator	Y
ServiceProviderID	N
ServiceContext	N
CarrierUsage	N
ControllingLegTreatment	Y
UserID	Y
BearerCapability	Y[a]
VerticalServiceCode	N
AccessCode	N
DisplayText	N
NotificationDuration	Y

Table 14 Create_Call Parameter Support

Parameters supported by Create_Call Message(Bellcore)	Parameter supported by Create_Call Message (DMS) in NA13
WakeUpDuration	N
OSIIndicator	N
PrimaryBillingIndicator	Y
OverflowBillingIndcator	Y
AMAAlernateBillingNumber	Y
AMABusinessCustomerID	Y
AMALineNumber	Y
AMAslpID	Y
AMAServiceProviderID	N
Amp1	N
Amp2	N
ExtensionParameter	N
Prefix	Y
GenericDigitsList	N

a. Bearer Capability of Speech and 3.1KHz only are supported for Create Call

When the SSP receives one of these unsupported parameters, they are discarded and call processing continues.

2.5 Interactions

Interactions between the AIN Create Call feature and existing features can be classified into the followings:

- Interactions with AIN triggers
- Feature interactions with the originator
- Feature interactions with the called party

2.5.1 Interactions with AIN Triggers

AIN triggers may encounter when trying to alert the originator, when the originator accepts the Create Call request by going offhook and when routing to the destination.

2.5.1.1 Alerting the Originator

When alerting the originator for a Create Call request, all AIN triggers encountered (e.g., terminating triggers like TAT, T_No_Answer and T_Called_Party_Busy triggers) are ignored and queries to the SCP are not sent.

2.5.1.2 Originator Goes Offhook

When the originator accepts the Create Call request by going offhook, any AIN triggers encountered at the Orig_Attempt TDP and Info_Collected TDP are ignored and queries to the SCP are not sent.

2.5.1.3 Routing to the Destination

After the originator accepts the call, the SSP attempts to route the call to the called party of the Create Call message. During the routing phase, any triggers that may occur result in queries to be sent to the SCP. This behaves the same as if the Called Party ID has been returned from the SCP in an Analyze Route message.

- After the originator goes offhook, the SSP starts to establish the call by taking up call processing within the Analyze_Information PIC of the Originating BCM. The SSP does not check for triggers at any TDP that precedes the Analyze_Information PIC.
- When the SSP encounters a Info_Analyzed trigger (such as LNP), the SSP shall send an Info_Analyzed TDP-Request message to the SCP.
- When the SSP encounters an AFR trigger, the SSP shall send a Network_Busy message to the SCP/Adjunct.
- When the SSP encounters an O_No_Answer or O_Called_Party_Busy trigger, the SSP shall send a query to the SCP.
- When the SSP encounters a Termination_Attempt trigger, the SSP shall send a Termination_Attempt TDP-Request message to the SCP.
- The SSP shall encounter the One_Plus_Prefix trigger when the Prefix parameter comes with a Create Call message.
- The SSP shall encounter the International trigger when the Nature of Number field of the CalledPartyID parameter of the Create Call message is “international number” or “international, operator requested.”
- The SSP shall encounter the Operator_Services trigger when the Nature of Number field of the Called Party ID parm of the Create Call message is “subscriber, operator requested”; “national, operator requested”; “no address present, operator requested”, or “international, operator requested.

- While processing the Create Call message, the Specified_Carrier trigger shall not be encountered based on the Carrier Format field of the Carrier parameter in the Create Call message.

2.5.2 Feature Interactions with the Originator

2.5.2.1 Originating Restriction Features

When the originator has one of the following call originating restrictions, the Create Call request is rejected by sending the SCP a Failure message with failureCause=inappropriateCallingInterface:

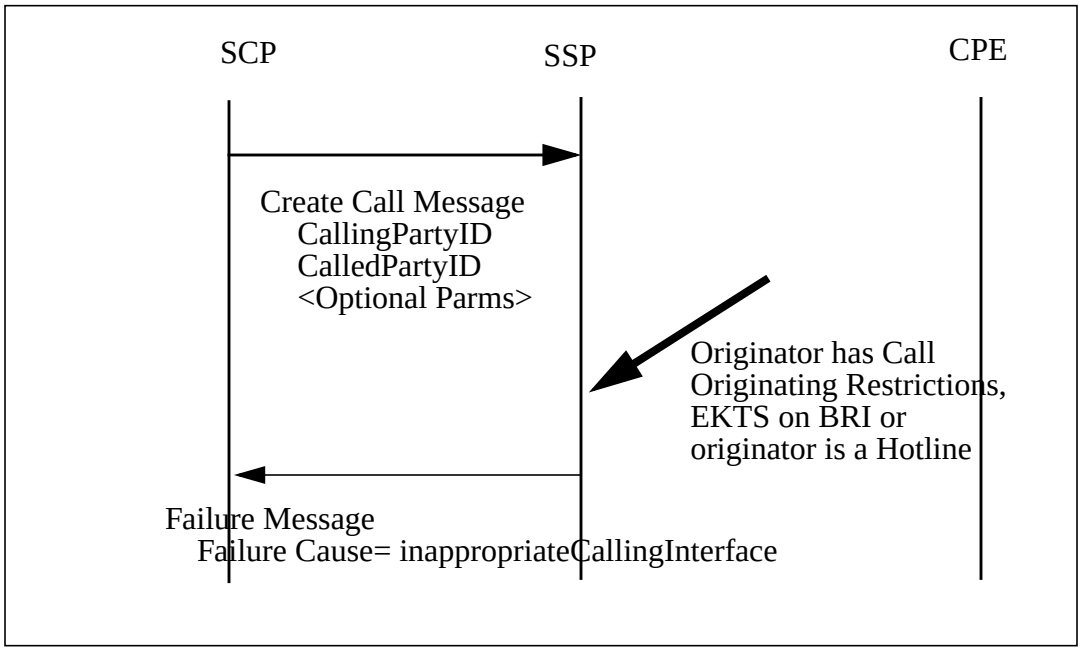
- DOR (denied Origination)
- SUS/RSUS (suspended/requested suspension)

In addition to the above originating restriction features, the following originators also result in failing the Create Call request (a Failure message with failureCause=inappropriateCallingInterface is sent to the SCP):

- Hotline Features AUL (automatic line), and MAN (Manual Line)
- EKTS on BRI
- A line with the ESL (Emergency Service Line) option
- one of the following MADN groups:
  - MADN SCA (Single Call Arrangement)
  - MADN MCA (Multiple Call Arrangement)
  - MADN EXB (Extension Bridge)
  - MADN CACH
- ACD
- UCD
- MeetMe Conference
- Non Resident DN
- A line with BC (Bearer Capability) option with values other than SPEECH or 3_1KHZ.

Please refer to “Figure 22 Originating Restriction Features Result in Failing Create Call Request” on page 154

Figure 22 Originating Restriction Features Result in Failing Create Call Request



2.5.2.2 Account Codes

Attempt to activate Account Codes (First or Last flavours) features prior to Called Party answers are denied. That is, if a Create Call is requested to originate from a line that requires Account Code, the Account Code is bypassed and the call is routed to the Called Party without the input of the Account Code.

The Account Code Voluntary feature shall be permitted to activate after flashing during an active call established through the Create Call functionality.

Note: Warning! It is assumed that the SCP/Adjunct is a "Trusted Node" and has authenticated the user request for Create Call functionality. The SCP/Adjunct provides Account Code data collection capabilities if the Service Provider deems them necessary.

2.5.2.3 Authorization Codes

Attempt to activate Authorization Codes (First or Last flavours) features prior to Called Party answers are denied. That is, if a
Create Call is requested to originate from a line that requires Authorization Code, the Authorization Code is bypassed and the call is routed to the Called Party without the input of the Authorization Code.

The Authorization Code Voluntary feature shall be permitted to activate after flashing during an active call established through the Create Call functionality.

Note: Warning! It is assumed that the SCP/Adjunct is a "Trusted Node" and has authenticated the user request for Create Call functionality. The SCP/Adjunct provides Account Code data collection capabilities if the Service Provider deems them necessary.

2.5.2.4 Authorization Code Immediate Dialing (ACID)

The ACID feature removes the seven second pause between the input of authorization codes and second dial tone. When an IBN subscriber dials a correct authorization code, including the correct security digits, the ACID feature assumes that no more authorization code digits are to be dialed. It then proceeds immediately to the next stage of call processing without waiting for an octothorpe (#) or interdigit time-out.

The interactions with this feature is the same as Create Call interactions with Authorization Codes.

2.5.2.5 Station Specific Authorization Codes (SSAC)

SSAC has the same interactions as authorization codes.

2.5.2.6 CRL (Code Restrictions)

Any DN that is blocked for the customer group through CRL is not blocked when a call is routed to that DN by the Create Call functionality.

2.5.2.7 SOR (Station Origination Restrictions)

The SOR feature determines whether the call should be restricted. SOR restrictions fall into one of the following four categories:

- calls permitted based on NCOS
- only intragroup calls or calls on an exception list are allowed
- only intragroup calls are allowed
- only calls on the exception list are allowed
- no calls are allowed

Table 15, "SOR and Create Call processing interactions," on page 155 describes the Create Call interactions with SOR.

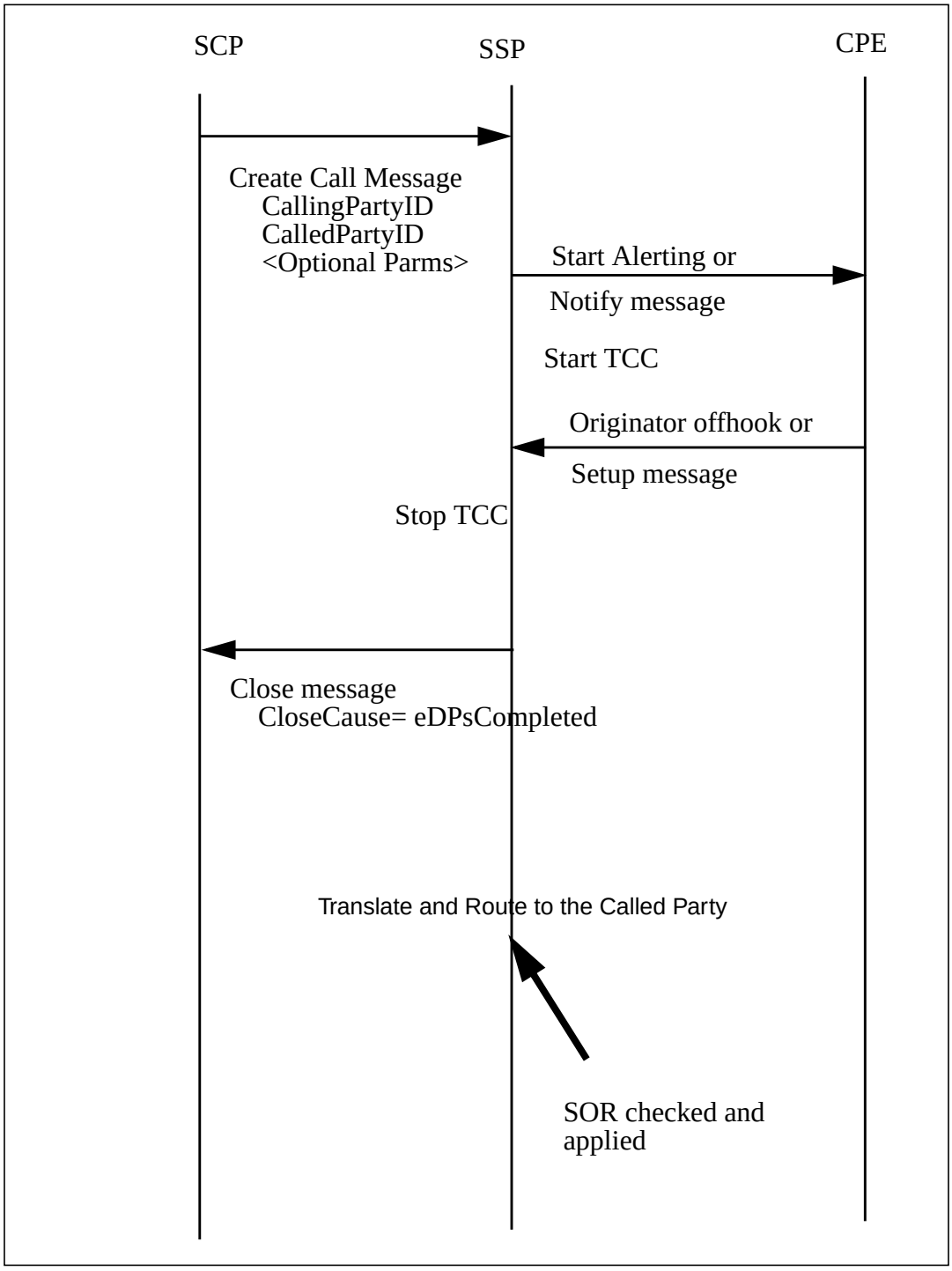
Table 15 SOR and Create Call processing interactions

Level	Incoming bearer capability	Create Call processing
0	All calls permitted by the NCOS are allowed	Same
1	Intragroup calls and calls on an exception list are allowed	Only calls on an exception list are allowed
2	Only intragroup calls are allowed	No calls are allowed
3	Only calls on an exception list are allowed	Same

Level	Incoming bearer capability	Create Call processing
4	No calls are allowed	Same

SOR is checked at the Analyze_Information PIC (Point In Call) of the call model. Please refer to “Figure 23 Create Call Interactions with SOR” on page 157.

Figure 23 Create Call Interactions with SOR



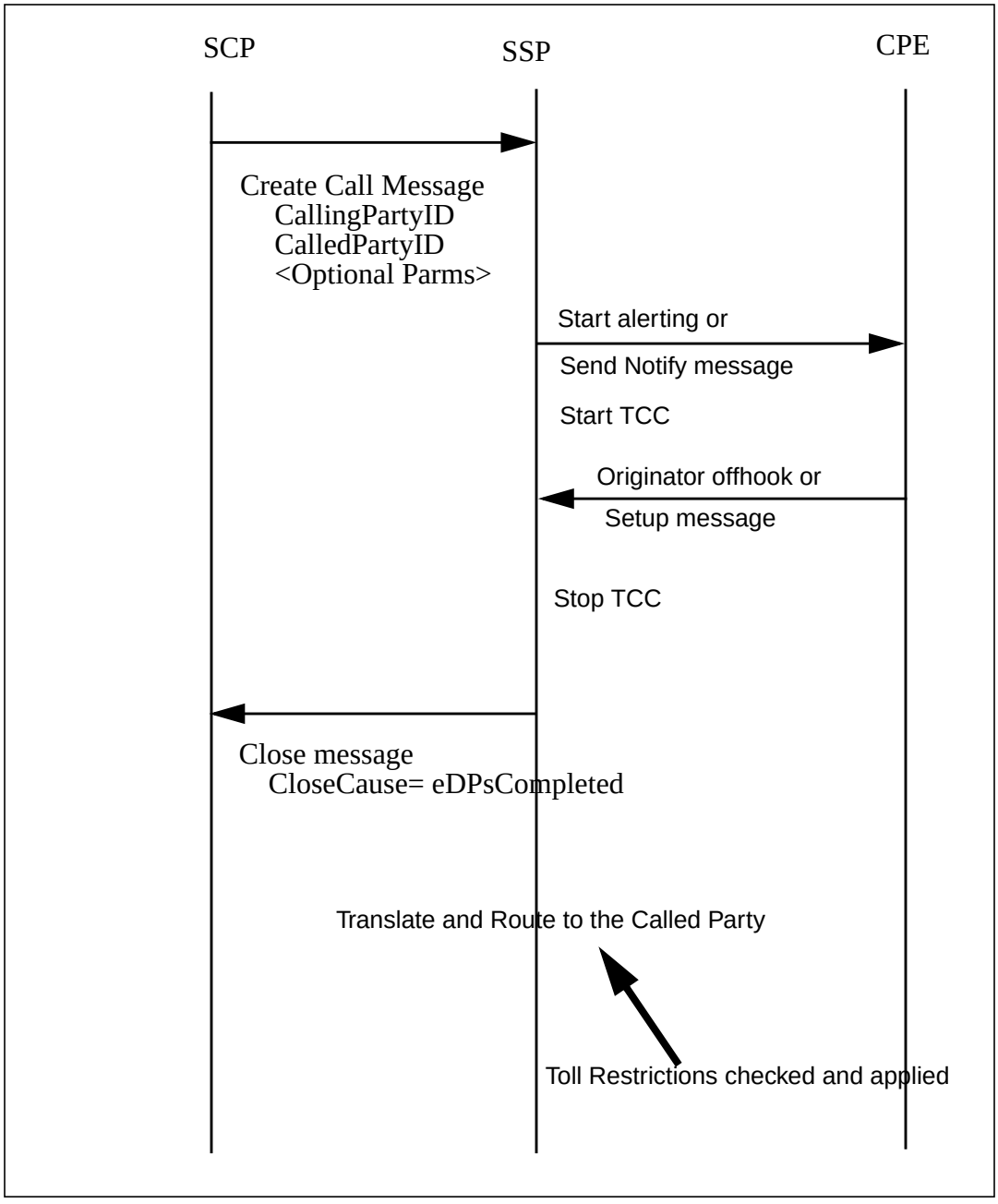
2.5.2.8 Toll Restriction Features

At the alerting originator phase, the originator is not checked against Toll Restrictions, that is, even if the originator has Toll Restrictions, the SSP will still alert the originator. When the originator accepts the call, the SSP then attempts to route the call to the called party -- this is when the Toll Restrictions are checked and applied to the call.

Toll Restrictions include:

- CTD (carrier toll denial)
- Equal Access Enhanced Carrier Toll Denial
- FCTDNTER (InterLATA Full Carrier Toll Denial)
- TDN (Toll Denial)
- TDV (Toll Diversion)

Figure 24 Toll Restriction Features Encountered During Routing



2.5.2.9 Alerting Secondary DN as Originator

When the CallingPartyID of a Create Call message maps to a SDN (Secondary directory number) or ESDN (Enhanced Secondary Directory Number) and ControllingLegTreatment is not provided, the default ControllingLegTreatment - “Alert Pattern 0” is used to alert the originator.

2.5.2.10 Terminating Features on the Originator

When alerting the originator, terminating features are not activated since the alerting is a treatment that applied to the originator indicating the Create Call request, not a call that is terminating on the originator. These terminating features include:

- All variants of Call Forwarding
- SCMP (Series CoMPletion)
- Termination Restrictions like DIN (Denied Incoming), DTM (Denied Terminating), DND (Do Not Disturb), MBK (Make Busy Key), MSB (Make Set Busy), MSBI (Make Set Busy Intragroup), PLP (PLug uP), SUS/RSUS (suspended/requested suspension) and RMB (Random Make Busy).
- EBCR (Enhance Busy Call Return)
- Intercept Feature like FLEXI (Flexible Intercept)
- Messaging Features like CSMI (Call Screening/Monitoring Intercept), EMW (Executive Message Waiting), FTS (FAX-Thru Service), ISA (In-Session Activation), SCM (Selective Call Messaging), SDS (Special Delivery Service), SODS (Special Offering Decoupling of SDS), MWT (station Message WaiTing) and UVM (universal Voice Messaging).
- Call Messager Feature for RES
- Call Pickup
- Hunting Features (a member of a hunt group as the originator is alerted for the Create Call request if not busy, however, if it is busy, no hunting is done and the case is handled as the originator being busy.)
- Hunt Group Overflow Routing like LOD (Line Overflow to DN) and LOR (Line Overflow to Route)
- DLCM (Dual Line Call Management)
- SimRing (Res Simultaneous Ringing)
- ACRJ (Anonymous Caller ReJection)
- SCA (Selective Call Acceptance)
- SCRJ (Selective Call ReJection)
- SCF (Selective Call Forwarding)
- BLOCKCGN (BLOCK CallinG Number) and BLOCKCDN (BLOCK CalleD Number), for ISDN BRI sets

However, if the Calling Party of a Create Call message has RSDT (restricted dial tone) with state in-effect, a call is not created through the Create Call functionality. No notification (alerting) for the Create Call request is sent to the Calling Party.

2.5.2.11 Features Treated as Interface Busy

When the originator has one of these features active, it is considered interface busy thus no alerting is provided to the originator:

- all variants of Call Waiting, including TCW (Talking Call Waiting)
- all variants of Hold
- ACOU (Additional Call Offer Unrestricted), for BRI NI-2 sets with CRBL (Call Reference Busy Limit)

Please refer to Section “2.2.7.7 Create Call Calling Party Busy” on page 140.

2.5.2.12 Call Waiting During Alerting Originator

When a call is terminating on an interface which is being notified as an originator of a previously received Create Call message, the SSP shall treat the call as terminating party busy. All call waiting features including SCWID (Spontaneous Call Waiting Identification, DSCWID (SCWID with Disposition) are not activated.

2.5.2.13 No Barge-in on Create Call

The SSP do not Barge-in on a call while attempting to service a Create Call request. In other words, when the originator is being alerted for a Create Call request, Barge-In features like executive busy override (EBO) and directed call pickup with barge in (DCBI) cannot be activated.

2.5.2.14 Feature Activation after Originator Accepts Create Call

Once the originator accepts the Create Call request by going offhook, the originator is able to activate any features that can be activated through normal call setup.

2.5.2.15 Distinctive Ringing Features

When optional parameter ControllingLegTreatment is included in the Create Call message, the value specified in this parameter overrides the switch based Distinctive Ringing features.

2.5.3 Feature Interactions During Routing to the Destination

2.5.3.1 Terminating Features

Terminating features on the Called Party are activated and function the same way as the call has been initiated by the originator through going offhook and dialing the digits.

2.5.3.2 Calling Number/Name Display/Blocking

The presentation status in the Calling Party ID in the Create Call message overrides calling number/name display/blocking features.

2.5.3.3 Distinctive Ringing Features

When optional parameter PassiveLegTreatment is included in the Create Call message, the value specified in this parameter overrides the switch based Distinctive Ringing features.

2.5.3.4 UCD (Uniform Call Distribution) Call Queuing

If the Called Party ID maps to a station in a UCD group, the call created through the Create Call functionality is terminated to that station.

2.5.3.5 Direct Inward System Access (DISA)

when the Called Party ID maps to a DISA DN, it behaves the same way as if the user had dialed the DN.

2.5.3.6 Preset Conference

A call can be routed to a Preset conference DN through a Create Call request.

2.5.3.7 MeetMe Conference

A call can be routed to a MeetMe conference DN through a Create Call request.

2.5.3.8 Expensive Route Warning Tone

When routing to the Called Party, the Expensive Route Warning Tone is not heard.

2.5.3.9 Flash

When routing to the Called Party, before the call terminates on the Called Party, flash is not allowed. Flash after terminating on the Called Party is allowed.

2.5.3.10 Flexible Calling (FC)

When routing to the Called Party, before the call terminates on the Called Party, FC is not allowed. FC after terminating on the Called Party is allowed.

2.5.3.11 PVN (Private Virtual Network)

While routing to the Called Party, attempting to start the PVN feature results in FNAL treatment to be applied to the call.

2.5.3.12 MCDN (Message Center Directory Number)

While routing to the Called Party, attempting to start the MCDN feature results in FNAL treatment to be applied to the call.

2.5.3.13 E800

If the Called Party ID in the Create Call message is an E800 number, the SSP shall activate the E800 service and query the E800 database.

2.5.3.14 AIN TFS

If the Called Party ID in the Create Call message is an AIN TFS number, the SSP shall query the SCP.

2.5.3.15 Emergency 911

If the Called Party ID in the Create Call message contains digits ‘911’, which correspond to the emergency service, the SSP shall route the call using the E911 service.

2.5.3.16 Virtual Facility Group Features

AIN response processing interacts with VFG features (Virtual Facility Group and Virtual Facility Group Look Ahead) through PrimaryTrunkGroupID, AlternateTrunkGroupID and AlternateTrunkGroupID provided by the SCP. Create Call interacts with the VFG features when triggering during routing to the Called Party and a response (like Analyze Route) returned by the SCP contains the above mentioned Trunk Groups. In this case, the interactions are the same as Analyze Route:

When attempting to route a call using an AR response with a PrimaryTrunkGroupID, AlternateTrunkGroupID, and a SecAlternateTrunkGroupID to VFG selectors, multiple VFGs can be throttled for the one call depending on the datafill and setup of the VFGs and trunk circuits.

2.5.3.17 Wide Area Telephone Service

Outward WATS (OWT) or two-way WATS (TWW) allows subscribers to make calls to specified geographic areas (zones or bands) at special billing rates.

During Create Call routing the call goes to treatment when the destination zone falls outside the allowed termination. The call is not sent to treatment if a ChargeNumber is received from the SCP, even if the carrier is not listed in the EWAL. The call is routed to the carrier provided by the SCP without band screening even if required by the carrier.

2.5.3.18 Enhanced and Universal Outwats

Enhanced outwats (EOW) or Enhanced two-way WATS (ETW) allows the subscriber to select, at the time of purchase, the list of long distance companies to use for the OWT calls. The EWAL line option is used to specify the carriers that can be used from the WATS line. Universal OWT extends OWT by allowing the subscriber to select the long distance company on a per call basis, as opposed to having to pre-establish the list of companies ahead of time.

The carrier included in the Create Call message must be one of the carriers specified by the EWAL line option, except when the universal WATS (UWATS) option is listed. The UWATS option allows the use of any carrier designated on the call.

The call is routed to the designated carrier when the carrier is listed in the EWAL, the UWATS is listed in the EWAL or the ChargeNumber is present in the Create Call message. Otherwise the call is sent to treatment.

2.5.3.19 TOD (Time Of Day routing)

The route taken by Create Call can be affected by Time of Day(TOD) Routing.

2.5.3.20 Simplified Message Desk Interface (SMDI)

The Called Party in the Create Call message can be a line served by SMDI.

2.5.3.21 Series Completion (SCMP)

A call created through the Create Call functionality can terminate to an SCMP group and does not affect the SCMP terminating algorithm.

2.5.3.22 Hunt Groups

If the Called Party ID in the Create Call message corresponds to one of the following Hunt Groups, then the call is terminated on first available member of the Hunt Group:

- BNN (Bridged Night Number)
- DLH (Distributed Line Hunt)
- DNH (Directory Number Hunt)
- KSH (Key-Set Short Hunt Group)
- MLH (Multiline Hunt)
- MPH (Multiple Position Hunt)
- NSDN (Night Service Directory Number)

2.5.3.23 Feature Groups

A call established through the Create Call functionality can route either as FGB, FGC or FGD.

A call established through the Create Call functionality can not be routed as FGA.

2.5.3.24 MADN (Multiple Appearance Directory Number)

When the Called Party ID included in the Create Call message maps to one of the following MADN group, the call terminates on the MADN group:

- MADN SCA (Single Call Arrangement)
- MADN MCA (Multiple Call Arrangement)
- MADN EXB (Extension Bridge)
- MADN CACH

2.5.3.25 SimRing

When CalledPartyID parameter in the Create Call message is a pilot DN, then SIMRING is activated and the Call proceeds normally.

2.5.3.26 PLP (PLug uP)

When the Called Party has the PLP feature activated, a call created through the Create Call functionality is not allowed to terminate on the Called Party.

2.5.3.27 SUS/RSUS (suspended/requested suspension)

When the Called Party has the SUS/RSUS feature activated, a call created through the Create Call functionality is not allowed to terminate on the Called Party.

2.5.3.28 RSDT (restricted dial tone) with state in-effect

When the Called Party has the RSDT feature activated, a call created through the Create Call functionality is not allowed to terminate on the Called Party.

2.5.3.29 CLASS Outgoing Call Memory

When a call is originated via the Create Call request, the SSP does not update the outgoing Memory Slot (OMS), regardless whether or not the call is diverted through triggering while routing to the Called Party.

2.5.3.30 LNR (Last Number Redial)

Attempt to invoke LNR on a call established through the Create Call functionality shall result in calling the number the originator dialed before the Create Call request.

2.5.3.31 AR (Automatic Recall)

Attempt to invoke AR on a call established through the Create Call functionality shall result in calling the number the originator dialed before the Create Call request.

2.5.3.32 ACB (Automatic Call Back)

When an attempt to establish a call through a Create Call request fails due to the Called Party's interface busy status, invoking ACB from the originator of the Create Call message shall result in calling the number the originator dialed before the Create Call request.

2.5.3.33 Ring Again Features

- **Call Back Queuing (CBQ)**: CBQ cannot be invoked when the call encounters a busy facility while routing the Called Party of a Create Call message.

  Note: CBQ (also known as on-hook queuing) provides a ring back to the on-hook calling line when a facility that the call is queued against becomes available. CBQ can be activated by the caller after receiving no circuit treatment, expensive route warning tone, or during the off-hook queue tone or announcement.

- **Nodal ring again (RAG)**: Attempt to invoke RAG on a call established through the Create Call functionality shall result in calling the number the originator dialed before the Create Call request.
- **Network ring again (NRAG)**: NRAG is applicable when the ring again feature is networked across different switching nodes. From a user point of view, NRAG and RAG operate the same way for Create Call.

2.5.3.34 Dynamic Control Routing (DCR)

Dynamic Control Routing may encounter while routing to the Called Party.

2.5.3.35 ACD (Automatic call distribution) Termination

Automatic call distribution (ACD) permits calls to be evenly distributed to a number of designated ACD agent positions. When all positions are busy, new calls are queued and a ringing tone or announcement can be returned to the caller.

A call can be routed to an ACD DN through the Create Call request and ACD functionality is not impacted.

Parameter Calling Party Id in the Create Call message is not used to update the display of EBS sets with the ACD option.

2.5.3.36 SMDR (Station Message Detail Recording)

All calls that would normally generate SMDR records will continue to do so when the call is created through the Create Call functionality.

2.6 Logs (LG)

Not applicable.

2.6.1 New/modified logs

Table 16 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

2.7.1 New/modified tables

Not applicable.

Table 17 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

Not applicable.

Table 18 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

Not applicable.

2.10 Alarms (AL)

Not applicable.

2.10.1 New/modified directories

Table 19 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

Not applicable.

2.11.1 New/modified commands

e

Table 20 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

Table 21 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason
AINICOFF	AIN Incoming Office Based Messages	Changed	Add new register IOCCALL to count the number of incoming Create Call messages.

Table 21 New or modified OM groups (Continued)

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason
AIN	AIN group for measuring AIN traffic and maintenance measurements	Changed	Add new register CCTMOUT to count the number of times the TCC timer expires while waiting for a user to respond to a create call indication.

2.12.2 Unchanged OM Groups

When a Close message is sent to the SCP in a response Package the SSP pegs the existing OM register for CLOSE messages in the OM Group AINOGOFF.

2.13 AMA/Billing information (AM)

The Create Call feature expands the message set that can be received by the SSP by supporting the Create_Call message within a Query Package. AIN AMA records will be generated if an AMAslpID is present and if the originator accepts the Create Call. If an AMAslpID is not present, switch based billing (toll, EA etc.) and AIN billing for subsequent triggers is be generated as required. If a bill is generated for the Create Call request it is always the first record for that call. Unanswered recording is not generated for the notification of the Create Call request.

If an AMAslpID is present in the Create Call request then is generated as is currently specified in the "AIN Service Implementation Guide, Nortel Networks" .

2.13.1 New/changed AMA/billing information

No new or changed AMA.

Table 22 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

Table 23 SOC

SOC option name:	AIN SE NA013 Create Call

SOC option title:	AIN SE NA013 Create Call
SOC option control type:	state
New SOC option?	Yes
SOC option order code	AIN00271
Option defined in DRU:	CNA
Affected products:	

2.15 Glossary

Term	Description
New term	definition

2.16 References

1. GR-1298-CORE “AINGR: Switching Systems”, Bellcore, Issue 4, Sept. 1997.
2. GR-1299-CORE “AINGR: Switch-SCP/Adjunct Interface”, Bellcore, Issue4, Sept. 1997.
3. AIN Service Implementation Guide, Nortel Networks

2: Functional description (FN)

2.1 Feature name

Called Party Address in ICM messages

2.2 Description

Prior to CCM13, Intelligent Call Management provided the Originbound DN field in the ICM messages populated with the DN to which the call was first targeted in to the ICM environment.

Some customers wish to see the Called Party Address digits as received in the setup messages for the incoming agent, displayed as a new parameter (CPADIGS) in ICM messages.This number will be referred to as the CPA in subsequent sections.

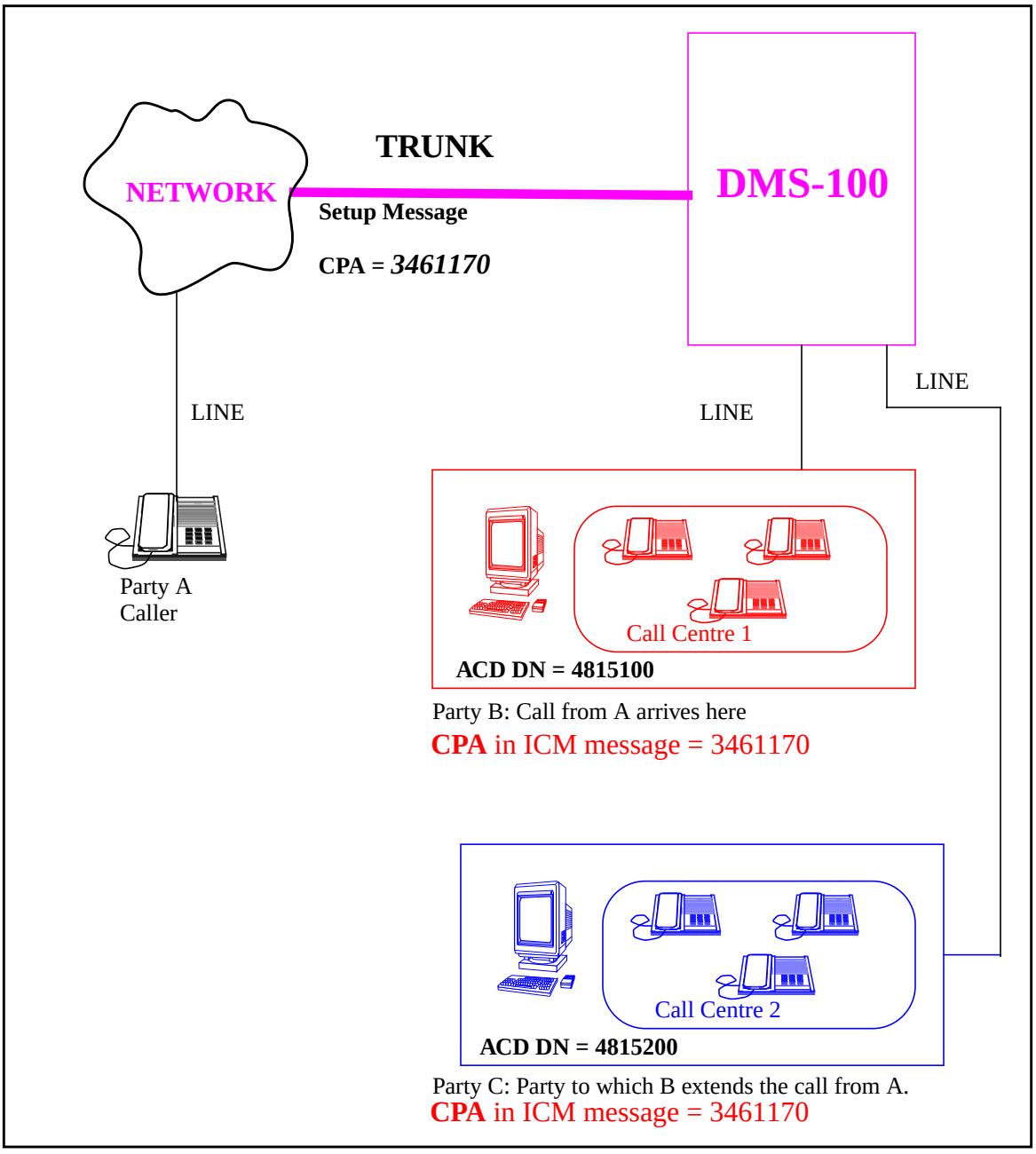
With the applications software, this CPA will be able to identify the product or service upon which the caller will address. Routing by this CPA enhances call distribution within an ACD system. This enhancement will allow calls to be routed to a specific ACD-DN, based on the CPA number. Many customers may configure their host applications to take advantage of this.When a call would be conferenced, transferred or redirected through application software, the CPA will be maintained in this additional parameter of the ICM messages, to help the application software take further routing decisions.

The main objective of this activity is to provide the Called Party Address digits (as it is found in the IAM and SAM messages in case of ISUP or its equivalent in other signalling systems) in the ICM messages.

The CPA must be delivered to the CTI host when the call is targeted to the ICM environment via the Call_offered_u, Call_queued_u, Call_received_c or Call_answered_u messages.

Since the CPA is to be delivered only for call centers, hence this activity provides the CPA in ICM messages for ACD customers only.

Figure 1 CPA for calls arriving over trunks



The functionality will be discussed under the following:

- Supported Agents
- Modified ICM Messages
- Subscription
- NICM Functionality & Support

- Message Flow Scenarios

2.2.1 Supported Agents

2.2.1.1 Description

The first call set-up message (Initial Address message; IAM in the case of ISUP) sent from the originating switch contains a parameter for the CPA (Called Party Address). The value of CPA is used by the terminating switch to route the call. The exact address digits contained in this CPA parameter will be delivered to the ICM environment.

However, in the case of overlap signalling, the SAM (Subsequent Address messages) is sent following an IAM, to convey additional called party address information.

Overlap signalling allows the onward transmission of address digits to commence before reception of all the address digits from the preceding node is complete. Onward transmission of digits may begin when sufficient digits have been received to identify an outgoing route. Most signalling protocols that support overlap signalling require the originating node to send the IAM message and then automatically send subsequent address messages as more digits are received. A few signalling systems (such as BTUP) require a request from the following nodes before the originating node sends the subsequent address messages.

The complete CPA which arrives in the IAM as well as the SAM is delivered to the ICM environment. Henceforth, CPA in this document will refer to the complete Called Party Address digits which arrives in the IAM as well as the SAM.

This feature ensures that CPA arriving over the following trunks is delivered to the ICM environment.

1. IBN7 (ANSI7: NORTEL implementation of ANSI ISUP)
2. ETSI ISUP V1
3. ETSI ISUP V2
4. BTUP
5. UK ISUP
6. NTNA PRI
7. ETSI PRI
8. DPNSS
9. ISUP (DFT: DPNSS Feature Transparency)

10. CAS trunks AC15, DC5, UKEARTH and UKLOOP configured with the following types of IBN trunks:

i. IBN DP IC TRUNK

ii. IBN MF IC TRUNK

iii. IBN DTMF IC TRUNK

iv. IBN DP OG TRUNK

v. IBN MF OG TRUNK

vi. IBN DTMF OG TRUNK

vii. IBN DP 2W TRUNK

viii. IBN MF 2W TRUNK

ix. IBN DTMF 2W TRUNK

Note: IBN 2W IMMEDIATE TRUNK is also used to configure the specified CAS trunks. But this configuration is not supported by this feature. This means that the CPA arriving over such a configuration will not be delivered to the ICM environment.

Please refer to "Figure 1 CPA for calls arriving over trunks" on page 70. The TRUNK shown in the figure is any of the ones listed (bullets 1 to 10) above.

For calls arriving over a line, the originally dialled digits will be delivered to the ICM environment. The incoming lines, therefore supported are

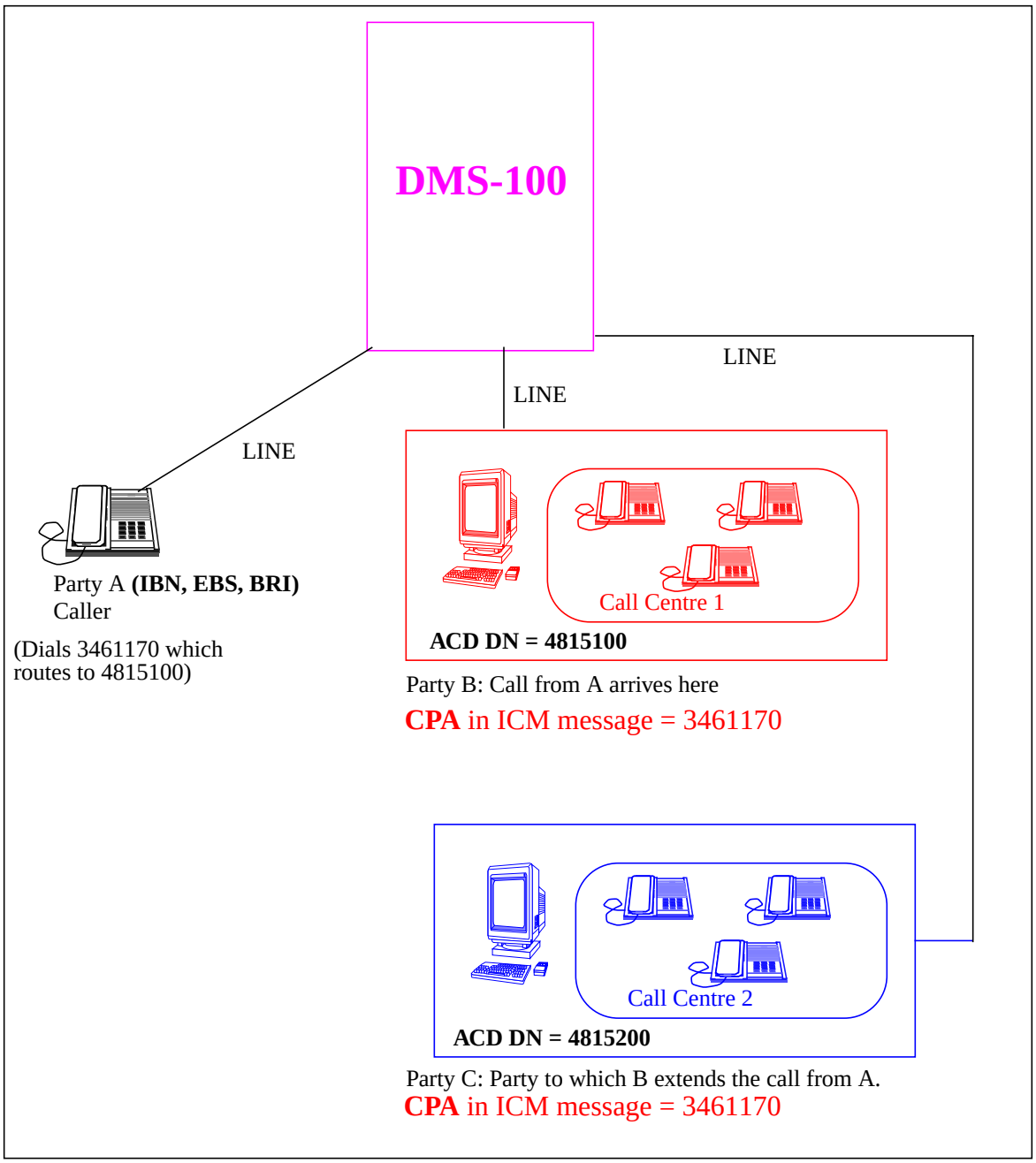
a. IBN

b. EBS

c. BRI

The line agents considered above are the originating agents. Calls from these lines will terminate to the ICM associated call centre.

Figure 2 CPA for calls arriving over lines



The CPA/dialled digits that is delivered to the ICM environment is displayed in the following ICM messages:

1. DV-CALL-OFFERED-U
2. DV-CALL-QUEUED-U
3. DV-CALL-ANSWERED-U

4. DV-CALL-RECEIVED-C

CPA arriving over any trunks other than those listed above may not be delivered to the ICM environment. **If the call happens to arrive over the unsupported trunks and the retrieval of CPA was unsuccessful, then a blank will be displayed in the corresponding parameter of the ICM message. Similarly, if a call arrives from an unsupported line, then the dialled digits may not be delivered to the ICM environment. Hence, a blank will be displayed in the corresponding parameter of the ICM message.**

The subsequent address messages received after the Address Complete Message (ACM) are ignored. Hence the CPA arriving in IAM and SAM, before the ACM is sent by the terminating switch, is delivered to the ICM environment. **CPA arriving in SAM after the ACM is sent, is ignored along with the SAM. Hence care should be taken to ensure, that wrong translations do not cause a call to be setup before the entire CPA is received.**

The value of the CPA delivered to the ICM environment remains static forsubsequent extensions of the calls. The calls can be extended using transfer, redirect, route, overflow or forward options. **As long as the local_call_id of the call remains the same for subsequent extensions of the call, the CPA parameter in the ICM messages remains static. For different local_call_id's, the value of CPA parameter in ICM environment differs**.

2.2.2 Modified ICM Messages

This feature introduces a new parameter, namely **CPADIGS** in the following ICM call related messages.

- dv_Call_Queued_U
- dv_Call_Offered_U
- dv_Call_Answered_U
- dv_Call_Received_C

The ASN.1 notations for the above mentioned four messages for ACD customer provided by this activity are shown in this section. The length fields are variable because the length depends on the variable contents. The tag values are taken from the Remote Operation Service Element (ROSE) protocol.

The maximum number of digits supported by the new parameter CPADIGS are 30. The new parameter will show up in the above said messages on the basis of the appropriate subscription which will be discussed.

- **SCAI15 Service Version**

— The ICM application Logon message contains a parameter; service Version, which is used to identify the stream of messages which will be allowed across the link. This service version is used as a method of protecting the integrity of host applications which choose not to upgrade their software to accept new message types after a switch has been upgraded to a new service version.

— The new service version SCAI15 needs to be added to the current list of SCAI service versions to receive modified messages with new parameter. The new service version is accepted at application logon processing time. The processing of individual messages which are introducing new encoding / decoding, adheres to the Service Version of ICM.

Note: *The parameters which are* ***italicized and bold*** *are new to these messages.The letter 'U' in the message name indicates that the message is unconfirmed, i.e., this operation requires no outcome to be reported by the host. The letter '****C****' at the end of the message's name indicates that the message requires confirmation from the host.*

2.2.2.1 DV_Call_Queued_U message

The switch sends this RO of Operation Class 5 to the host when a call to an ACD DN associated with the current session is received by the switch and placed in the Incoming Call Queue.

2.2.2.1.1 Changed DV_CALL_QUEUED_U ASN.1 definition.

ASN.1 Encoding

```
dv-CALL-QUEUED-U ARGUMENT        OPERATION

                                    ARGUMENT CallQueuedArgument
::= 6

    CallQueuedArgument                  ::=     SEQUENCE
     {networkCallID                 [0] IMPLICIT SEQUENCE
     {networkNodeID                 [0] IMPLICIT INTEGER OPTIONAL,
     localCallID                    [1] IMPLICIT INTEGER OPTIONAL}
                                    OPTIONAL,

    acdDN                   [1] IMPLICIT OCTET STRING OPTIONAL,
    origCallingNumber       [2] IMPLICIT OCTET STRING OPTIONAL,
    origChargeNumber        [3] IMPLICIT OCTET STRING OPTIONAL,
    callHistoryInfo         [4] IMPLICIT SEQUENCE
```

```
{callType                [0] IMPLICIT  ENUMERATED
   {callTransferred      (1),
    callOverflowed       (2),
    callRedirected       (3),
    callForwarded        (4)
   callConsult           (5),
   callConference        (6),
   callReturnedToQueue   (7),
   callRouted            (8)} OPTIONAL,

origInboundDN            [1] IMPLICIT OCTET STRING OPTIONAL,
prevApplicationID        [2] IMPLICIT INTEGER OPTIONAL,
hostCallData             [3] IMPLICIT OCTET STRING OPTIONAL}
                         OPTIONAL,

acdGroup                 [5] AddressType OPTIONAL,
forwardingParty          [6] ForwardingPartyType OPTIONAL,

cpadigs                  [7] IMPLICIT OCTET STRING
                         OPTIONAL}


AddressType:: = CHOICE
 {positionID             [0] IMPLICIT INTEGER,
 dialedDigits            [1] IMPLICIT IA5STRING,
 stationNumber           [2] IMPLICIT OCTET STRING,
 q931Address             [3] Q931AddressType}

Q931 AddressType                 :: =     SEQUENCE
 {numberTypeNumberPlan           [0] OCTET STRING OPTIONAL,
 presentationScreeningIndicator  [1] OCTET STRING OPTIONAL,
 digits                          [2] IA5 STRING OPTIONAL}


ForwardingPartyType              :: =     IMPLICIT SEQUENCE
 {firstFwdNumber                 [0] AddressType OPTIONAL,
 firstFwdReason                  [1] IMPLICIT ENUMERATED
 {unknown                        (0),
 userBusy                        (1),
 noReply                         (2),
 unconditional                   (3)  }   OPTIONAL,
 lastFwdNumber                   [2] AddressType OPTIONAL,
 lastFwdReason                   [3] IMPLICIT ENUMERATED
 {unknown                        (0),
 userBusy                        (1),
 noReply                         (2),
 unconditional                   (3)  }   OPTIONAL},
```

2.2.2.1.2 DV_CALL_QUEUED_U:Coded example.

An ACD call has been initiated from the OrigCallingNumber 6136217703 by dialing 6134444444 and assigned a LocalCallID = 13, and offered it to an ACD group with Primary DN 6136212111, for which no agent is available, the call is placed in the Incoming Call Queue and the switch sends DV-CALL-QUEUED-U to the host. No Return Result is required or received by the switch from the host.

INVOKE **DMS** ===== > **HOST**

Hex Dump			Information Element	Comments
Tag	**Length**	**Content**		
a1	3c		INVOKE	Message length is 60 bytes decimal
02	02	03 fb	InvokeID	the InvokeID is 1002
02	01	06	Operation	Operation value for dv-call-queued-u is decimal 6
30	33		Argument	CallQueued argument is of Sequence type and is 51 bytes long decimal
a0	09		NetworkCallId	the NetworkCallId is a constructor 9 bytes long
80	04	03 38 d0 90	NetworkNodeId	the NetworkNodeId is 54055056
81	01	0d	LocalCallId	the LocalCallId is 13
81	0a	36 3133 36 32 31 32 31 31 31	ACDDN	the called ACDDN of the Group is 6136212111
82	0c	00 83 36 31 33 36 32 31 37 37 30 33	Original Calling Number	The first 2 bytes are fixed and must not be read at present. The original calling number is 6136217703
A5	0c		acd group	the ACDGroup is of type Constructor and is 12 bytes long
82	0a	36 31 33 36 32 31 32 31 31 31	station number	The station number of the ACDGroup is 6136212111

Hex Dump			Information Element	Comments
Tag	**Length**	**Content**		
87	**0a**	**36 31 33 34 34 34 34 34 34 34**	**CPADIGS**	**The CPA value is 6134444444**
Hex Dump= a1 3c 02 02 03 ea 02 01 06 30 33 a0 09 80 04 03 38 d0 90 81 01 0d 81 0a 36 31 33 36 32 31 32 31 31 31 82 0c 00 83 36 3133 36 32 3137 37 30 33 a5 0c 82 0a 36 31 33 36 32 31 32 31 31 31 87 0a 36 31 33 34 34 34 34 34 34 34				

2.2.2.2 DV_Call_Offered_U message

This section describes the DV-CALL-OFFERED-U message the switch uses to notify the host that a ICM Party has been selected for ACD. The party has been selected to handle an incoming call to one of the DNs belonging to the associated environment of the current switch-host session when the call is about to be offered to the ICM Party.

2.2.2.2.1 Changed DV_CALL_OFFERED_U ASN.1 definition.

ASN.1 Encoding

```
dv-CALL-OFFERED-U                    OPERATION

                                     ARGUMENT CallOfferedArgument
::= 5

CallOfferedArgument                  ::=     SEQUENCE
 {networkCallID   [0] IMPLICIT SEQUENCE
 {networkNodeID          [0] IMPLICIT INTEGER OPTIONAL,
 localCallID             [1] IMPLICIT INTEGER OPTIONAL}
                                     OPTIONAL,
acdDN              [2] IMPLICIT OCTET STRING OPTIONAL,
origCallingNumber[3] IMPLICIT OCTET STRING OPTIONAL,
origChargeNumber[4] IMPLICIT OCTET STRING OPTIONAL,
callHistoryInfo    [5] IMPLICIT SEQUENCE

 {callType          [0]  IMPLICIT  ENUMERATED
    {callTransferred       (1),
     callOverflowed        (2),
     callRedirected        (3),
     callForwarded         (4)
    callConsult            (5),
    callConference         (6),
```

```
    callReturnedToQueue (7),
    callRouted          (8)} OPTIONAL,
origInboundDN   [1] IMPLICIT DeviceAddressType OPTIONAL,
prevApplicationID[2] IMPLICIT INTEGER OPTIONAL,
hostCallData    [3] IMPLICIT OCTET STRING OPTIONAL}
                    OPTIONAL,

acdGroup        [6] AddressType OPTIONAL,
callMode        [7] IMPLICIT ENUMERATED

{callWaited     (1)}    OPTIONAL,
destDeviceID    [8] AddressType OPTIONAL,
forwardingParty [9] ForwardingPartyType OPTIONAL,
cpadigs         [10]IMPLICIT OCTET STRING OPTIONAL}


AddressType                 :: =    CHOICE
{positionID     [0] IMPLICIT INTEGER,
dialedDigits    [1] IMPLICIT IA5STRING,
stationNumber   [2] IMPLICIT OCTET STRING,
q931Address     [3] Q931AddressType}

Q931AddressType             :: =    SEQUENCE
{numberTypeNumberPlan       [0] OCTET STRINGOPTIONAL,
 presentationScreeningIndicator [1] OCTET STRINGOPTIONAL,
 digits                     [2] IA5 STRINGOPTIONAL}

ForwardingPartyType         :: =    IMPLICIT SEQUENCE
{firstFwdNumber             [0] AddressTypeOPTIONAL,
 firstFwdReason             [1] IMPLICIT ENUMERATED
{unknown                    (0),
 userBusy                   (1),
 noReply                    (2),
 unconditional              (3)} OPTIONAL,

 lastFwdNumber              [2] AddressType OPTIONAL,
lastFwdReason               [3] IMPLICIT ENUMERATED
{unknown                    (0),
 userBusy                   (1),
 noReply                    (2),
 unconditional              (3)  }  OPTIONAL}
```

2.2.2.2.2 DV_CALL_OFFERED_U:Coded example.

An ACD call is initiated from the OrigCallingNumber 6136217703 by dialing 6134444444 and is assigned a LocalCallID = 9. The call is offered to an acd agent with posid 7707 of the acd group with primary DN 613621111. The switch sends DV-CALL-OFFERED-U to the host. No Return Result is required or received by the switch from the host.

INVOKE **DMS** ===== > **HOST**

Hex Dump			Information Element	Comments
Tag	**Length**	**Content**		
a1	3e		INVOKE	this message is 66 bytes decimal
02	02	03 f9	InvokeID	the InvokeID is 1017
02	01	05	Operation	the operation is DV-CALL-OFFERED-U [5]
30	39		Argument	CallOffered argument is of Sequence type and is 57 bytes long decimal
a0	09		NetworkCallId	the NetworkCallId is a constructor 9 bytes
80	04	03 38 d0 90	NetworkNodeId	the NetworkNodeId is 54055056
81	01	09	LocalCallId	the LocalCallId is 9 decimal
82	0a	36 31 33 36 32 31 32 31 31 31	acd_dn	6136212111
83	0c	00 83 36 3133 36 32 31 37 37 30 33	OrigCallingNumber	The first two bytes are fixed and presently must not be read.The customer's OrigCallingNumber is 6136217703
a6	0c		acd_grp	
82	0a	36 31 33 36 32 31 32 31 31 31	StationNumber	the called DN is 6136212111
a8	04		DeviceID	the DeviceID is of type Constructor and is 4 bytes long
80	02	1e1b	pos_id_2	7707
8a	**0a**	**36 31 33 34 34 34 34 34 34 34**	**CPADIGS**	**The CPA value is 6134444444**

Hex Dump			Information Element	Comments
Tag	Length	Content		
Hex Dump =a1 42 02 02 03 f9 02 01 05 30 39 a0 09 80 04 03 38 d0 90 81 01 09 82 0a 36 31 33 36 32 31 32 31 31 31 83 0c 00 83 36 31 33 36 32 31 37 37 30 33 a6 0c 82 0a 36 31 33 36 32 31 32 31 31 31 a8 04 80 02 1e 1b 8A 0a 36 31 33 34 34 34 34 34 34 34				

2.2.2.3 DV_Call_Answered_U message

The DV-CALL-ANSWERED-U message is used by the switch to notify the host of an incoming call offered to a ICM Party in an Associated environment with which the host has an established session has been answered.

2.2.2.3.1 Changed DV_CALL_Answered_U ASN.1 definition.

ASN.1 Encoding

```
dv-CALL-ANSWERED-U          OPERATION
                            ARGUMENT CallAnsweredArgument
::= 16

CallAnsweredArgument        ::=     SEQUENCE
{networkCallID              [0] IMPLICIT SEQUENCE
{networkNodeID              [0] IMPLICIT INTEGER  OPTIONAL,
localCallID                 [1] IMPLICIT INTEGER OPTIONAL}

destDeviceID            [1] AddressType OPTIONAL,
acdDN                   [2] IMPLICIT OCTET STRING OPTIONAL,
origCallingNumber       [3] IMPLICIT OCTET STRING OPTIONAL,
origChargeNumber        [4] IMPLICIT OCTET STRINGOPTIONAL,
callHistoryInfo         [5] IMPLICIT SEQUENCE

 {callType              [0]  IMPLICIT  ENUMERATED
    {callTransferred    (1),
     callOverflowed     (2),
     callRedirected     (3),
     callForwarded      (4)
    callConsult         (5),
    callConference      (6),
    callReturnedToQueue (7),
    callRouted          (8)} OPTIONAL,

origInboundDN           [1] IMPLICIT DeviceAddressType
                                        OPTIONAL,
```

```
prevApplicationID       [2] IMPLICIT INTEGER OPTIONAL,
hostCallData            [3] IMPLICIT OCTET STRING OPTIONAL}
                                                OPTIONAL,

acdGroup                [6] AddressType   OPTIONAL,
callMode                [7] IMPLICIT ENUMERATED
 {callWaited            (1)}     OPTIONAL,
forwardingParty         [8] ForwardingPartyType OPTIONAL,
cpadigs                 [9] IMPLICIT OCTET STRING OPTIONAL}

AddressType                  :: =      CHOICE
 {positionID            [0] IMPLICIT INTEGER,
 dialedDigits           [1] IMPLICIT IA5STRING,
 stationNumber          [2] IMPLICIT OCTET STRING,
 q931Address            [3] Q931AddressType}

Q931AddressType         :: =     SEQUENCE
 {numberTypeNumberPlan          [0] OCTET STRING OPTIONAL,
 presentationScreeningIndicator [1] OCTET STRING OPTIONAL,
 digits                         [2] IA5 STRING OPTIONAL}

ForwardingPartyType     :: =     IMPLICIT SEQUENCE
 {firstFwdNumber                [0] AddressType OPTIONAL,
 firstFwdReason                 [1] IMPLICIT ENUMERATED
 {unknown                       (0),
 userBusy                       (1),
 noReply                        (2),
 unconditional                  (3)  }    OPTIONAL,

lastFwdNumber           [2] AddressType OPTIONAL,
lastFwdReason           [3] IMPLICIT ENUMERATED
{unknown                (0),
 userBusy               (1),
 noReply                (2),
 unconditional          (3)  }    OPTIONAL}
```

2.2.2.3.2 DV_CALL_Answered_U:Coded example.

An ACD call is initiated from the OrigCallingNumber 6136217703 by dialing 6134444444 and assigned a LocalCallID = 12 to the call. An agent from the posid 7707 of the ACD group with primary DN 6136211111 answers. The switch sends DV-CALL-ANSWERED-U to the host. No Return Result is to be received by the switch from the host.

INVOKE **DMS ===== > HOST**

Hex Dump			Information Element	Comments
Tag	**Length**	**Content**		
a1	42		INVOKE	this message is 66 bytes decimal
02	02	03 ef	InvokeID	the InvokeID is 1007
02	01	10	Operation	it operation value is DV-CALL-ANSWERED[16] decimal
30	39		Argument	the CallAnsweredArgument is of type Sequence and is 57 bytes long decimal
a0	09		NetworkCallId	this of type Constructor and is 9 bytes long
80	04	03 38 d0 90	NetworkNodeId	the NetworkNodeId is 54055056 decimal
81	01	0c	LocalCallId	the LocalCallId is 12 decimal
a1	04		DeviceId	this is a constructor 12 bytes long decimal
80	02	1e 1b	posid	the posid of the agent is 7707
82	0a	36 31 33 36 32 31 32 31 31 31	acd_dn	6136212111
83	0c	00 83 36 31 33 36 32 31 37 37 30 33	original calling number	The first two bytes are fixed and presently must not be read. The customer's OrigCallingNumber is 6136217703
a6	0c		acd_grp	
82	0a	36 31 33 36 32 31 32 31 31 31	Station Number	6136212111
8a	**0a**	**36 31 33 34 34 34 34 34 34 34**	**CPADIGS**	**The CPA value is 6134444444**
Hex Dump=a1 42 02 02 03 ef 02 01 10 30 39 a0 09 80 04 03 38 d0 90 81 01 0c a1 04 80 02 1e 1b 82 0a 36 31 33 36 32 31 32 31 31 31 83 0c 00 83 36 31 33 36 32 3137 37 30 33 a6 0c 82 0a 36 31 33 36 32 31 32 31 3131 8a 0a 36 31 33 34 34 34 34 34 34 34				

2.2.2.4 DV_Call_Received_C message

The switch uses the DV-CALL-RECEIVED-C message to notify the host that a call to an ACD group belonging to an Associated environment with which the host has an established session has been received. This allows the host to "redirect" the call.

2.2.2.4.1 Changed DV_CALL_Received_C ASN.1 definition.

ASN.1 Encoding

```
dv-CALL-RECEIVED-C          OPERATION
                            ARGUMENT  CallReceivedArgument
                            RESULT
                            ERRORS      {call-Received-Error}
                            LINKED {dv-CALL-REDIRECT}
::= 10

CallReceivedArgument            ::=     SEQUENCE
 {networkCallID             [0] IMPLICIT SEQUENCE
 {networkNodeID                 [0] IMPLICIT INTEGER OPTIONAL,
 localCallID                    [1] IMPLICIT INTEGER OPTIONAL}
                            OPTIONAL,
acdDN                       [1] IMPLICIT OCTET STRING OPTIONAL,
origCallingNumber           [2] IMPLICIT OCTET STRING OPTIONAL,
origChargeNumber            [3] IMPLICIT OCTET STRING OPTIONAL,
callHistoryInfo             [4] IMPLICIT SEQUENCE
{callType                       [0] IMPLICIT ENUMERATED
    {callTransferred        (1),
     callOverflowed         (2),
     callRedirected         (3),
     callForwarded          (4)
    callConsult             (5),
    callConference          (6),
    callReturnedToQueue     (7),
    callRouted              (8)} OPTIONAL,
origInboundDN                   [1] IMPLICIT OCTET STRING
                                    OPTIONAL,
prevApplicationID               [2] IMPLICIT INTEGER OPTIONAL,
hostCallData                    [3] IMPLICIT OCTET STRING
                            OPTIONAL}
                            OPTIONAL,
acdGroup                    [5] AddressType OPTIONAL,
forwardingParty             [6] ForwardingPartyType OPTIONAL,
cpadigs                     [7]IMPLICIT OCTET STRING OPTIONAL}

AddressType                     :: =    CHOICE
```

```
{positionID                 [0] IMPLICIT INTEGER,
dialedDigits                [1] IMPLICIT IA5STRING,
stationNumber               [2] IMPLICIT OCTET STRING,
q931Address                 [3] Q931AddressType}

Q931AddressType                 :: =    SEQUENCE
{numberTypeNumberPlan           [0] OCTET STRING OPTIONAL,
presentationScreeningIndicator  [1] OCTET STRING OPTIONAL,
digits                          [2] IA5 STRING OPTIONAL}

ForwardingPartyType             :: =    IMPLICIT SEQUENCE
{firstFwdNumber                 [0] AddressType OPTIONAL,
firstFwdReason                  [1] IMPLICIT ENUMERATED
{unknown                        (0),
userBusy                        (1),
noReply                         (2),
    unconditional               (3) } OPTIONAL,
lastFwdNumber                   [2] AddressType OPTIONAL,
lastFwdReason                   [3] IMPLICIT ENUMERATED
{unknown                        (0),
userBusy                        (1),
noReply                         (2),
unconditional                   (3) }  OPTIONAL}

call-Received-ErrorERROR::= 0
```

2.2.2.4.2 DV_CALL_Received_C:Coded example.

An ACD call has been initiated from the OrigCallingNumber 9192466001 by dialing 9197224444 and assigns a LocalCallID = 4 to the call meant for ACD group with Primary DN of the ACD group =9194815200. The switch sends DV-CALL-RECEIVED-C message to the host which responds with either Return Result message or Return Error message.

INVOKE DMS ===== > **HOST**

Hex Dump			Information Element	Comments
Tag	**Length**	**Content**		
a1	39		INVOKE	this message is 57 bytes decimal
02	02	03 f9	InvokeID	the InvokeID is 1017 decimal
02	01	0a	Operation	the operation is DV-CALL-RECIEVED-C[10] decimal

Hex Dump			Information Element	Comments
Tag	**Length**	**Content**		
30	30		Argument	CallReceived argument is of Sequence type and is 48 bytes long decimal
a0	06		NetworkCallId	the NetworkCallId is a constructor 6 bytes
80	01	00	NetworkNodeId	the NetworkNodeId is 0
81	01	04	LocalCallId	the LocalCallId is 4
81	0a	39 31 39 34 38 31 35 32 30 30	ACDDN	the called ACDDN is 9194815200
82	0c	00 83 39 31 39 32 34 36 36 30 30 31	OrigCallNumber	the first two bytes are fixed and presently unused. The customer's OrigCallNumber is 9192466001

Hex Dump			Information Element	Comments
Tag	**Length**	**Content**		
a5	0c		ACDGroup	the ACDGroup is a type constructor 12 bytes
82	0a	39 31 39 34 38 31 35 32 30 30	StationNumber	the customer group's Primary ACDDN is 9194815200
87	**0a**	**39 31 39 37 32 32 34 34 34 34**	**CPADIGS**	**The CPA value is 9197224444**
Hex Dump= a1 39 02 02 03 f9 02 01 0a 30 30 a0 06 80 01 00 81 01 04 81 0a 39 31 39 34 38 31 35 32 30 30 82 0c 00 83 39 31 39 32 34 36 36 30 30 31 a5 0c 82 0a 39 31 39 34 38 31 35 32 30 30 87 0A 36 31 33 37 32 32 34 34 34 34				

RETURN-RESULT **DMS <===== HOST**

Hex Dump			Information Element	Comments
Tag	**Length**	**Content**		
a2	03		RETURN RESULT	this message is 3 bytes long decimal
02	01	32	InvokeID	the InvokeID is 50 decimal
Hex Dump=A2 03 02 01 32				

RETURN-ERROR **DMS <===== HOST**

Hex Dump			Information Element	Comments
Tag	**Length**	**Content**		
a3	06		RETURN-ERROR	this message is 6 bytes long
02	01	32	InvokeID	the InvokeID is 50 decimal
02	01	00	ErrorValue	the ErrorValue is Call-Received-Error[0]
Hex Dump=A3 06 02 01 32 02 01 00				

2.2.3 Subscription

The following changes in table SCAISSRV are required to provide subscription to receive ICM messages with the new parameter. Preconditions to be satisfied by a party in order to receive all the messages with new parameter are also given in this section.

2.2.3.1 Changes in table SCAISSRV for DV_Call_queued_U, DV_Call_Offered_U,DV_Call_Answered_U and DV_Call_Received_C messages

An optional parameter CPADIGS is added to the existing parameters in the function CALLQUED,CALLOFFR and CALLANSWR which is of the category ACDEVENT message in table SCAISSRV.

An optional parameter CPADIGS will be added to the existing parameters in the function CALLRECDC, which is of the category ROUTING in table SCAISSRV.

A new default tuple ACDEVENT15$ under category ACDEVENT will be created with the optional parameter CPADIGS of the function CALLQUED, CALLOFFR and CALLANSWR set to Y. Prior to CCM13, the latest default tuple in the category ACDEVENT is ACDEVENT12$.

A new default tuple ROUTING15$ under category ROUTING will be created with the optional parameter CPADIGS of the function CALLRECDC set to Y. Prior to CCM13, the latest default tuple in the category ROUTING is ROUTING35$.

Table 1 SCAISSRV table changes

Category	Function	Parameters	New/Same
ACDEVENT	CALLQUED / CALLOFFER / CALLANSWR	CPADIGS	Old function and new parameter
ROUTING	CALLRECDC	CPADIGS	Old function and new parameter

2.2.3.2 Preconditions to be satisfied by a party in order to receive all the modified messages with new parameter.

- A party must be ECM associated in order to get the modified messages.
- The Service Version should at least be SCAI15.
- The ICM session on which the DV_Call_Queued_U message is to be sent with the new parameter must subscribe to the ACDEVENT category and

CALLQUED function. Also the parameter ***CPADIGS*** in the function CALLQUED must be set to ***Y***.

- The ICM session on which the DV_Call_Offered_U message is to be sent with the new parameter must subscribe to the ACDEVENT category and CALLOFFR function. Also the parameter ***CPADIGS*** in the function CALLOFFR must be set to ***Y***.
- The ICM session on which the DV_Call_Answered_U message are to be sent with the new parameter must subscribe to the ACDEVENT category and CALLANSWR function. Also the parameter ***CPADIGS*** in the function CALLANSWR must be set to ***Y***.
- The ICM session on which the DV_Call_Received_C message are to be sent with the new parameter must subscribe to the ROUTING category and CALLRECDC function. Also the parameter ***CPADIGS*** in the function CALLRECDC must be set to ***Y***.

2.2.4 NICM Functionality & Support

In CCM10, the activity AU2799: Network Intelligent Call Management (NICM) enhanced the ICM capability by providing transfer of ICM specific information when call gets networked. The NICM functionality transports the identity of the call and certain dynamic as well as static data of the call, whenever the call gets extended from one switch to another. The capability to transfer NICM information over ISUP trunks was developed for the calls getting networked from one DMS-100 in CCS7 network. NICM activity also provides support and maintains unique identification of calls extended from one DMS-100 to another.

In CCM11, the activities AU3193 and AU3295 further enhanced the NICM functionality by providing ISDN PRI transport for NICM. This activity was carried out to specifically ensure the NICM information transfer between a DMS-100 and SL-100 that are connected through PRI trunks. The SL-100 supports the NTNA protocol variant of ISDN Q.931 message and hence the NICM information will be transferred from DMS -100 to SL-100 and vice versa for only NTNA protocol variant.

Two levels of optionality exists for activating NICM feature. The first one is on the switch basis. The parameter NETWORK_ICM_ACTIVE in table OFCOPT must be set to Y to activate the NICM feature on the switch. The second level option is the option NETICM in table ACDGRP. This option indicates subscription to the Network ICM feature, for a ACD group. If NETICM option is subscribed, the NetworkCallId from the source switch can be sent to the target switch when a call is routed. Both the source group and target group should have this option turned ON in order for the Network ICM service to be functional.

Prior to this activity, the NICM information that was transported for networked calls contained the following 5 parameters:

- Network_Node_Id
- Network_Call_Id
- NICM_Call_Type
- Prev_Appl_Id
- Original_Inbound_Dn

As mentioned earlier, this activity will introduce a new parameter CPADIGS in the ICM messages (dv_call_offered_u, dv_call_queued_u, dv_call_answered_u and dv_call_received_c). The networking functionality of ICM, NICM must be modified in order to support the transport of the new parameter over the trunks. Since the new parameter CPADIGS is meant to emulate the originbounddn, which is of a static nature, it means due to the static property of the originbounddn, its value gets written only once in the life of the call, and beyond that it is propagated through all extensions.

In case of extended networked calls, the prerequisite for a host computer to receive the same CPADIGS parameter (as was received for the first leg of call) in these ICM messages is to have NICM subscription. In addition to NICM subscription, the customer should also subscribe for the CPADIGS parameter.

- In case if a host computer has subscribed for NICM but has not subscribed for CPADIGS parameter, it will receive the NICM information without the CPADIGS parameter.
- In case if a host computer has subscribed for CPADIGS parameter but has not subscribed for NICM, it will receive the new CPADIGS parameter in the ICM messages i.e, the value of CPADIGS parameter will not be the same as that in the first leg of the call, but it will contain the CPA value which arrives in the trunk setup message for the extended call.
- If a host computer has subscribed for NICM as well as CPADIGS parameter then it will see the CPADIGS parameter (as was received for the first leg of call) in the above mentioned ICM messages. In such cases the

NICM information transported for networked calls will include 6 parameters as shown:

— Network_Node_Id

— Network_Call_Id

— NICM_Call_Type

— Prev_Appl_Id

— Original_Inbound_Dn

— ***CPADIGS***

This feature will be NICM compliant. This means the NICM functionality will be modified to carry an additional parameter CPADIGS over IBN7 trunks as well as PRI (NTNA protocol), provided proper subscription exists for NICM and CPADIGS parameter.

2.2.5 Message Flow Scenarios

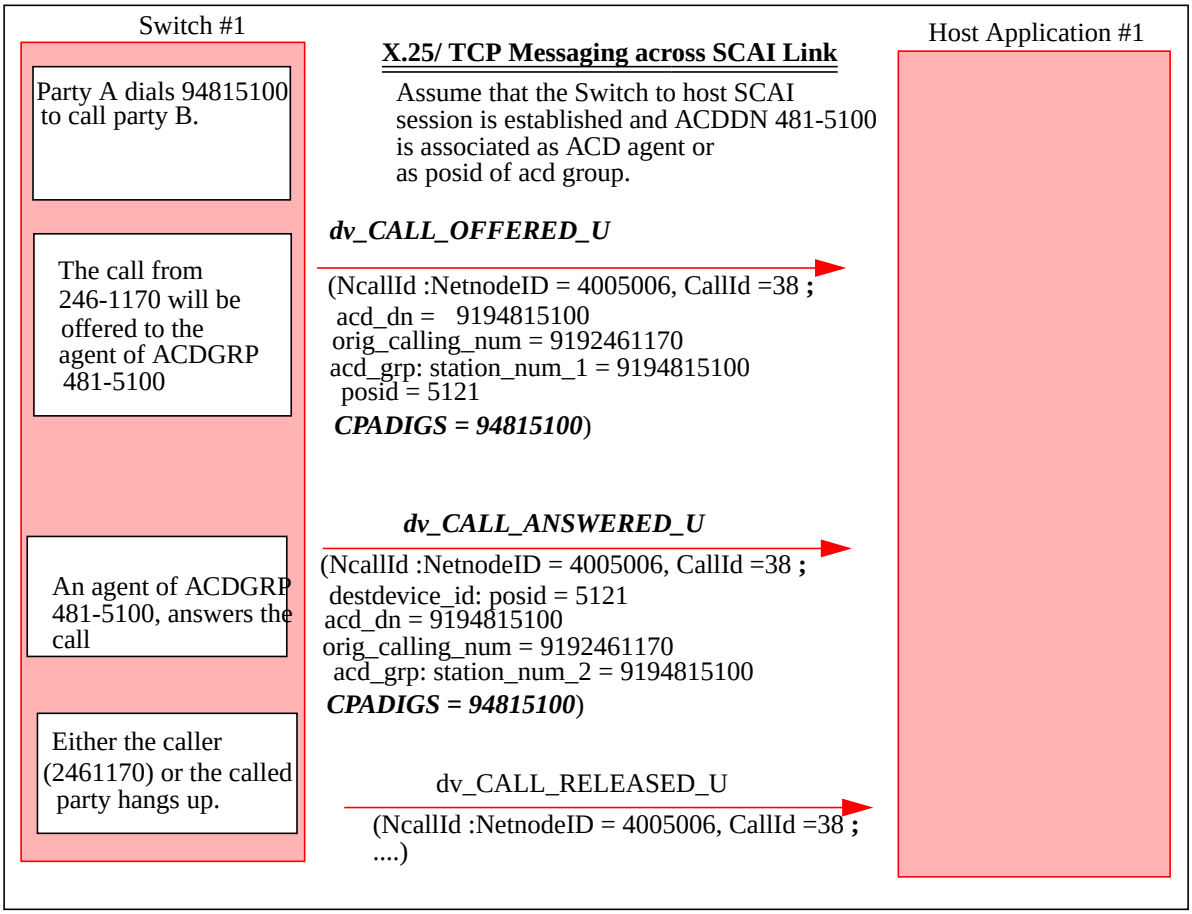
Let us consider some message flow scenarios to get better understanding of the feature. In all the scenarios mentioned below, assume the following, unless stated otherwise:

1. *Parties B, C and D are always ACD agents.*
2. *Parties B and C belong to same switch. D belongs to a remote switch.*
3. *Party A is any agent that requires service from a call centre and may be on the same network or a different network.*
4. *All the preconditions mentioned in section "2.2.3.2 Preconditions to be satisfied by a party in order to receive all the modified messages with new parameter." on page 88 are satisfied by all the parties.*
5. *The modified messages are shown in bold and italics.*
6. *The messaging that remains the same may not been shown explicitly.*
7. *Both, switch 1 and switch 2 are having CCM13 software. The XPM software is of release 13 or higher.*
8. *In case of extended calls, the host1 has a call to be extended (forwarded. transferred, redirected, overflowed, routed) to the host2.*
9. *The term trunks mean any of the trunks mentioned in section "2.2.1.1 Description" on page 71.*
10. *In all the scenarios, the statement 'party A calls party B/D' is to be interpreted as 'party A dials to reach a call centre and the call terminates to agents B/D within that call centre'.*

2.2.5.1 Two way Line Call

Party A (2461170) calls party B (ACD agent of ACDGRP 4815100, posid: 5121) over line and party B answers. Please refer to “Figure 3 2-Way Line Call” on page 92.

Figure 3 2-Way Line Call



2.2.5.2 Two way Trunk Call

Party A (2461170) calls party D (ACD agent of ACDGRP 4815200, posid: 5211) over trunk.

Please refer to “Figure 4 2-Way Trunk Call (Trunk Signalling Message)” on page 93 and “Figure 5 2-Way Trunk Call (ICM Messages)” on page 93.

Figure 4 2-Way Trunk Call (Trunk Signalling Message)

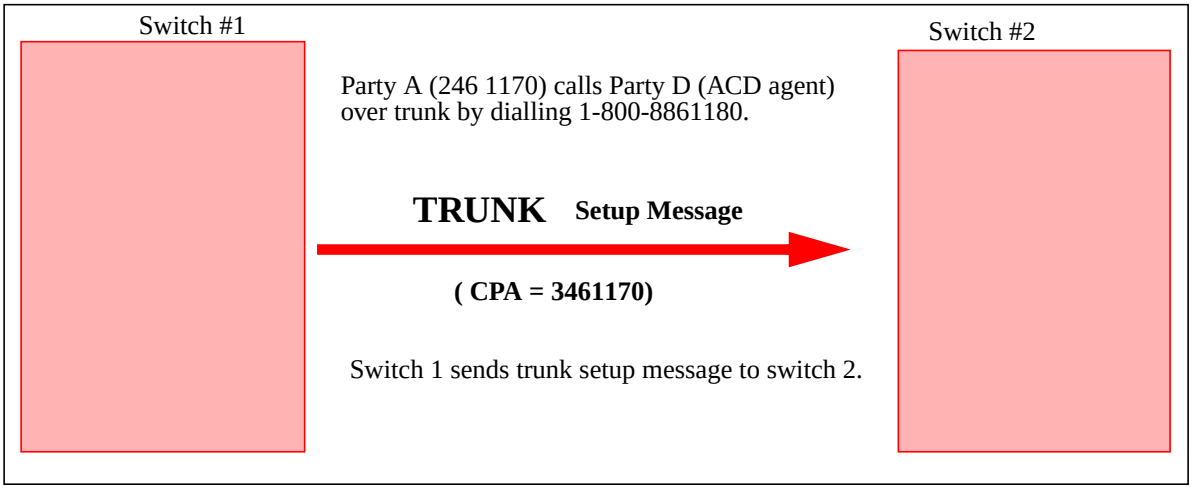
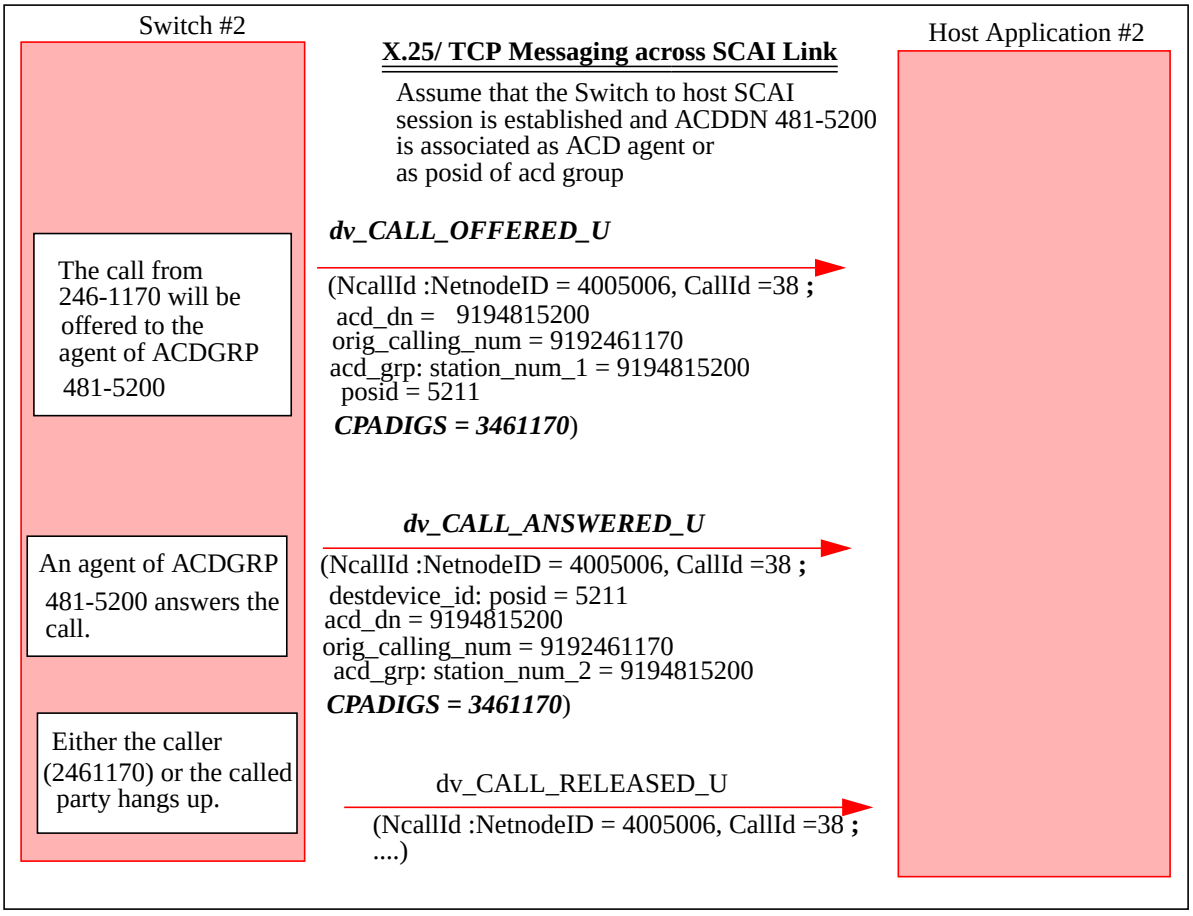


Figure 5 2-Way Trunk Call (ICM Messages)



2.2.5.3 Calls Extended Over Line

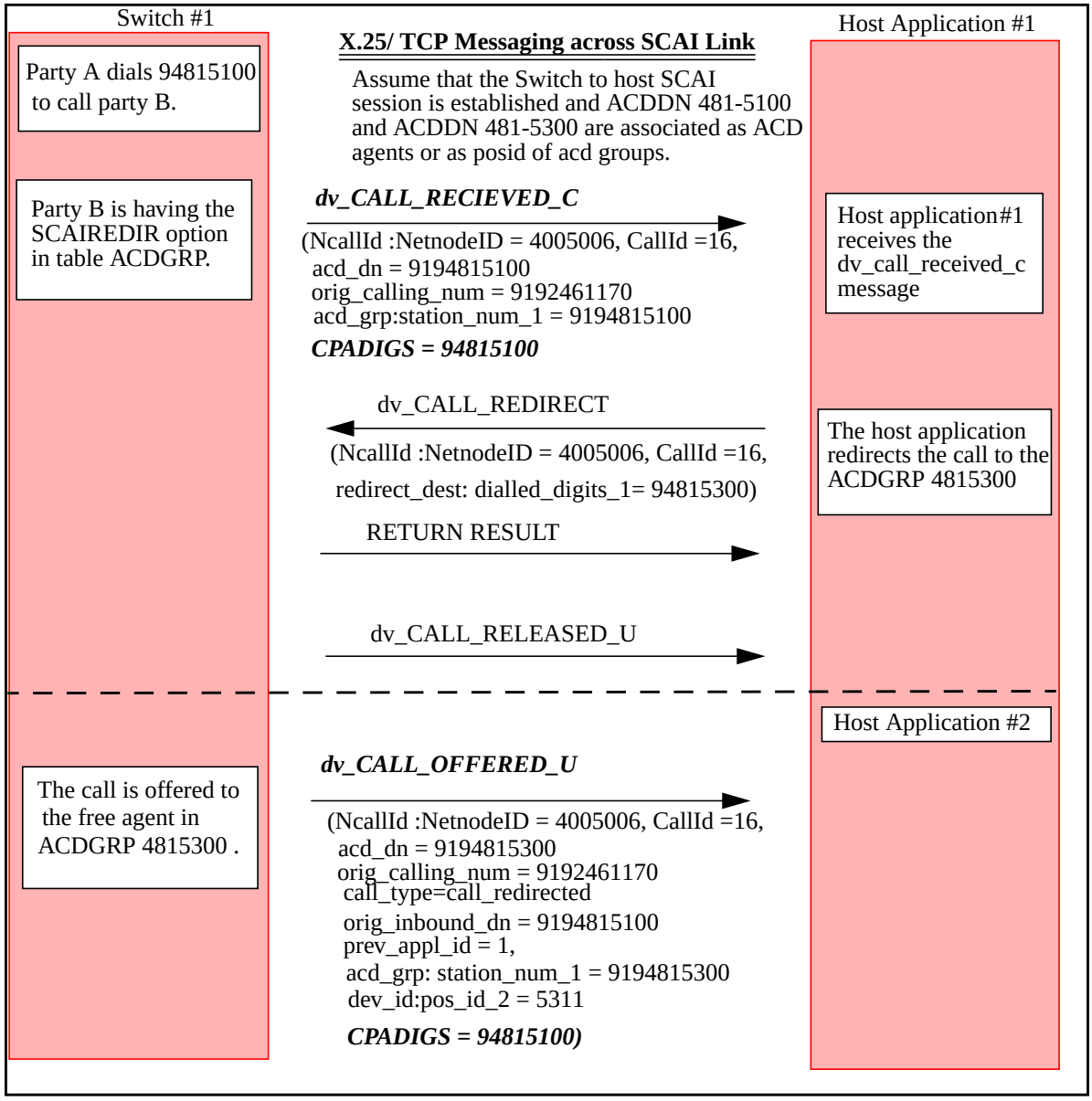
Consider the following two cases:

2.2.5.3.1 ACD Group (with Redirect Option)

Party A (2461170) calls party B (ACD agent of ACDGRP 4815100, posid: 5121) over line. The ACDGRP 4815100 is having the SCAIREDIR option in table ACDGRP. Party B then extends the call (using the DV_CALL_REDIRECT message) to party C (ACD agent of ACDGRP 4815300, posid: 5311) over line.

The messages for this scenario are shown in “Figure 6 Call Extended Over Line (ACD Group with Redirect Option)” on page 95.

Figure 6 Call Extended Over Line (ACD Group with Redirect Option)



2.2.5.3.2 ACD Group (without Redirect Option)

Party A (2461170) calls party B (ACD agent of ACDGRP 4815100, posid: 5121) over line and party B answers. Party B then extends the call to party C (ACD agent of ACDGRP 4815300, posid: 5311) over line. It is assumed that party B extends the call to party B using the DV_ADD_PARTY and DV_TRANSFER_PARTY messages.

The messages for first leg of call shown are shown in “Figure 7 Call Extended Over Line (Without Redirect option) : 1st leg” on page 96. For the messages in the second leg of call please refer to “Figure 8 Call Extended Over Line (Without Redirect option) : 2nd leg” on page 97.

Figure 7 Call Extended Over Line (Without Redirect option) : 1st leg

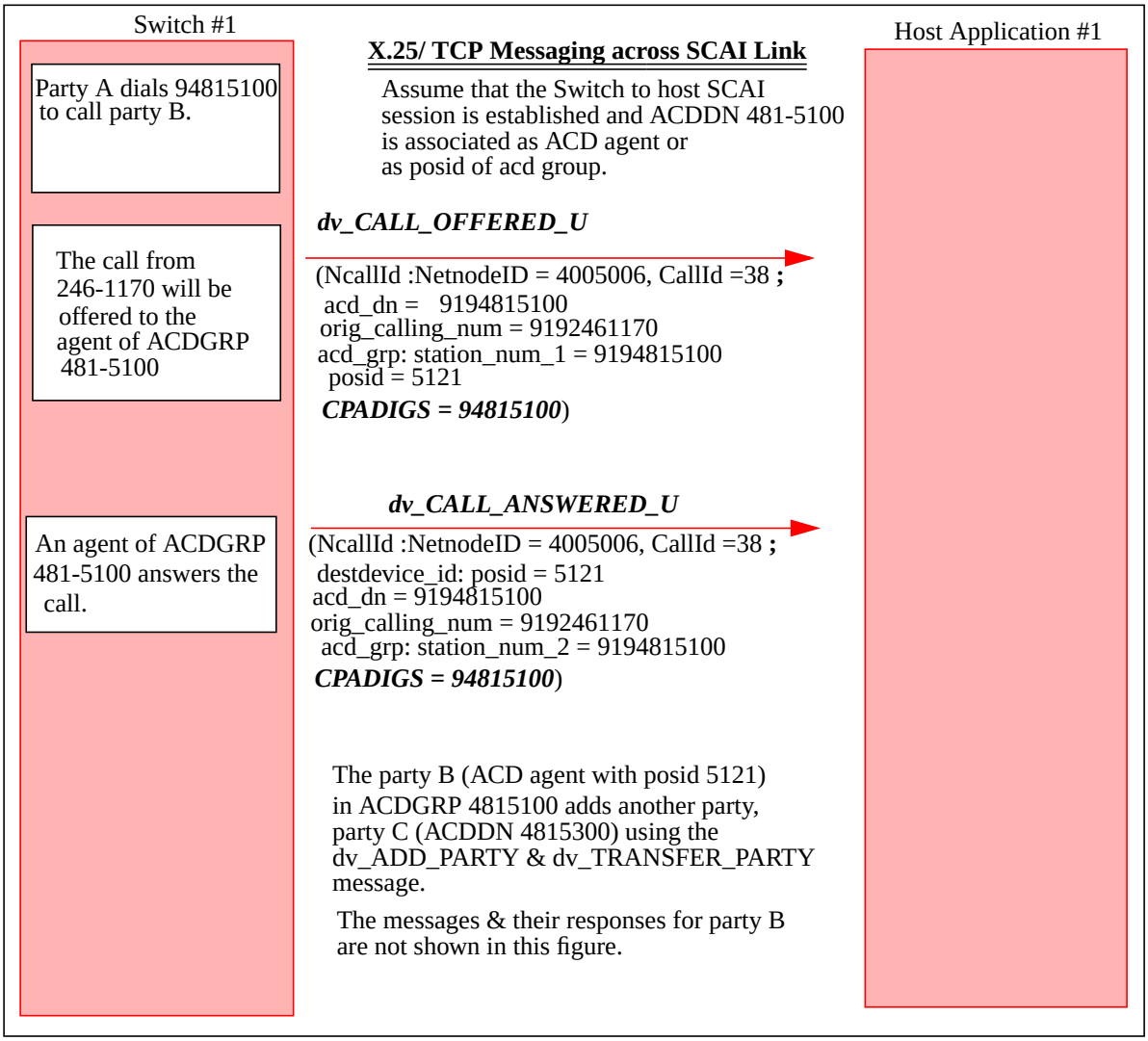


Figure 8 Call Extended Over Line (Without Redirect option) : 2nd leg

2.2.5.4 Calls Extended Over Trunk

Note: *It is assumed that all the parties & switches involved are having proper NICM subscription.*

There can be following four scenarios:

- A calls B over line and B (with Redirect option) extends call to D over trunk.

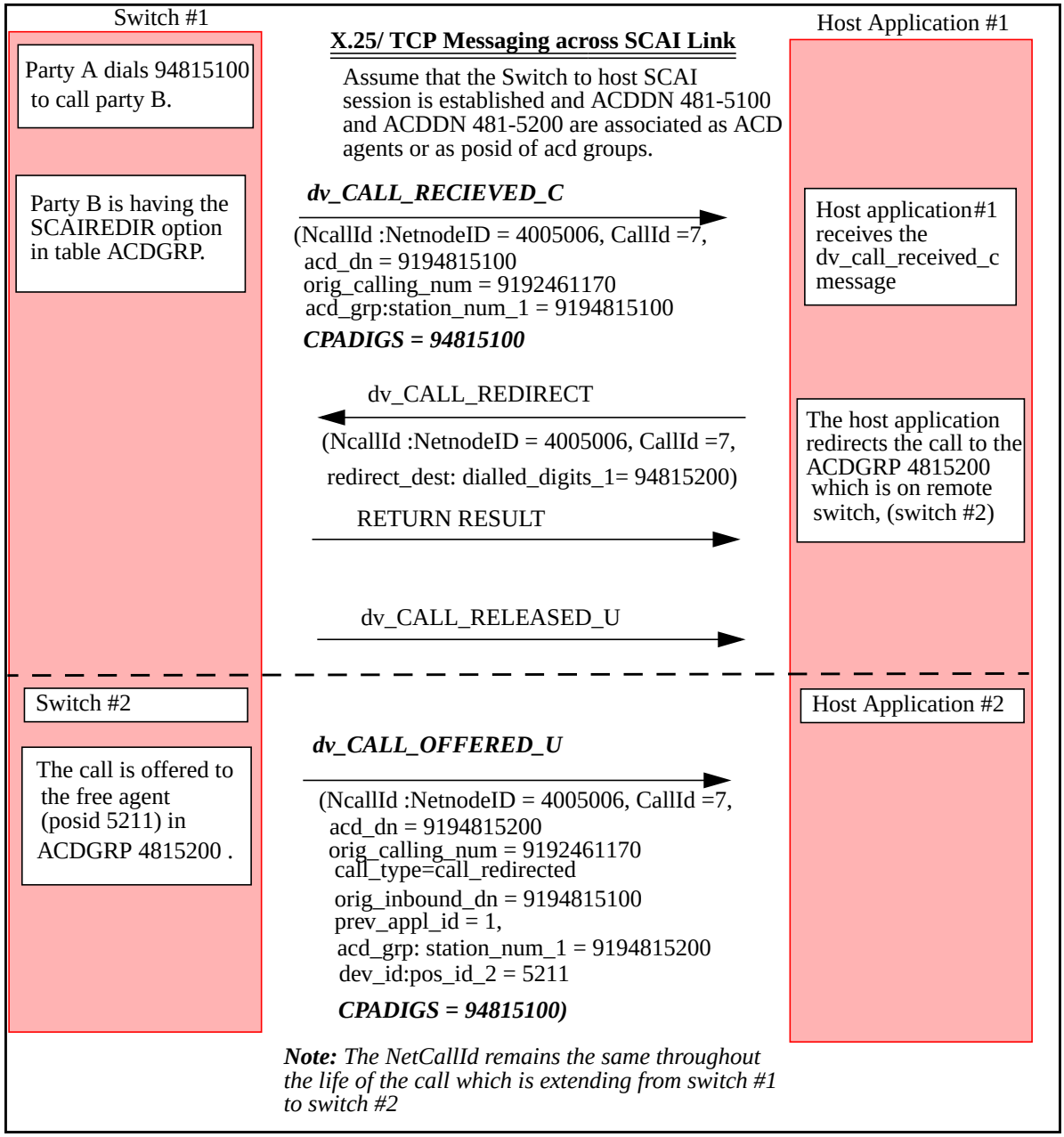
- A calls B over line and B (without Redirect option) extends call to D over trunk.
- A calls B over trunk and B (with Redirect option) extends call to D over trunk.
- A calls B over trunk and B (without Redirect option) extends call to D over trunk.

2.2.5.4.1 A Calls B over line and B (With Redirect option) extends call to D over trunk:

Party A (2461170) calls party B (ACD agent of ACDGRP 4815100, posid: 5121) over line. The ACDGRP 4815100 is having the SCAIREDIR option in table ACDGRP. Party B then extends the call (using the DV_CALL_REDIRECT message) to party D (ACD agent of ACDGRP 4815200, posid: 5211) over trunk.

Please refer to “Figure 9 A calls B over line & B (with SCAIREDIR) extends call over trunk” on page 99.

Figure 9 A calls B over line & B (with SCAIREDIR) extends call over trunk



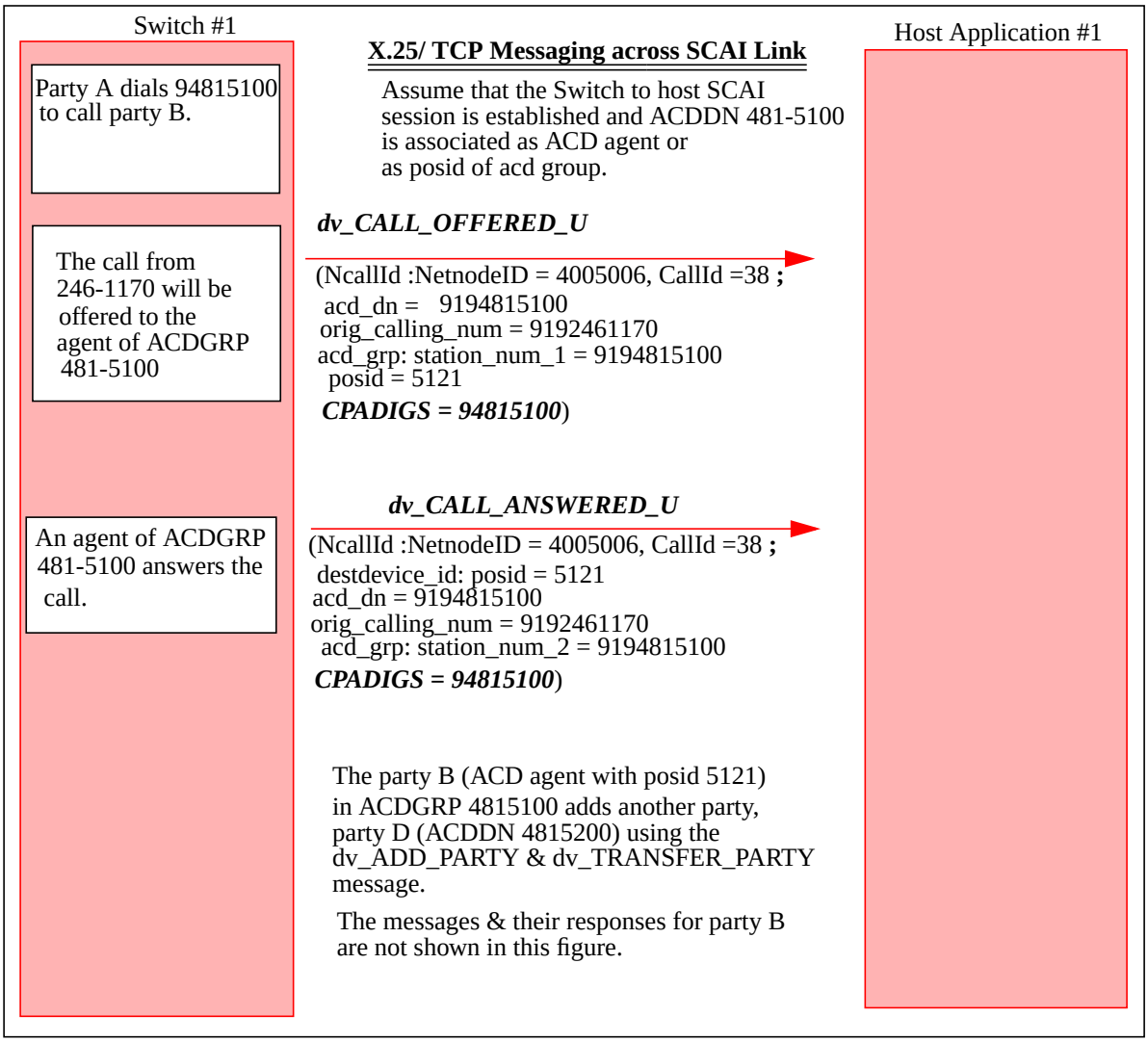
2.2.5.4.2 A Calls B over line and B (Without Redirect option) extends call to D over trunk:

Party A (2461170) calls party B (ACD agent of ACDGRP 4815100, posid: 5121) over line and party B answers. Party B then extends the call to party D

(ACD agent of ACDGRP 4815200, posid: 5211) over trunk. It is assumed that party B extends the call to party D using the DV_ADD_PARTY and DV_TRANSFER_PARTY messages.

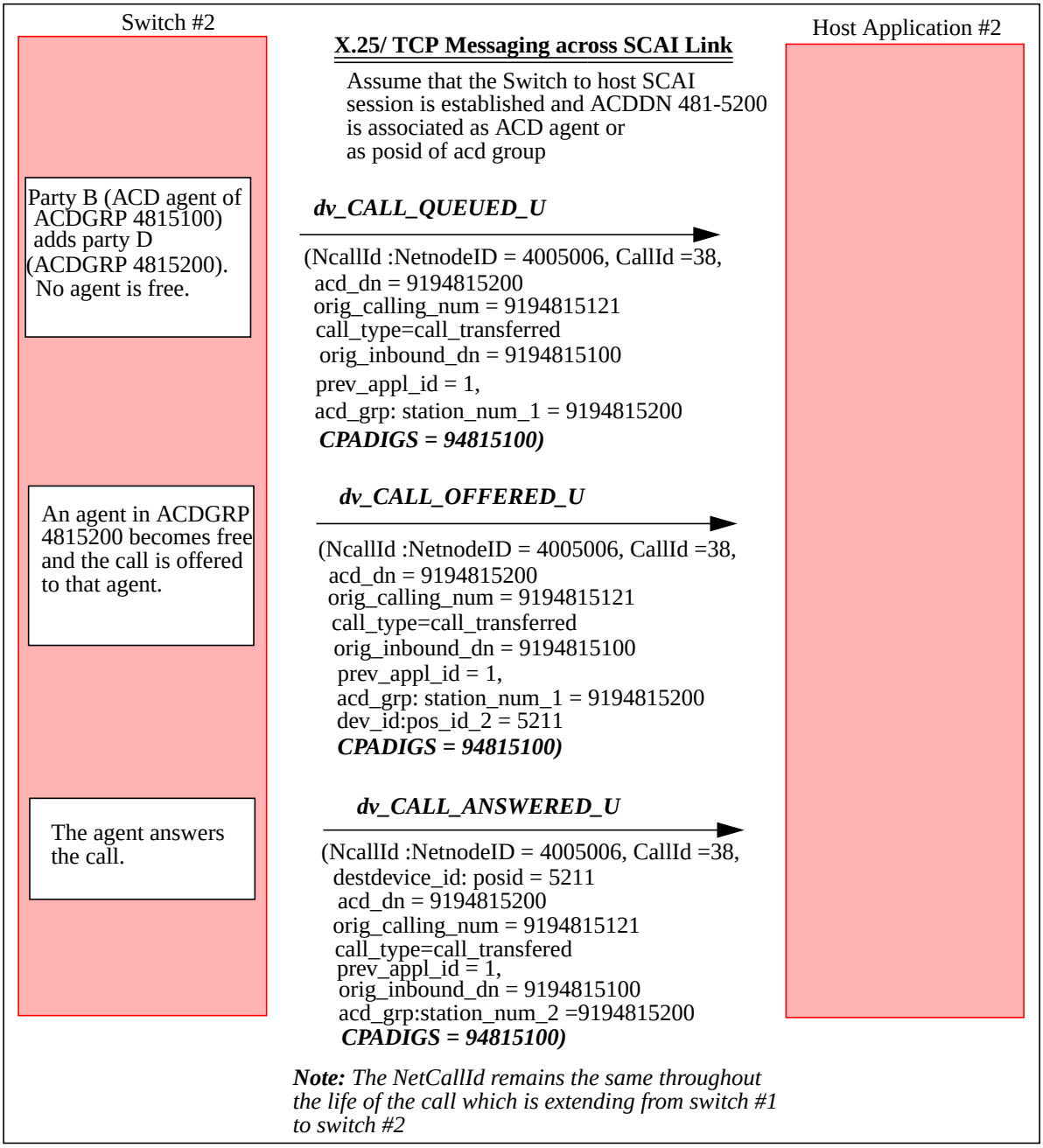
The messages for the first leg of call are shown in “Figure 10 A calls B over line & B (without SCAIREDIR) answers” on page 100.

Figure 10 A calls B over line & B (without SCAIREDIR) answers



The messages for second leg of call are shown in “Figure 11 B (without SCAIREDIR) extends the call to D over trunk” on page 101.

Figure 11 B (without SCAIREDIR) extends the call to D over trunk



2.2.5.4.3 A Calls B over trunk and B (With Redirect option) extends call to D over trunk:

Note: *Assume that parties A, B and D belong to different switches.*

Party A (2461170) calls party B (ACD agent of ACDGRP 4815100, posid: 5121) over trunk. The ACDGRP 4815100 is having the SCAIREDIR option in

table ACDGRP. Party B then extends the call (using the DV_CALL_REDIRECT message) to party D (ACD agent of ACDGRP 4815200, posid: 5211) over trunk.

When A calls B over trunk, switch #1 sends a trunk setup message to switch #2. Please refer to “Figure 12 A calls B (Trunk Signalling Message)” on page 103.

The ICM messaging, when B receives the call, is shown in figure “Figure 13 A calls B over trunk & B (with SCAIREDIR) extends call over trunk” on page 103.

Figure 12 A calls B (Trunk Signalling Message)

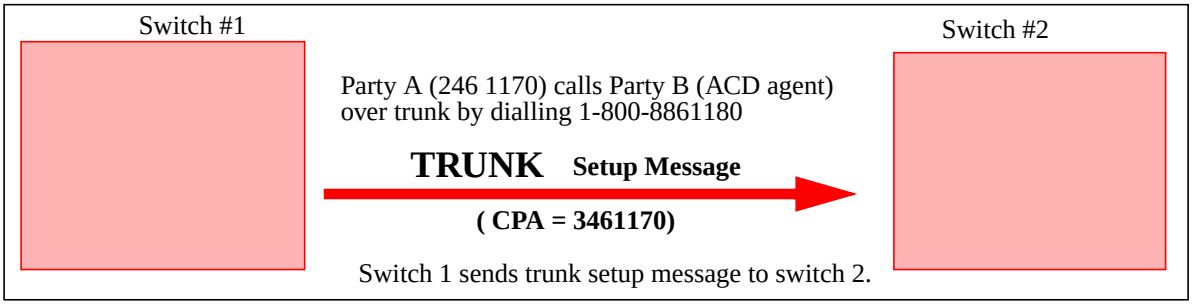
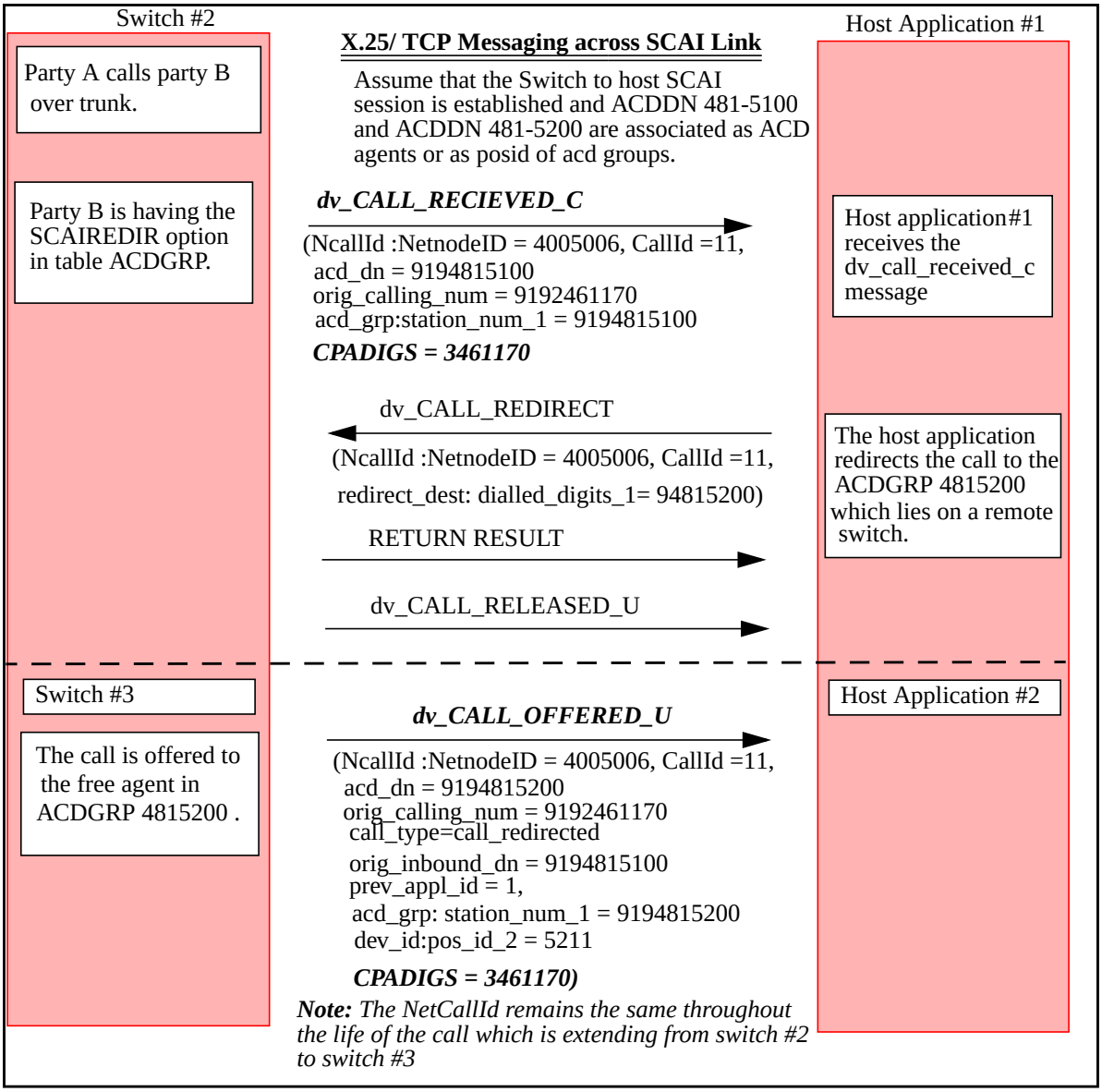


Figure 13 A calls B over trunk & B (with SCAIREDIR) extends call over trunk



2.2.5.4.4 A Calls B over trunk and B (Without Redirect option) extends call to D over trunk:

Note: *Assume that parties A, B and D belong to different switches.*

Party A (2461170) calls party B (ACD agent of ACDGRP 4815100, posid: 5121) over trunk and party B answers. Party B then extends the call to party D (ACD agent of ACDGRP 4815200, posid: 5211) over trunk. It is assumed that party B extends the call to party D using the DV_ADD_PARTY and DV_TRANSFER_PARTY messages.

When A calls B over trunk, switch #1 sends a trunk setup message to switch #2 as shown in "Figure 12 A calls B (Trunk Signalling Message)" on page 103.

The ICM messaging, when B receives the call, is shown in figure "Figure 14 A calls B over trunk & B (without SCAIREDIR) answers" on page 105.

Party B then initiates 3WC by adding another party, party D over trunk. For details of ICM messaging for party D, please refer to "Figure 15 B (without SCAIREDIR) extends the call to D over trunk" on page 106.

Figure 14 A calls B over trunk & B (without SCAIREDIR) answers

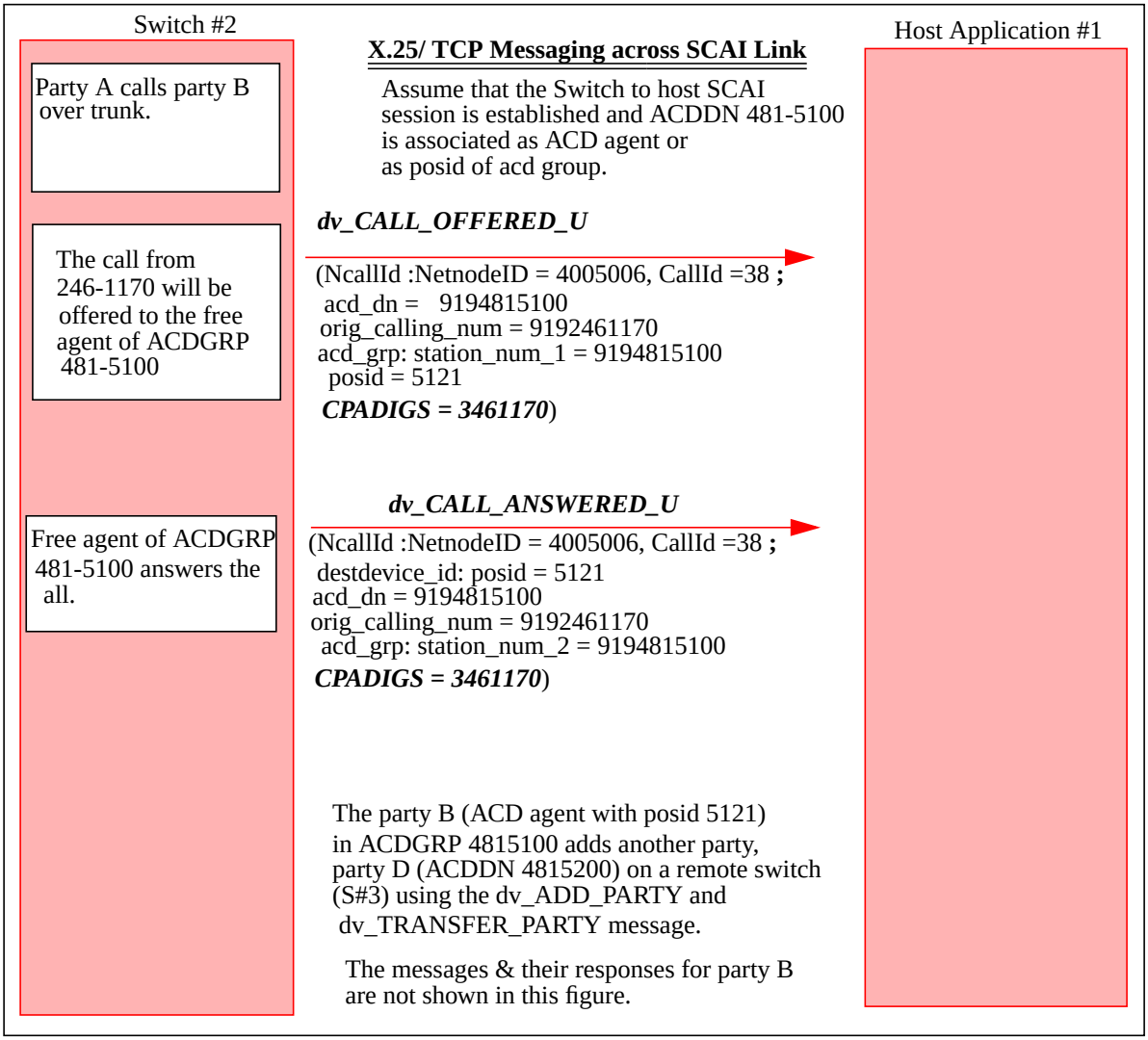
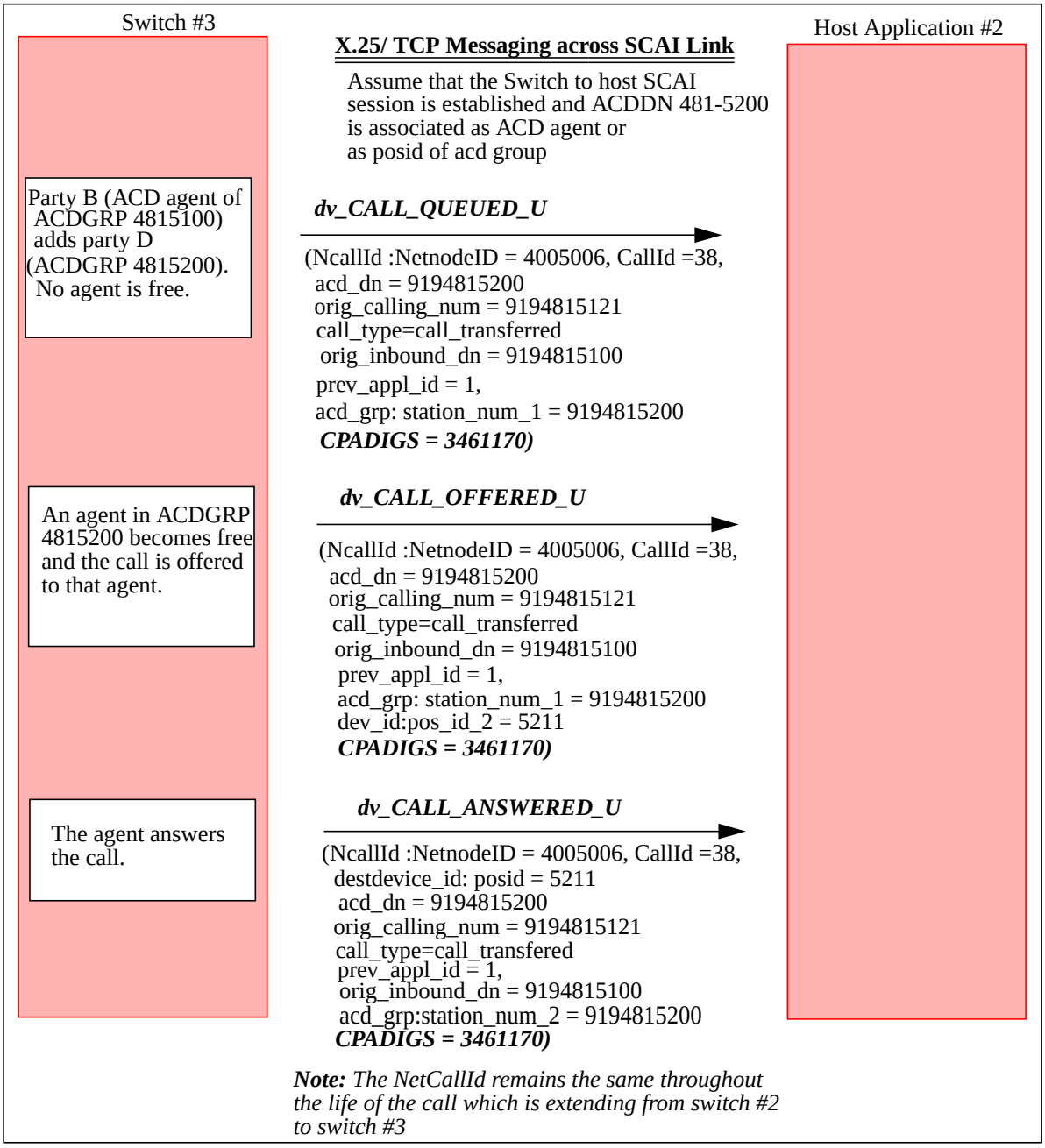


Figure 15 B (without SCAIREDIR) extends the call to D over trunk



2.2.5.5 Calls Extended Over Trunk (Without NICM)

Note: *Assume that the party D is not subscribed to NICM.*

Consider the following two cases:

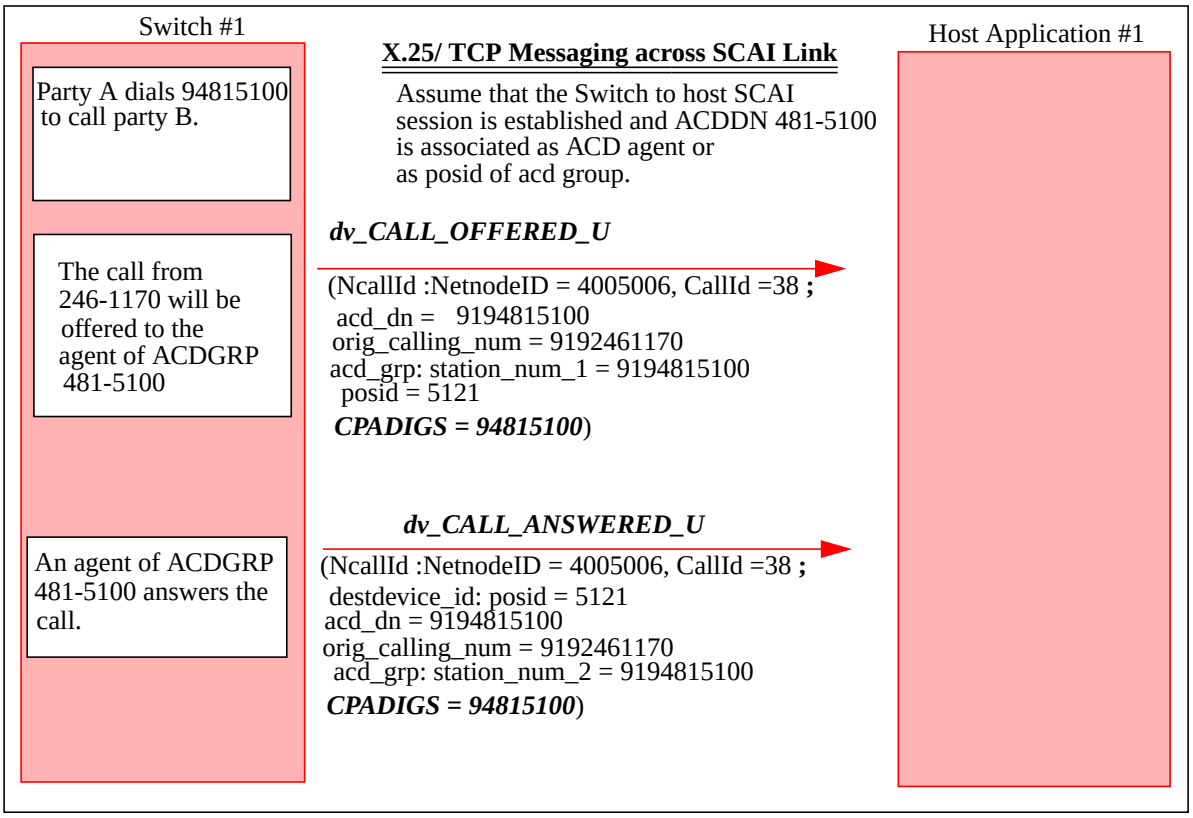
- A calls B over line and B extends the call to D over trunk.

- A calls B over trunk and B extends the call to D over trunk.

2.2.5.5.1 A calls B over line and B extends call to D over trunk

The ICM messaging, when party A (2461170) calls party B (ACD agent in ACDGRP 4815100, posid: 5121), is shown in “Figure 16 Party A calls Party B over line” on page 107.

Figure 16 Party A calls Party B over line



When B extends the call to party D (ACD agent in ACDGRP 4815200, posid: 5211), the following happens:

Switch 1 sends trunk setup message to switch 2 as shown in “Figure 17 Calls Extended Over Trunk (Without NICM): Trunk Signalling” on page 108.

After this the call is offered to the free agent in the ACD group 4815200. Please refer to “Figure 18 Calls Extended Over Trunk (Without NICM): ICM Messaging” on page 108.

Note: *Since the NICM information is not transferred from switch 1 to switch 2, the value of CPADIGS parameter in the ICM messages of party*

D is 3461170. This is actually the CPA value in the trunk setup message sent by switch 1 to switch 2.

***Note:** The NetCallIDs for the call from A to B and that of B to D are different, since party D is not subscribed to NICM.*

Figure 17 Calls Extended Over Trunk (Without NICM): Trunk Signalling

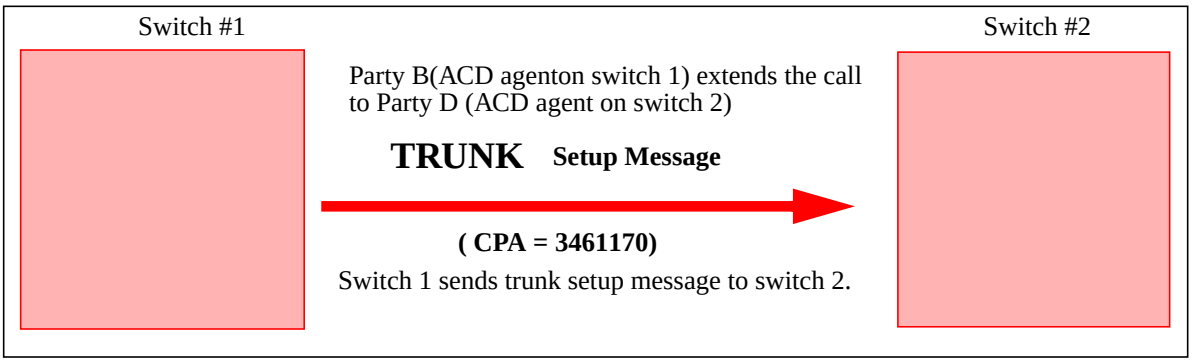
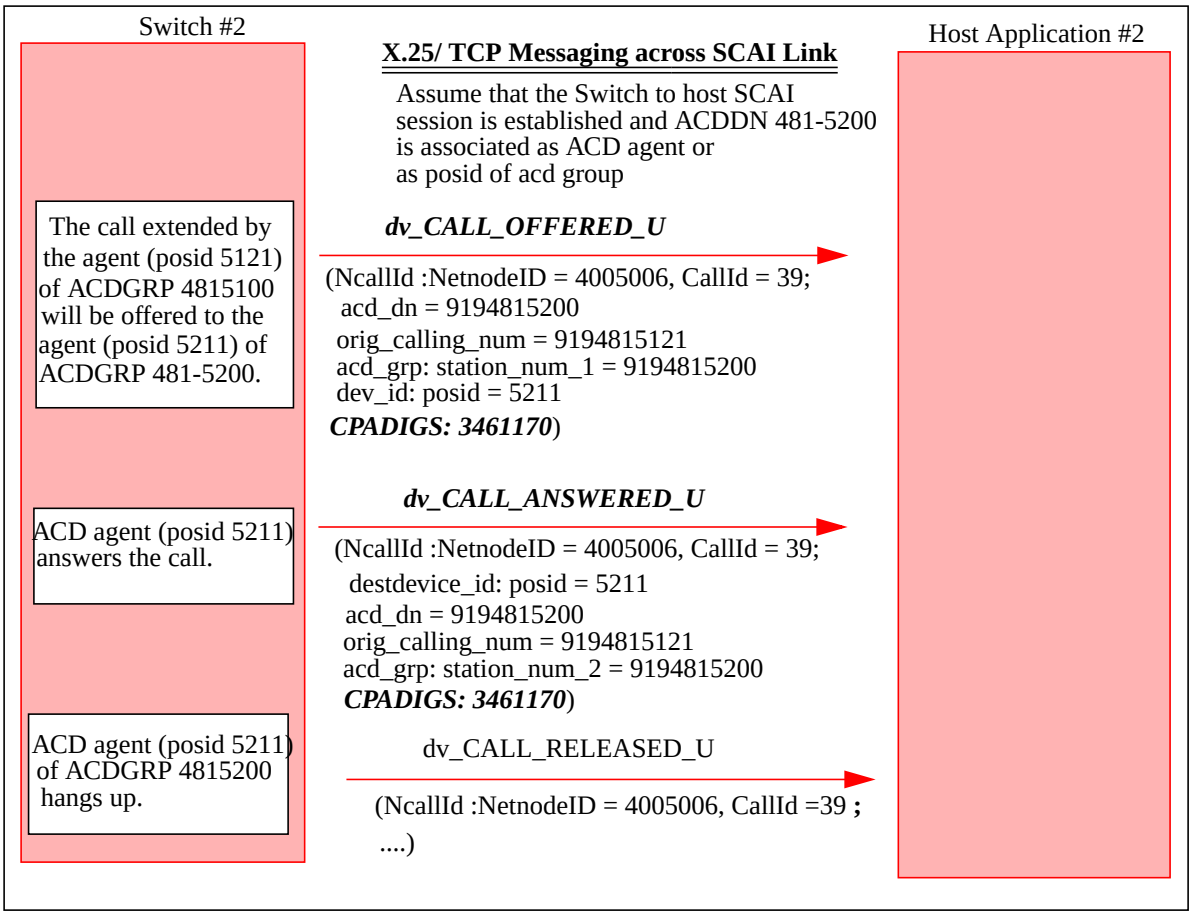


Figure 18 Calls Extended Over Trunk (Without NICM): ICM Messaging



2.2.5.5.2 A calls B over trunk and B extends call to D over trunk

Note: *Assume that parties A, B and D are on different switch.*

When party A(2461170) calls party B(ACD agent in ACDGRP 4815100, posid: 5121), switch 1 sends a trunk setup message to switch 2. Please refer to “Figure 19 A calls B over trunk (Trunk Signalling Messages)” on page 110.Then the call is offered to the free agent in the ACDGRP. The ICM messaging when party B receives the call is shown in “Figure 20 A calls B over trunk (Without NICM) : ICM Messaging” on page 110.

Now party B (ACD agent in ACDGRP 4815100, posid: 5121) extends the call to party D (ACD agent in ACDGRP 4815200, posid: 5211) over trunk. This time switch 2 sends trunk setup message to switch 3 as shown in “Figure 21 B extends call to D over trunk (Trunk Signalling Messages)” on page 111.

The call is then offered to the free agent in the ACDGRP 4815200. Please refer to “Figure 22 B extends call to D over trunk (Without NICM) : ICM Messages” on page 111.

Note: *Since the NICM information is not transferred from switch 2 to switch 3, the value of CPADIGS parameter in the ICM messages of party D is 8696746. This is actually the CPA value in the trunk setup message sent by switch 2 to switch 3.*

Note: *The NetCallIDs for the call from A to B and that of B to D are different, since party D is not subscribed to NICM.*

Figure 19 A calls B over trunk (Trunk Signalling Messages)

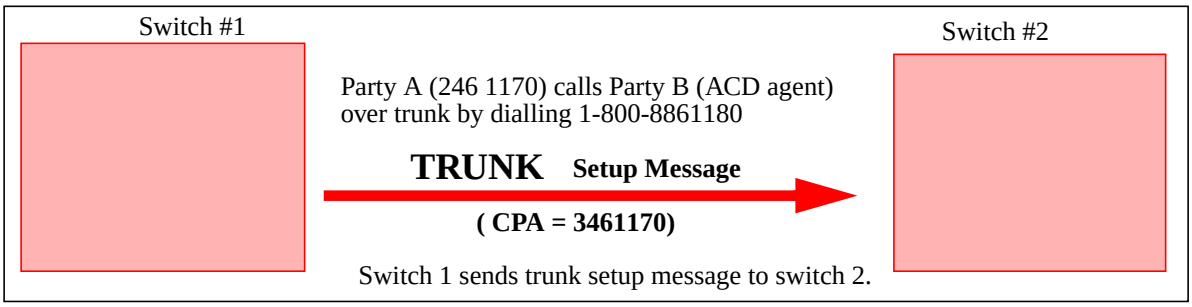


Figure 20 A calls B over trunk (Without NICM) : ICM Messaging

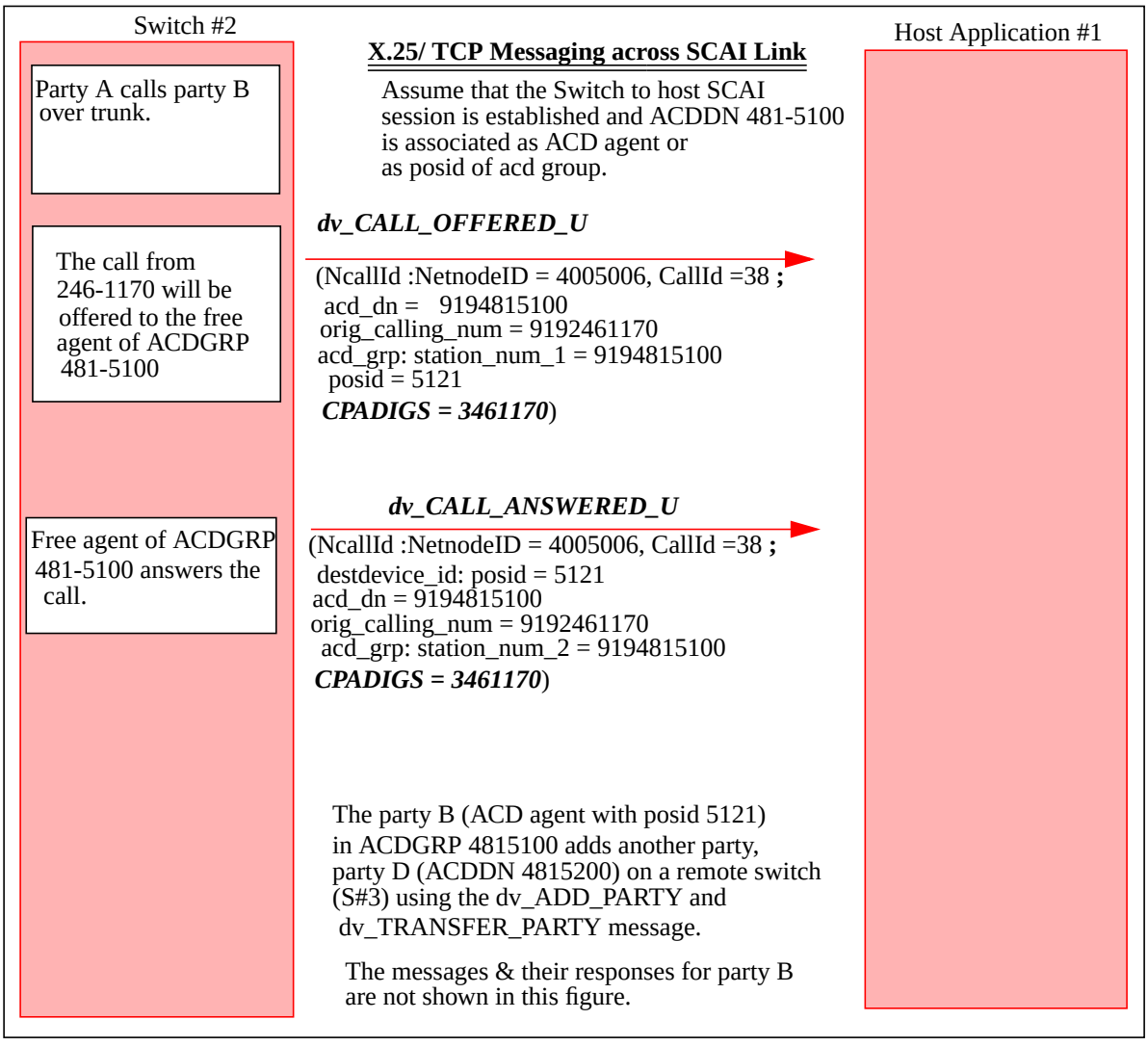


Figure 21 B extends call to D over trunk (Trunk Signalling Messages)

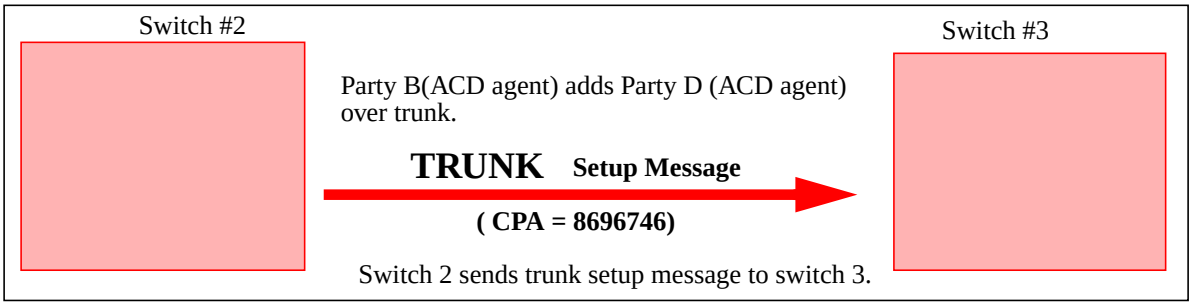
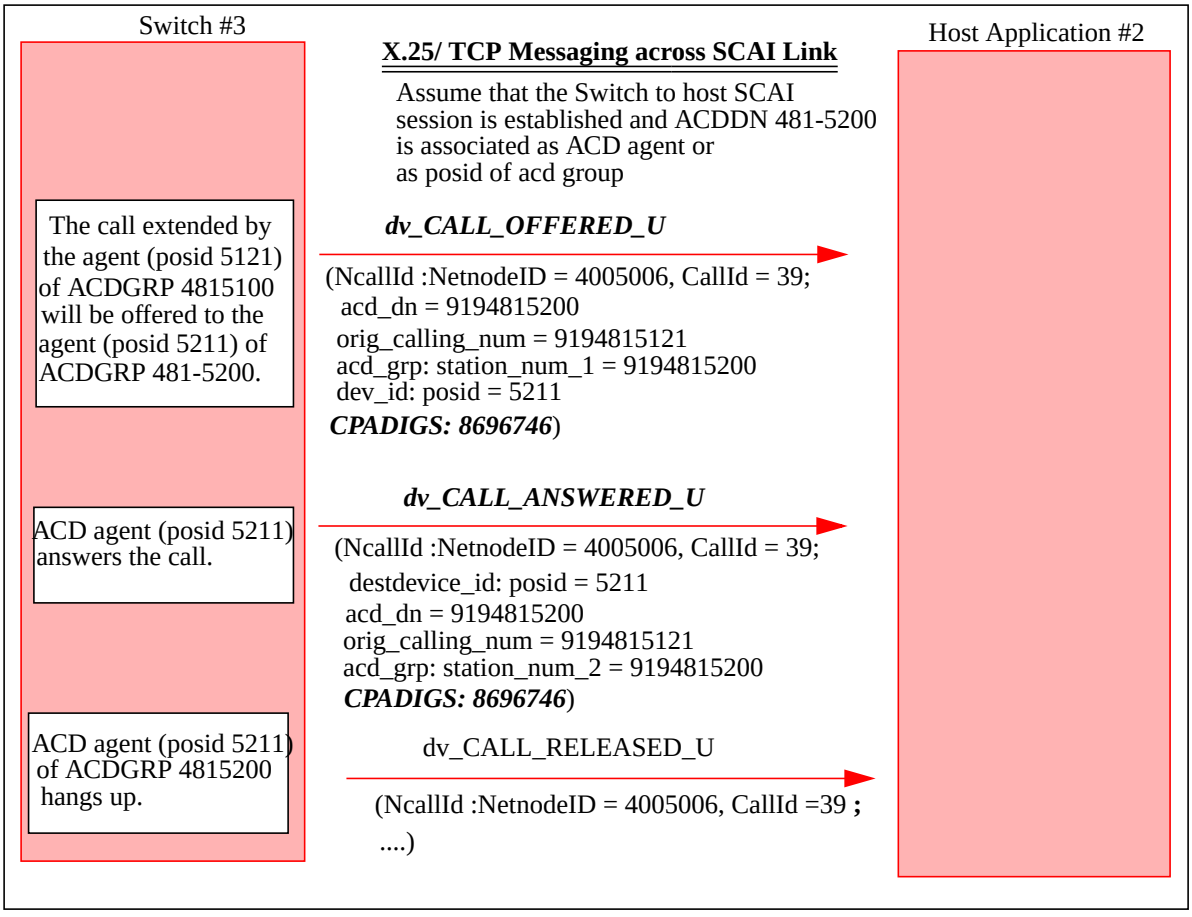


Figure 22 B extends call to D over trunk (Without NICM) : ICM Messages



2.2.5.6 Exceptional Cases

The value of the parameter CPADIGS may not be displayed in the following scenarios:

2.2.5.6.1 Calls in ACD-MDC-ACD environment

Note: *It is assumed that the party C is a MDC line.*

Note: *Parties A, B, C and D are on the same switch.*

Note: *All the preconditions in section "2.2.3.2 Preconditions to be satisfied by a party in order to receive all the modified messages with new parameter." on page 88 are satisfied.*

Party A calls party B (ACD agent). Party B adds party C (MDC line) over a line. Now party C adds one more party D (ACD agent) over line. In this case:

- The ICM messages to party B will show CPADIGS as the digits dialled by party A.
- The ICM messages to party C will not have the parameter CPADIGS at all.
- The ICM messages to party D will again show CPADIGS parameter. The CPADIGS will display the digits dialled by party A.

The ICM messaging when party A (4815132) calls party B (ACD agent in ACDGRP 4815100) is shown in "Figure 23 Party A (4815132) calls party B (ACD agent)" on page 113.

Figure 23 Party A (4815132) calls party B (ACD agent)

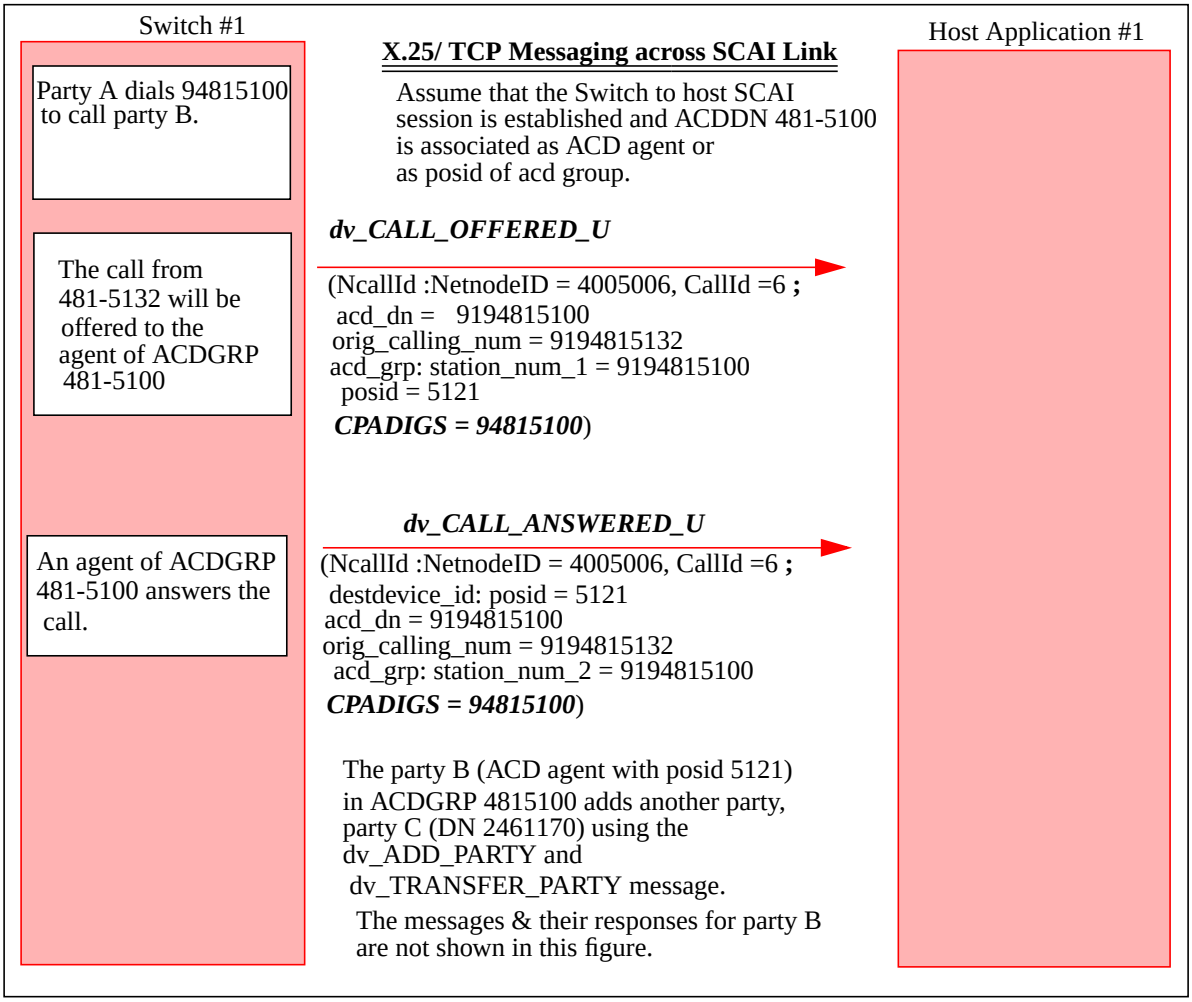
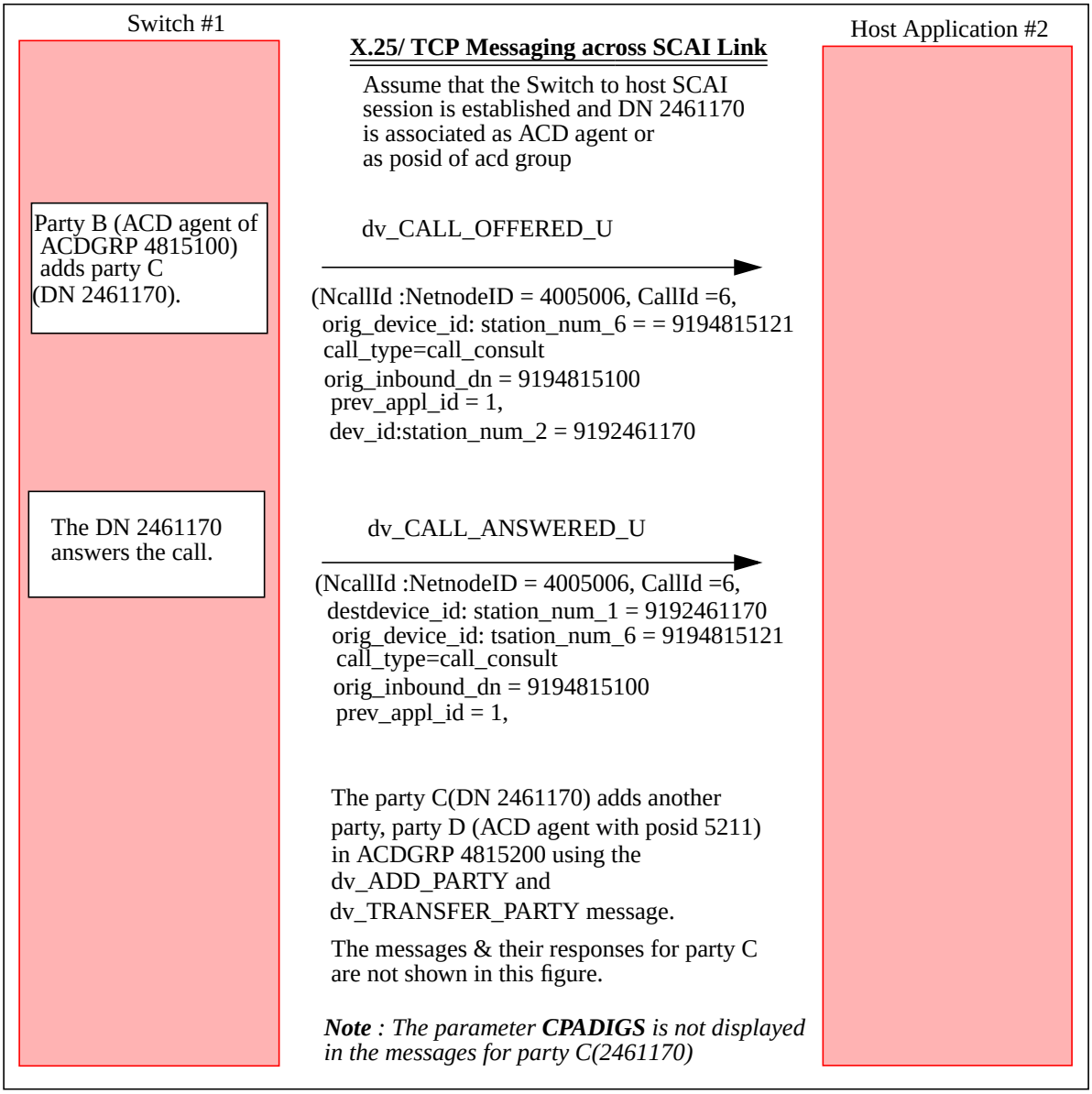
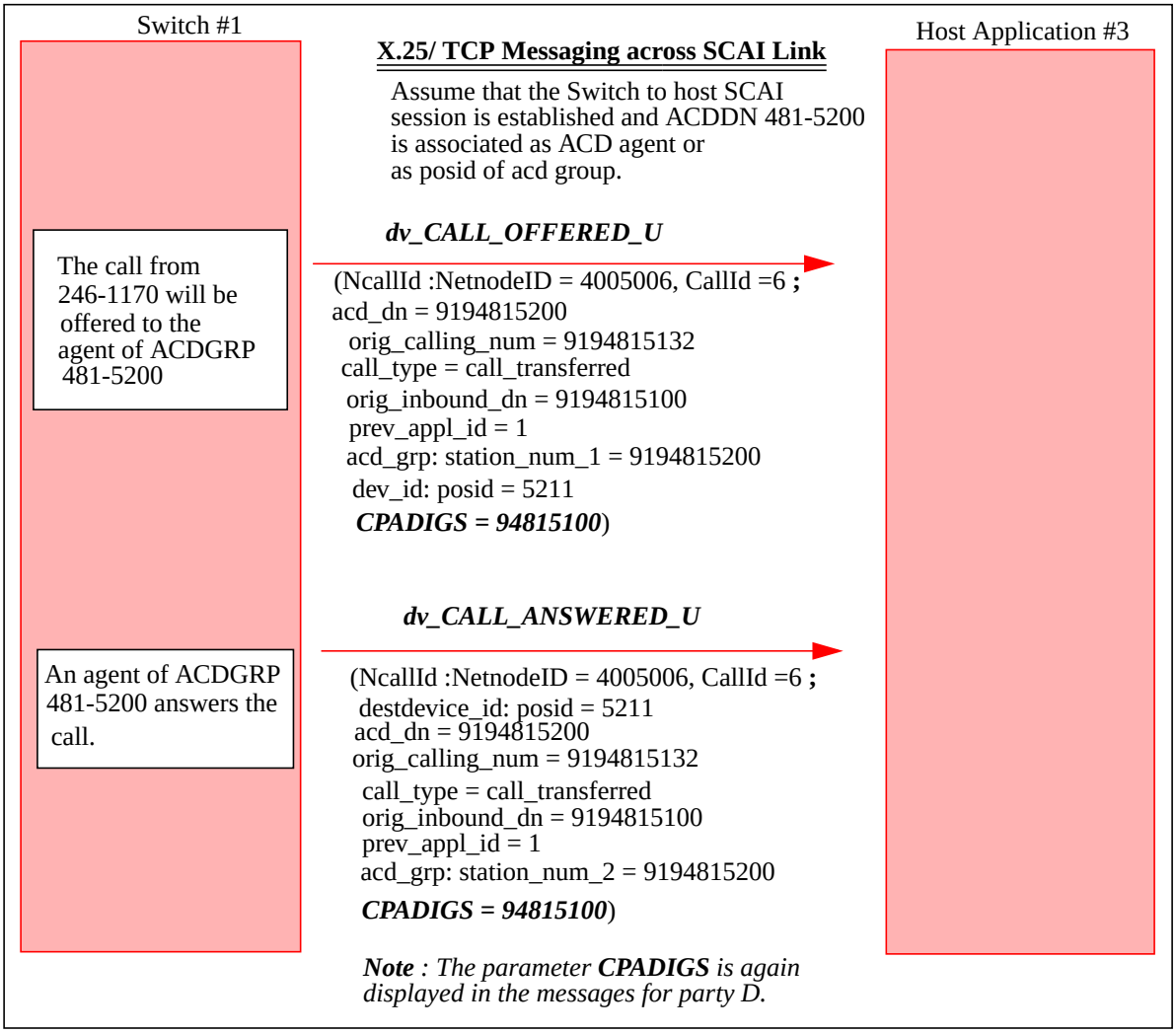


Figure 24 Party B (ACD agent) adds party C (MDC line)



Now party B transfers the call from party A to party C (MDC line, DN 2461170). The messaging for this leg of call is shown in “Figure 24 Party B (ACD agent) adds party C (MDC line)” on page 114.

Figure 25 Party C (MDC line) adds party D (ACD agent)



The scenario now is party A and party C are talking. Now party C transfers the call to party D (ACD agent). The messaging for party D are shown in “Figure 25 Party C (MDC line) adds party D (ACD agent)” on page 115.

2.2.5.6.2 Different Versions of CM & XPM Software

Consider a case in which a switch S2 is having the following versions of software: CM (Release 12), XPM (Release13 or higher).

If S2 receives an incoming Q.931 setup message from switch S1 (with CPADIGS parameter) on the PRI trunks then it will not be able to show the CPADIGS parameter in the ICM messages. However the other NICM parameters will be displayed (if proper NICM subscription exists.)

Thus, in general, if any of the intermediate switch in the life of an extended call has a CM software of version 12 or lower, then the delivery of CPADIGS parameter is not guaranteed at the terminating switch.

This applies even if the terminating switch has CM and XPM software of release 13 or above.

2.2.5.6.3 Different SCAI Versions

Consider a case involving parties A, B and C which are ACD agents. All the parties belong to the same switch. The switch is having CCM13 software. All the parties A, B and party C are having proper subscription for CPADIGS parameter.

Party A and party C have logged on to ICM sessions with SCAI version SCAI15. Party B has logged on to ICM session with SCAI version SCAI14.

When a caller calls ACD agent A, the CPADIGS parameter (with its value as the digits dialled by the caller) is displayed in the appropriate ICM messages for the agent A. Now if A transfers the call to agent B, then the ICM messages for agent B will not contain the parameter CPADIGS as B has logged on with SCAI version lower than SCAI15. Now if party B extends the call to party C, then the ICM messages for party C will again show the CPADIGS parameter (with its value as the digits dialled by the caller).

2.3 Hardware requirements

Not Applicable

2.4 Limitations and restrictions

- This feature does not ensure the correct digits' population for the protocol variants other than those specified in "2.2.1.1 Description" on page 71.
- If a call is extended from a CTI agent to a non CTI MDC agent and again extended to a CTI agent, then ICM considers these as separate calls. Therefore call_related data will be changed. So also the CPA parameter in the ICM messages.
- If during the life of the call, i.e. through the different extensions, any switch having a lower version which does not have the CPA functionality then the value of the CPA will be lost.

2.5 Interactions

This feature supports the population of the parameter CPADIGS over NICM. For example consider caller A calls party B over line which is in switch 1. The party B does not have the subscription to the CPADIGS. Hence the parameter

CPADIGS will not show up for the party B. Please refer to “Figure 26 Caller A calls party B over Line” on page 117.

The party B now extends the call to party D which is in switch 2. Both parties B and D have appropriate subscription to NICM. The party D has subscription to the parameter CPADIGS. **Hence the parameter CPADIGS will show up for the party D even though the same parameter did not show up for party B.** Please refer to “Figure 27 Party B extends call to party D over trunk” on page 118.

In case of networked calls, the NICM subscription ensures the transportation of all NICM parameters along with CPADIGS parameter from one switch to another irrespective of the subscription to the CPADIGS parameter. However the subscription to CPADIGS parameter will ensure delivery of CPADIGS parameter in ICM messages.

Figure 26 Caller A calls party B over Line

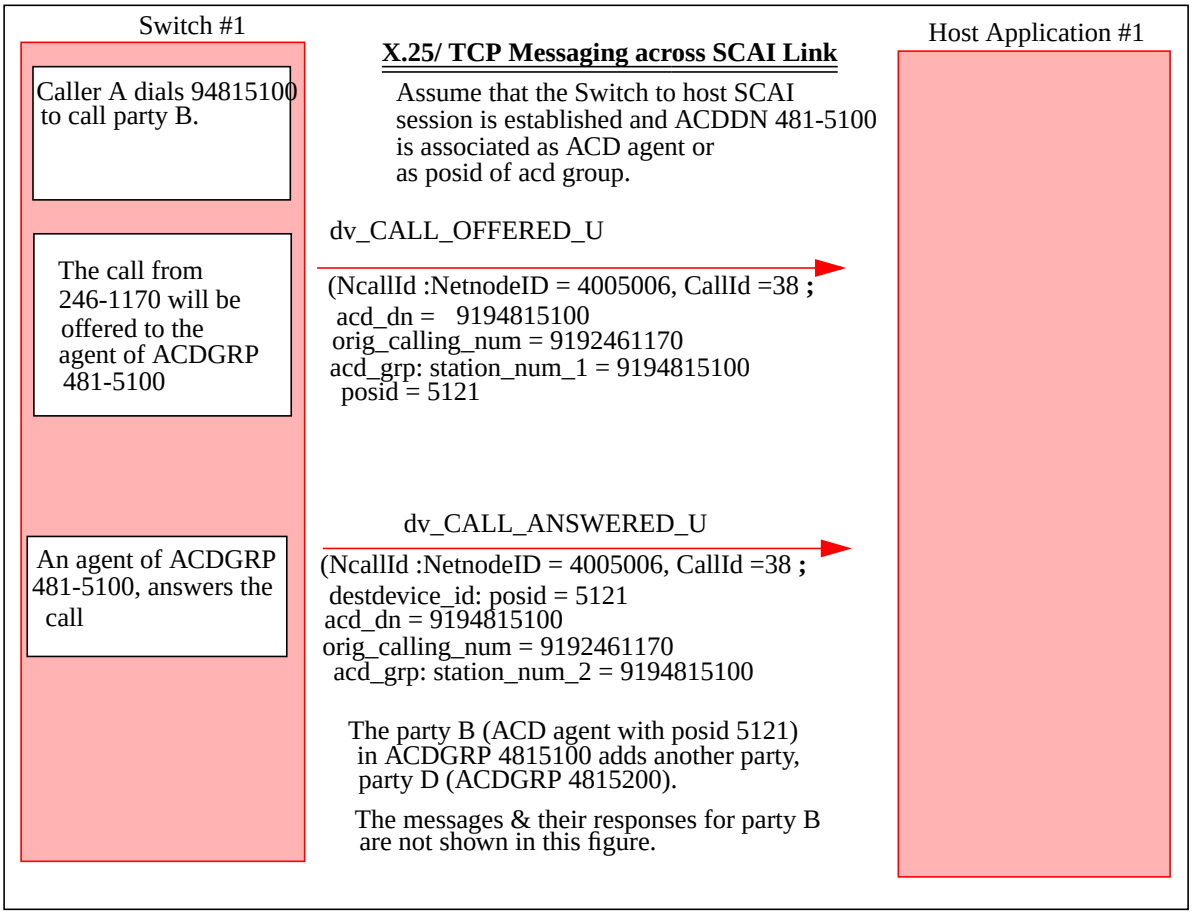
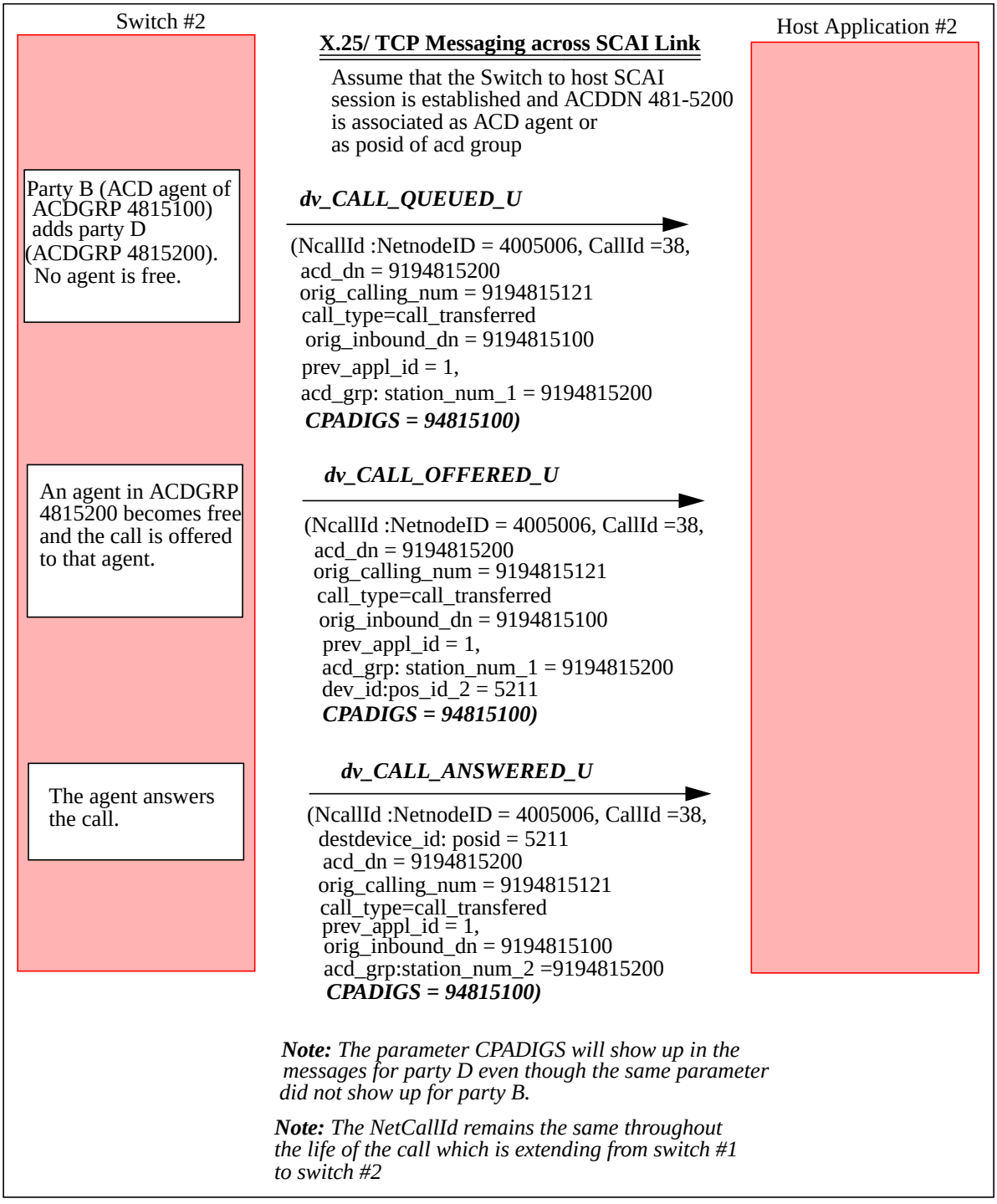


Figure 27 Party B extends call to party D over trunk



2.6 Data schema (DS)

Please see the Data Schema document for this feature.

2.6.1 New/modified tables

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
SCAISSRV	CHANGED	NEW

2.7 Glossary

Term	Description
ACD	Automatic Call Distribution
ACM	Address Complete Message
ASN.1	Abstract Syntax Notation
BTUP	British Telecom User Part
CAS	Computer-Assisted Signaling
CAS	Channel Associated Signaling
CPA	Called Party Address
DPNSS	Digital Private Network Signaling System
ECM	Enhanced Call Management
ETSI	European Telecommunications Standards Institute
IAM	Initial Address Message
ISUP	ISDN User Part
ICM	Intelligent Call Manager
NICM	Network ICM
HDB	History Data Block
MDC	History Data Block
ISDN	Integrated Services Digital Network
PRI	Primary Rate Interface
ROSE	Remote Application Service Element
SAM	Subsequent Address Message

2.8 References

REF #	Description of Reference
NIS Q218	CompuCALL interface specifications
A59011948 HLD	ICM Called Party Number Reporting
AJ5521	NETICM Interworking Enhancements For UK
AU3295	ICM PRI Networking - XPM Changes
AU3193	ICM PRI Networking
AU2799	Network CompuCALL

2: Functional description (FN)

2.1 Feature name

59011953: Increase in ICM ACD DN Association Limit

2.2 Description

The purpose of this activity is

- To provide a new ACD DN association limit as a range of values from 1 to 100.

2.2.1 Functional Overview

Presently i.e before CCM13, the maximum number of ACD DNs that can be associated to a single ICM session is 20. This activity increases the maximum number of ACD DNs that can be associated to an ICM session. This activity provides the new ACD DN association limit as a range of values from **1 to 100.** This will allow the telco to datafill the number of ACD DNs that can be associated to that customer session by studying the customer call center set up. The guidelines that are to be followed are given in section 2.17.

The telco could control the number of ACD DNs that can be associated through subscription which is discussed in section 2.2.1.1.

This increase in the ACD DN association limit will allow the call center to control more acdgroups in a single session.

Presently on associating more than 20 ACD DNs, the switch sends a return error to the host with the reason as **max_no_of_lines_associated**. With this activity the same reason **max_no_of_lines_associated** will be specified in the return error message if the host tries to associate ACD DNs more than the subscribed number of ACD DNs.

This feature is best suited for small call centers with few agents per acdgroup. This is because such call centers would be able to associate more ACD DNs per session and also stay within the limit of the number of CTI agents specified in section 2.4.

2.2.1.1 Subscription Mechanism

This feature of enhanced ACD DN association is subscribed through an option ENHASSOC in table SCAICOMS.

If the option ENHASSOC is added for a particular linkset then a new parameter NUMACDDN is prompted which takes an integer value in the range from 1 to 100. If a customer datafills the ENHASSOC option along with the NUMACDDN parameter, then the enhanced ACD DN association limit comes into effect and the customer will be able to associate ACD DNs, upto the maximum value specified in the parameter NUMACDDN, for that session.If the ENHASSOC is not subscribed for a particular linkset then the customer will be able to associate upto 20 ACD DNs as it was prior to CCM13.

2.3 Hardware requirements

Not applicable

2.4 Limitations and restrictions

Increasing the ACD DN association count on a per session basis, may increase the number of agents associated with that session. Hence, of the ICM calls arriving at the Telco's switch, the number of calls handled by the session will change. This, in turn, may increase the number of messages sent out on the link.The increase in the number of messages could cause the link capacity to be exceeded resulting in performance degradation.

Hence care should be taken to ensure that the number of CTI agents, associated through ACD DN association, individual agent association and Centrex DN association in a session is within the limit calculated from the formulae given in the appendix.

2.5 Interactions

Not applicable

2.6 Logs (LG)

Not applicable

2.7 Data schema (DS)

2.7.1 New/modified tables

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
SCAICOMS	CHANGED	UNCHANGED

The table SCAICOMS is modified to contain a new optional parameter ENHASSOC.

The parameter ENHASSOC contains the following sub-parameters

- NUMACDDN

A sample datafill for X.25 and TCP linkset is given below.

Example with TCP Linkset.

TABLE: SCAICOMS

LINKSET:

>tcp1

LNKSEL:

>tcp

IP_ADDR:

>192 136 141 205

MULTIMSG:

>n

OPTION:

>ENHASSOC

NUMACDDN:

>50

OPTION:

>$

Example with X.25 Linkset

LINKSET:

> X251

LNKSEL:

> X25

DEVICE:

> MPC

LINK_DEFINITION:

> 0 3 000000000000000 9 9 9 9 SVC

LINK_DEFINITION:

> $

MINALARM:

> MN

MAXALARM:

> CR

OPTION:

> ENHASSOC

NUMACDDN:

> 50

OPTION:

> $

The tuple in table SCAICOMS will be as shown below

LINKSET SCAILNKS OPTIONS

TCP1 TCP 192 136 141 205 N (ENHASSOC 50) $

An X.25 tuple will be as :

LINKSET SCAILNKS OPTIONS

X251 X25 (MPC (0 3 000000000000000 9 9 9 9 SVC) $)$ MN CR (ENHASSOC 50) $

2.8 Office parameters (OP)

Not Applicable

2.8.1 New/modified office parameters

Not Applicable

2.9 Service orders (SO)

Not Applicable

2.10 Alarms (AL)

Not Applicable

2.10.1 New/modified directories

Not Applicable

2.11 Command interface (CI)

Not applicable

2.11.1 New/modified commands

Not applicable

2.12 Operational measurements (OM)

Not applicable

2.12.1 New/modified OM groups

Not applicable

2.13 AMA/Billing information (AM)

Not applicable

2.13.1 New/changed AMA/billing information

Not applicable

2.14 Software optionality control (SOC)

Not applicable

2.15 Glossary

Term	Description
ICM	Intelligent Call Management
ACD	Automatic Call Distribution
DN	Directory Number
MDC	Meridian Digital Centrex
RES	Residential Enhanced Services
CDN	Controlled directory Number
SCAI	Switch-Computer Application Interface
DMS	Digital Multiplex System
CM	Computing Module
IVR	Interactive Voice Response
CTI	Computer Telephony Integration
CA	Call Attempt
ECM	Extended Call Management
CallP	Call Processing

2.16 References

REF #	Description of Reference
1	SEB-95-03-002 UK CompuCALL SEB
2	SEB-93-09-001 ACD Performance Engineering and Administration Update
3	297-8001-8551 DMS-100 Family NA100 Office Parameters Reference Manual Volume 1 of 3
4	A59011953HLD Increase in ACD DN Association Limit

2.17 APPENDIX A: Analysis

This appendix provides the analysis that has been done and the formulae that have been used to determine the number of CTI agents that can be handled by a particular link capacity.

2.17.1 Guidelines

To determine the *number of agents per session*, the various factors that need to be considered are as given below

- The kind of call scenarios (traffic model), average number of messages and message lengths per call scenario
- The Busy Hour Call Attempts for each scenario
- The link (X.25 or TCP/IP) speed
- Link Capacity Required by CallP and maintenance
- Call holding time for each scenario
- Number of X.25 links

2.17.1.1 Traffic Model

Three simple ICM traffic models have been considered to represent a range of ICM applications.

Simple Screen Pops with no redirects model - it represents a simple screen pops with no redirects application. This model contains Calls to agents which answer immediately via SCAI messages. Each call is handled by one agent

Redirects and IVR Model - This model includes the following call mix:

- 10% of calls are self service (Basic Call Offer/Answer).

- 20% of calls are Zero Outs (also, Basic Call Offer/Answer).

- 70% of calls are answered by IVR, redirected and transferred to live agent, and with the additional 50% of transfers that are queued and redirected & transferred to Music.

An estimated 2.25 agents (=10%*1 + 20%*2 +70%*2 +70%*50%*1) are involved per call attempt.

Screen Pops with Redirects and Transfers model - This is a hypothetical model defined for a more complex screen pops application with additional redirections, conference and transfers. It is used to analyze the capacity impact of additional cost of redirects, conferences and transfers. This model contains the calltype of basic call offer and answer, same as the one for the simple screen pops model, with the following additional components:

- 1 redirection per call,
- 20% of calls queued with treatment,
- 10% of calls conferenced,
- 50% of calls transferred,
- 20% of calls transferred a second time.

An estimated 1.8 agents (=1 + 10%*1 + 50%*1 +20%*1) are involved per call attempt.

2.17.1.2 Busy Hour Call Attempts (BHCA)

This is the system engineered CM call capacity. It is the number of calls arriving at a switch in a busy hour, of the mixed traffic type. Let AWT[1]b and AWTicm be the average work times of NA100 basic model and the ICM model respectively. If p is the percentage of the ICM call attempts of the mixed traffic, then the CM call capacity, in BHCAs, is given by the formula below:

CM Call capacity in BHCAs = (3,600,000 ms * %CP_EngPt) /((1-p)*AWTb + p*AWTicm)

where, the %CP_EngPt is the % of CM engineering Point allocated for Call Processing. The standard value of %CP_EngPt is 77%.

Note : Henceforth, in the document, BHCA refers to the BHCA's due to the ICM call traffic alone.

2.17.1.3 Link Capacity Required by CallP

Link (X.25 or TCP/IP) capacity is the bytes of SCAI messages, exchanged between the DMS-100 and the host computer, that the link can carry in a second. It is given by the formula below

Link Capacity for CallP = BHCA/3600 * total msgsize in bytes per CA

where, total msgsize in bytes per CA, are the SCAI messages that are transported over SCAI links, at the physical layer, from DMS-100 to Host computer.

[1]AWT is the average real-time (RT) required for call processing to process a Call Attempt (CA).The value of AWTb for the base bus model is 5.081 ms. Data taken from System Engineering guide.

2.17.1.4 Link Capacity Required by Maintenance

Additional SCAI link capacity must be engineered for DMS link maintenance software to ensure the sanity and integrity of interface and networking components that are involved in the SCAI messaging.

2.17.1.5 Link Capacity Required to support SCAI messages

The total X.25 or TCP/IP link capacity required to support SCAI messages exchanged between the DMS-100 and a given host computer is

total_SCAI_msg_Link_traffic=1.2*(avg_link_capacity_req_CP+avg_link_capacity_req_mtc)

where

- an additional 20% link capacity is added to adjust for Poisson random message arrival.
- avg_link_capacity_req_CP is the Link Capacity Required by CallP.
- avg_link_capacity_req_mtc is the Link Capacity Required by Maintenance.

2.17.1.6 Call Holding Time

The average call holding time is the period of time during which the agent is not available to receive a new call, and includes a minimum amount of time between call presentation to each agent. This varies with the traffic. The holding time determines the number of calls each agent can answer.

2.17.1.7 Number of X.25 links

Number of X.25 links =

total_SCAI_msg_Link_traffic / (0.4 * link_speed_in_Bps)

where the 0.4 multiplication factor is for reliability considerations for each X.25 link.

2.17.2 CALLP and AUXCP Requirement[1]

The majority of the CM real time (RT) work for ICM calls is carried out in CALLP (Call Processing) class. The remaining RT work undertaken by the SCAIBASE, SCAITRAN and CCTCPSVR processes is carried out in AUXCP (Auxiliary Call processing). The SCAIBASE process is basically a message router. On the incoming side it decodes the SCAI message header and then routes the ICM message to the appropriate destination. On the outgoing side it

[1]Please refer to SEB-95-03-002 UK CompuCALL SEB

determines the destination of the message by looking at the SCAI session information, encapsulates application specific data inside the appropriate envelope, and then sends it over the appropriate transport (i.e. X.25 or TCP/IP). The SCAITRAN process deals specifically with the X.25 transport functionality and CCTCPSVR deals specifically with the TCP/IP transport functionality

The maximum allowable real time usage of AUXCP at full load is adjustable via DMS-100 Table OFCENG, office parameter AUXCP_CPU_SHARE. This office parameter may be set from 1% to 25% of the CM real-time in single percentage point increments. The parameter does not require a switch restart for activation.

AUXCP is also used to schedule processes supporting applications other than ICM, e.g., SMDI (Simplified Message Desk Interface). When more than one DMS application requiring AUXCP real time is present and running on the CM, the total AUXCP share should be set to the sum of the shares needed by each application, not to exceed the office parameter's maximum value of 25%.

Allocating an increasing % of CM processing to ICM will result in corresponding decrease in the amount of CM processing for other, non-ICM call types. For ICM, this would mean that, the ICM messages are processed faster, increasing the number of messages on the link and thus the total ICM calls processed will increase. But as per the calculations of section 2.1.7.4, the link (X.25 or TCP/IP) capacity can handle only a certain number of BHCAs. Beyond this number, the link performance will degrade. Hence, while setting the AuxCP value the following considerations should be made:

— too high an AuxCP real time share could result in Dial Tone Delay beyond acceptable standard Grade of Service levels for other non-ICM traffic (if the non-ICM traffic exceeds engineered levels)

— too low an AuxCP time share could result in degraded ICM service, i.e. delays beyond the engineered messaging Grade of Service, if the ICM traffic exceeds its engineered levels during peak CM utilization periods.

2.17.3 CTI Agents to support traffic

From the projected ICM BHCAs, the number of CTI agents that are required to support the traffic can be estimated by the following formula,

CTI agents = ICM_BHCAs * (# agent_CAs per CA) / (#BHagent_CAs per agent)

where CTI agents mean associated Centrex DNs and ACD agents associated either individually or through ACD DNs.

2.17.4 Sample calculation

Considering the factors mentioned in 2.17.1 a sample calculation for calculating the number of CTI agents that can be associated to an ICM session is given below.

Inputs required:

- The traffic model (i.e the kind of call scenario)
- The number of messages per call scenario
- The total size of the messages per call scenario
- Number of agents per call attempt
- Number of X.25 links
- Link speed
- Link capacity for maintenance
- Number of busy hour call attempts that the agent can handle

Outputs obtained:

- The total SCAI message link traffic
- The link capacity required for Call Processing
- The Busy Hour Call Attempts
- The number of CTI agent

The following assumptions are made in the sample calculations

- The link speed of an X.25 link is 2.4 Kbytes/sec. This speed has been considered so that the link utilization will be optimum.
- The link speed of a TCP/IP link is 20 Kbytes/sec[1].
- Link capacity for maintenance is assumed to be 0.1 Kbytes/sec per X.25 link and 0.5 KBytes/sec per TCP/IP link.
- Each agent can handle either 10, 20 or 30 busy hour calls.
- This analysis does not consider any specific AuxCP value for the calculations. The analysis determines the maximum ICM BHCAs that can be handled by the link capacity irrespective of the AuxCP setting.

[1]The engineered number of EIUs on a MA LPP (multi applications Link Peripheral Processor) is dependent on the message throughput required, and the EIUs for other applications (if any) sharing the same LPP. Since only a max. of 2 EIUs and 40 KBps of DS30 links bandwidth can be provisioned to EIUs that are on the same MA LPP, the MA LPP is suitable only for small ICM penetration(< 20 KBytes/s). Information taken from the System Engineering guide.

Consider an ICM session having a **single X25 link** with a link speed of **2.4 Kbytes/sec**, and using the **Simple Screen Pops with no redirects model** then the total_SCAI_msg_Link_traffic is obtained as follows

Number of X.25 links[1] =

total_SCAI_msg_Link_traffic / (0.4 * link_speed_in_Bps)

Replacing the values, we have,

1 = total_SCAI_msg_Link_traffic/ (0.4 * 2400)

total_SCAI_msg_Link_traffic = 1 * 960 = **960 Bytes**

Also,

total_SCAI_msg_Link_traffic=1.2*(avg_link_capacity_req_CP+ avg_link_capacity_req_mtc)

Replacing the values, we have,

960 = 1.2*(avg_link_capacity_req_CP + 100)

avg_link_capacity_req_CP = (960/1.2) -100 = **700 Bytes/sec**

Link Capacity for CallP = BHCA/3600 * total msgsize in bytes per CA

The total msgsize in bytes per CA for this model is 434.4 bytes[2].

Replacing the values, we have,

700 = BHCA/3600 * 434.4

BHCA = (700*3600)/434.4 = 5801 CA’s

CTI agents = ICM_BHCAs * (# agent_CAs per CA)/ (#BHagent_CAs per agent)

where **#BHagent_CAs** per agent is **10**

Replacing the values, we have,

[1]If multiple links are used, the number of X.25 links will vary from 1 to 8.
[2]Data taken from System Engineering guide.

CTI agents = 5801 * 1/10 = **580 agents**

Similarly if #BHagent_CAs per agent is **20** then # CTI agents is **290** and when the #BHagent_CAs per agent is **30** then # CTI agents is **193**.

Consider an ICM session on a **TCP link** with a link speed of **20 Kbytes/sec**, using the **Simple Screen Pops with Redirect Model** then the total_SCAI_msg_Link_traffic is obtained as follows

total_SCAI_msg_Link_traffic = 20,000 * 0.4 = **8000 Bytes/sec**

total_SCAI_msg_Link_traffic=1.2*(avg_link_capacity_req_CP+ avg_link_capacity_req_mtc)

Replacing the values, we have,

8000 = 1.2*(avg_link_capacity_req_CP + 500)

avg_link_capacity_req_CP = (8000/1.2) - 500 = 6166 **Bytes/sec**

Link Capacity for CallP = BHCA/3600 * total msgsize in bytes per CA

The total msgsize in bytes per CA for this model is 713.8 bytes[1].

Replacing the values, we have,

6166 = BHCA/3600 * 713.8

BHCA = (6166*3600)/713.8 = **31097 CA's**

CTI agents = ICM_BHCAs * (# agent_CAs per CA)/ (#BHagent_CAs per agent)

where **#BHagent_CAs** per agent is **10**

Replacing the values, we have,

CTI agents = 31097 * 1/10 = **3109 agents**

[1]Data taken from System Engineering guide.

Similarly if #BHagent_CAs per agent is **20** then # CTI agents is **1554** and when the #BHagent_CAs per agent is **30** then # CTI agents is **1036**.

Using the above method of calculation and assumptions, CTI agents for each of the three models, for a session with one to eight X.25 links and one TCP/IP link is given below in a tabular form.

Considering A as the Simple Screen Pops with no redirects model, B as the Redirects and IVR model and C as the Screen Pops with Redirects and Transfer model and Bps as Bytes per second.

Table 2 # CTI agents for a session with multiple X.25 links for model A

Model	Trans port	Number of links	Scai Link Traffic Bps	Link Capacity Bps	BHCA	CTI Agents		
						10 BH calls/ agent	20 BH calls/ agent	30 BH calls/ agent
A	X.25	1	960	700	5801	580	290	193
	X.25	2	1920	1400	11602	1160	580	387
	X.25	3	2880	2100	17403	1740	870	580
	X.25	4	3840	2800	23204	2320	1160	773
	X.25	5	4800	3500	29032	2902	1451	967
	X.25	6	5760	4200	34806	3480	1740	1160
	X.25	7	6720	4900	40607	4060	2030	1353
	X.25	8	7680	5600	46408	4640	2320	1546

Table 3 # CTI agents for a session with multiple X.25 links for model B

Model	Trans port	Number of links	Scai Link Traffic Bps	Overall Link Capacity Bps	BHCA	CTI Agents		
						10 BH calls/ agent	20 BH calls/ agent	30 BH calls/ agent
B	X.25	1	960	700	1755	394	197	131
	X.25	2	1920	1400	3511	788	394	263
	X.25	3	2880	2100	5266	1184	592	395

Table 3 # CTI agents for a session with multiple X.25 links for model B

Model	Trans port	Number of links	Scai Link Traffic Bps	Overall Link Capacity Bps	BHCA	CTI Agents		
						10 BH calls/ agent	20 BH calls/ agent	30 BH calls/ agent
	X.25	4	3840	2800	7022	1578	789	526
	X.25	5	4800	3500	8778	1974	987	658
	X.25	6	5760	4200	10533	2368	1184	789
	X.25	7	6720	4900	12289	2764	1382	921
	X.25	8	7680	5600	14044	3158	1579	1053

Table 4 # CTI agents for a session with multiple X.25 links for model C

Model	Trans port	Number of links	Scai Link Traffic Bps	Overall Link Capacity Bps	BHCA	CTI Agents		
						10 BH calls/ agent	20 BH calls/ agent	30 BH calls/ agent
C	X.25	1	960	700	1982	356	178	119
	X.25	2	1920	1400	3965	712	356	234
	X.25	3	2880	2100	5948	1070	535	356
	X.25	4	3840	2800	7931	1426	713	475
	X.25	5	4800	3500	9914	1784	892	598
	X.25	6	5760	4200	11897	2140	1070	713
	X.25	7	6720	4900	13879	2498	1249	833
	X.25	8	7680	5600	15864	2854	1427	951

Table 5 # CTI agents for a session with TCP/IP link

Model	Trans port	Number of links	Scai Link Traffic Bps	Link Capacity Bps	BHCA	CTI Agents		
						10 BH calls/ agent	20 BH calls/ agent	30 BH calls/ agent
A	TCP/IP	1	8000	6166	31097	3109	1554	1036
B	TCP/IP	1	8000	6166	9954	2239	1119	746
C	TCP/IP	1	8000	6166	11353	2043	1021	681

The above tables give the relationship between link capacity, BHCAs and number of CTI agents required to support the traffic. In each of the above tables, for the specified link capacity the corresponding BHCAs is the maximum that can be handled by the link. And to support this traffic, the corresponding number of CTI agents will be required.

Note: The number of ICM BHCA's that can be handled is restricted by the **SCAI application** i.e the processing time of the AUXCP processes SCAIBASE, SCIOGBAS, SCAITRAN and CCTCPSVR .

Note: The above calculations are for the X.25 link speed of 2.4 Kbytes/sec and TCP/IP link speed of 20 KBytes/sec. If the link speeds are different from the above values then the number of CTI agents should be calculated using the sample calculations as reference. The formulae used in the sample calculation have been taken from the System Engineering guide.

For each of the ACD DN value selected, the telco should take care that the number of CTI agents required to support the traffic, should fall within the limit of CTI agents obtained by using the sample calculation mentioned above. If the number of agents is increased in an attempt to answer more calls then it could lead to the link capacity being exceeded causing message loss.

2: Functional description (FN)

2.1 Feature name

Table XXCODE Expansion

2.2 Description

Universal Translations (UXLA) is made up of eight logical groupings known as translation systems. These eight translation systems are: access code (AC), prefix code (PX), utility code (FT), country code (CT), foreign access code (FA), office code (OFC), ambiguous code (AM), and number services code (NSC).

Each system is made up of 3 tables: a HEAD table, a CODE table, and a RTE (route) table. The exception is the AM system, which does not contain a RTE table. The CODE tables (XXCODE) contain tuples that usually perform the majority of the call processing functions within UXLA. This includes digit manipulation, feature activation, and sometimes destination determination.

This expansion activity refers to all XXCODE tables, EXCEPT the Table AMCODE. Table AMCODE is the only CODE table that is not digilator-based. For the purposes of this feature, any mention of Table XXCODE refers to the AC, PX, FT, CT, FA, OFC, and NSC CODE tables.

Currently, the maximum number of tuples that can be datafilled in Table XXCODE is restricted to 16K. This activity increases the maximum capacity to 32K. All XXCODE tables will increase in capacity, except for Table AMCODE. Table AMCODE is not digilator-based and its maximum capacity will remain at 16K. The number of available digilator blocks is not increased.

2.3 Hardware requirements

Not applicable: no hardware requirements are created by this activity.

2.4 Limitations and restrictions

The maximum capacity of Table XXCODE is increased to 32K. The number of digilator blocks is not increased. The actual capacity of Table XXCODE may

be less than 32Ksince the amount of memory used depends on the number of tuples, the lenth of the digit keys, and the numerical distribution of the digit keys.

Due to limited storage resources and architectural constraints, it is not desirable to increase Table XXCODE beyond 32K. If greater than 32K capacity is required, then a new table and method must be considered.

2.5 Interactions

There are no interactions between this feature and other existing features.

DDOC section summaries

2.6 Logs (LG)

Not applicable: no new logs are created by this activity.

2.7 Data schema (DS)

2.7.1 New/modified tables

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
ACCODE, PXCODE, FTCODE, CTCODE, FACODE, OFCCODE, and NSCCODE	CHANGED: maximum tuple capacity increased from 16K to 32K.	UNCHANGED

2.8 Office parameters (OP)

Not applicable: no new office parameters are created by this activity.

2.9 Service orders (SO)

Not applicable: no new service orders are created by this activity.

2.10 Alarms (AL)

Not applicable: no new alarms are created by this activity.

2.11 Command interface (CI)

Not applicable: no new CI commands are created by this activity.

2.12 Operational measurements (OM)

Not applicable: no new OMs are created by this activity.

2.13 AMA/Billing information (AM)

Not applicable: no new AMA structures are created by this activity.

2.14 Software optionality control (SOC)

Not applicable: no new SOC options are created by this activity.

2.15 Glossary

Term	Description
AC	Access Code translation system
AM	Ambiguous Code translation system
CT	Country Code translation system
FA	Foreign Access code translation system
FT	utility code translation system
NSC	Number Services Code translation system
OFC	OFfice Code translation system
PX	PrefiX code translation system
UXLA	Universal Translations
xxCODE	All CODE tables, where XX is the XLASYStem (This feature does not include Table AMCODE.)

2.16 References

2: Functional description (FN)

2.1 Feature name

CALL REDIRECT (CRT)

2.2 Feature synopsis

Call Redirect (CRT) feature provides residential end users with the capability to transfer calls to a pre-defined routing Directory Number (DN). The transfer is made when the end user flashes and dials an access code (for example #9 or *9) during an established two-party call. Upon successful activation of the CRT feature, the end user is routed to a confirmation treatment which is defined by the operating company.

The routing DN can be specified by the operating company such that the incoming calls are routed to the switch-based tone or announcement or to an external platform. The CRT feature is available to the subscribers on a subscription or pay-per-use (PPU) basis.

Only the terminator in a two party call will be able to activate CRT.

2.3 Functional overview

2.3.1 Background

Imagine you are at home relaxing and watching your favorite program on TV. Suddenly, the phone rings. You answer the call and here somebody calls you and would like to talk to you. You are not willing to listen to the caller, you put the caller on hold, you dial CRT access code and hang up. Now, the caller gets redirected to an announcement.

Depending on the type of services to be offered, the operating companies can specify the routing DN such that the incoming calls are routed to a tone, an announcement or an external platform. The call transfer or redirect functionality of such applications as transferring nuisance calls to an announcement can be provided by this feature.

Note: Currently CRT feature will not allow the controller to redirect an incoming call to a voicemail system.

2.3.2 Terminology

As an aid in encouraging a common interpretation of this document, the intended meanings of the terms below are given:

Controller	The end user who activates the CRT feature.
Other Party	The party who is talking to the CRT *controller* when the feature is activated.
Routing DN	The pre-defined directory number, specified by the operating company, to which the *other party* is routed upon activation of the CRT feature.
Confirmation treatment	The treatment, specified by the operating company, to which the CRT *controller* is routed upon successful activation of the CRT feature. This can be a tone, an announcement, or a route to an external platform.
External Platform	The platform which is external to the CRT serving end office that provides audible messages to the party being routed to the platform.
CRT Access code	The *access code* dialed by the CRT *controller* to activate the CRT feature (for example #9 or *9). It can be preceded by either a star (*) or an octothorpe (#).
Two-party call	A call that involves two agents in a talking state. The agents can be lines or trunks.
Flash	An end user *flashes* by momentarily pressing the switch-hook (between 0.5 to 1.0 second) or pressing the *link* key. As a result of a flash, the *other party* is put on hold and the end user is provided with dial tone.

2.3.3 CRT Network Overview

The CRT feature resides in the serving end office of the CRT *controller* and interacts with other network nodes. Figure 1 depicts the network topology to provide the CRT service.

The CRT feature is activated by the CRT *controller* when the CRT *controller* is connected to the *other party* on a *basic two-party call* (**1**). The CRT *controller* flashes and dials the CRT *access code* to activate the CRT feature (**2**).

Once activated, the CRT feature routes the *other party* to the CRT *routing DN*. The CRT *routing* DN, specified by the operating company, can be routed either to a switch-based tone or announcement (**3a**) or to an *external platform* (**3b**).

When the *other party* is routed to the switch-based tone or announcement or the *external platform*, the CRT *controller* is disconnected from the call and is sent to the CRT *confirmation treatment*. This treatment which is defined by the operating company can be a switch-based tone or announcement (**4a**) or a route to an *external platform* (**4b**).

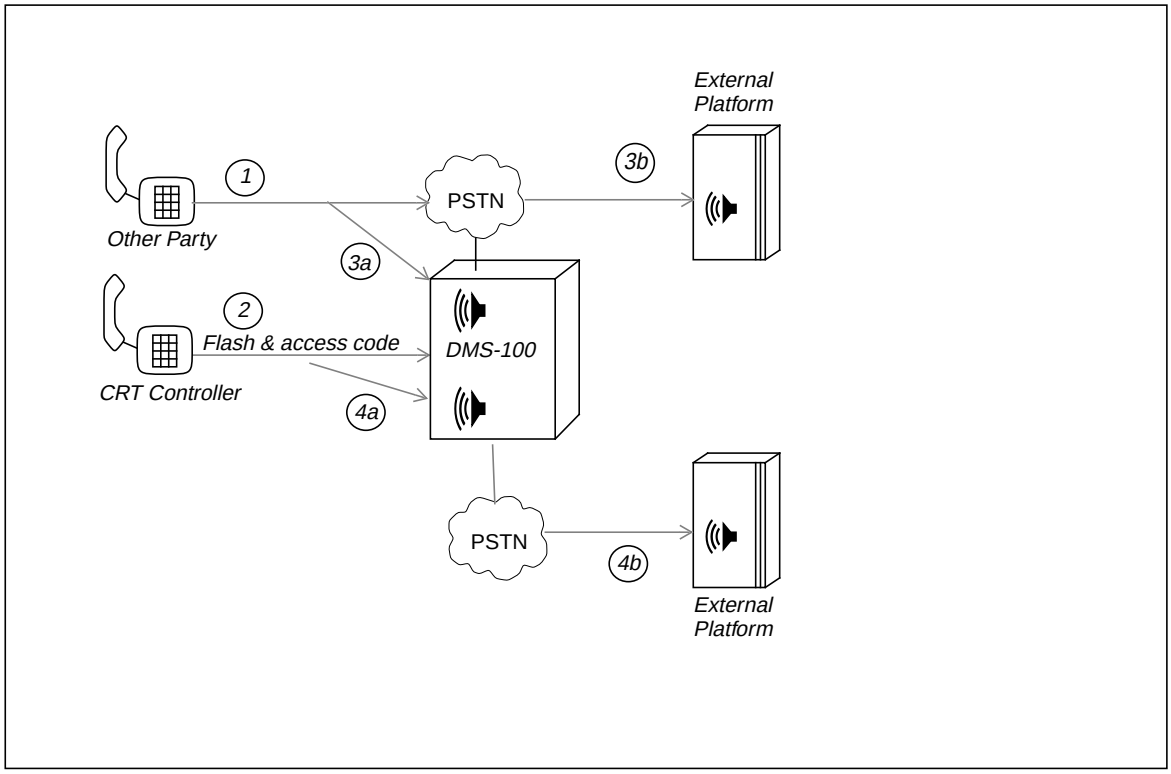


Figure 1: Network overview of Call Redirect feature

2.3.4 Agent support

The CRT feature is available to Residential Enhanced Services (RES) lines. which must have a Line Class Code (LCC) of RES or be POTS lines converted to RES.

Conversion to RES applies when the RES Servord Simplification process is active (RES_AS_POTS is set to ‘Y’ in the RES_SO_SIMPLIFICATION office parameterin table OFCVAR). The converted POTS lines must have a previous LCC of 1FR or 1MR.

The CRT feature does not impose any limitations on the agent used to connect the external platform to the DMS or to the other party.

2.4 Feature description

2.4.1 Office Control

The office-wide availability of the feature is controlled by Software Optionality Control (SOC). A new SOC option is created to enable the operating company to turn the CRT feature functionality ON or OFF on an office-wide basis. The two supported states are IDLE and ON. In the ON state, the feature is enabled and is available to all applicable subscribers (RES 1MR and 1FR) in the entire end office. In the IDLE state, the functionality of the feature is disabled.

2.4.2 Usage Sensitive provisioning

Once the SOC option of the feature is set to ON, the CRT feature is available to all applicable residential subscribers on a pay-per-use basis. However, the CRTDENY line option can be assigned to the lines of those subscribers who want to deny the usage sensitive access of the feature.

2.4.3 Line subscription provisioning

The CRT line option can be used to assign to the applicable residential subscribers to have access of the feature on a per line basis. The CRT and CRTDENY line options are incompatible line options. The CRT access code provisioning in table IBNXLA is required on the customer group of the subscriber. If CRT access code is not provisioned, the CRT functionality will not be available to any line within the customer group even if SOC state is ON and the CRT line option is assigned on the line.

2.4.4 Access code provisioning

Whether the feature is to be accessed by usage sensitive or line subscription basis, it requires the provisioning of the feature access code in table IBNXLA. The CRT access code can be provisioned as a star (*) or an octothorpe (#) access code of length between 1 and 18 digits. Each CRT access code is provisioned against a customer group in table IBNXLA, meaning that all subscribers within a particular customer group will use the same access code to activate the CRT feature.

Along with each access code, the telephone company is required to datafill the CRT routing DN and the boolean billing option. The CRT routing DN is the destination where the other party is routed upon activation of the feature. It is datafilled as a 7 or 10-digit directory number. The billing option is used to control the generation of a switch-based billing record for the feature usage sensitive activation.

2.4.5 Feature operation

This feature provides residential end users with the capability to transfer incoming calls to a pre-defined Directory Number (DN). The DN can be specified by the operating company to differentiate different services or applications such that the incoming calls are routed to a tone, an announcement or an external platform.

The CRT feature will be activated only during a basic-two party call when the CRT controller flashes and dials the CRT access code. When the CRT controller flashes, the connection between the CRT controller and the other party is put on hold. Once the CRT controller dials the access code, the access code digits will be translated and the CRT feature activated.

After the CRT feature is activated, it will extract the CRT routing DN and the pay-per-use AMA billing option from the controller’s customer group datafill in table IBNXLA. The CRT feature will translate the CRT routing DN. It will also update the redirection information of the call with the DN of the CRT controller. If the CRT controller does not have the CRT line option on his line and the pay-per-use AMA billing option for the CRT access code in table IBNXLA is Y, the CRT feature will generate a switch-based pay-per-use billing record for the feature activation.

If the CRT routing DN is translated successfully, the CRT controller will be provided with the CRT confirmation treatment. The CRT confirmation treatment is determined on an office-wide basis and is datafilled in subtable TREAT of table TMTCNTL by the operating company.

In case the CRT routing DN translation fails, a CRT log will be generated, the CRT controller will be given NACK treatment and reconnected to the other party.

Activation of the CRT feature is considered successful when:

- the feature is active in the office (SOC is ON)
- It’s a two party call
- CRT controller is a RES line
- CRT controller is the terminator in the call
- the access code dialed by the end user is provisioned against the end users’ customer group translation table and is associated with the CRT feature.
- the end user’s line does not have the CRTDENY option assigned
- the CRT routing DN is successfully translated

Fig 2 shows the call flow for the successful activation of the CRT feature.

The feature flow diagrams provide a description of the overall logic of the feature.

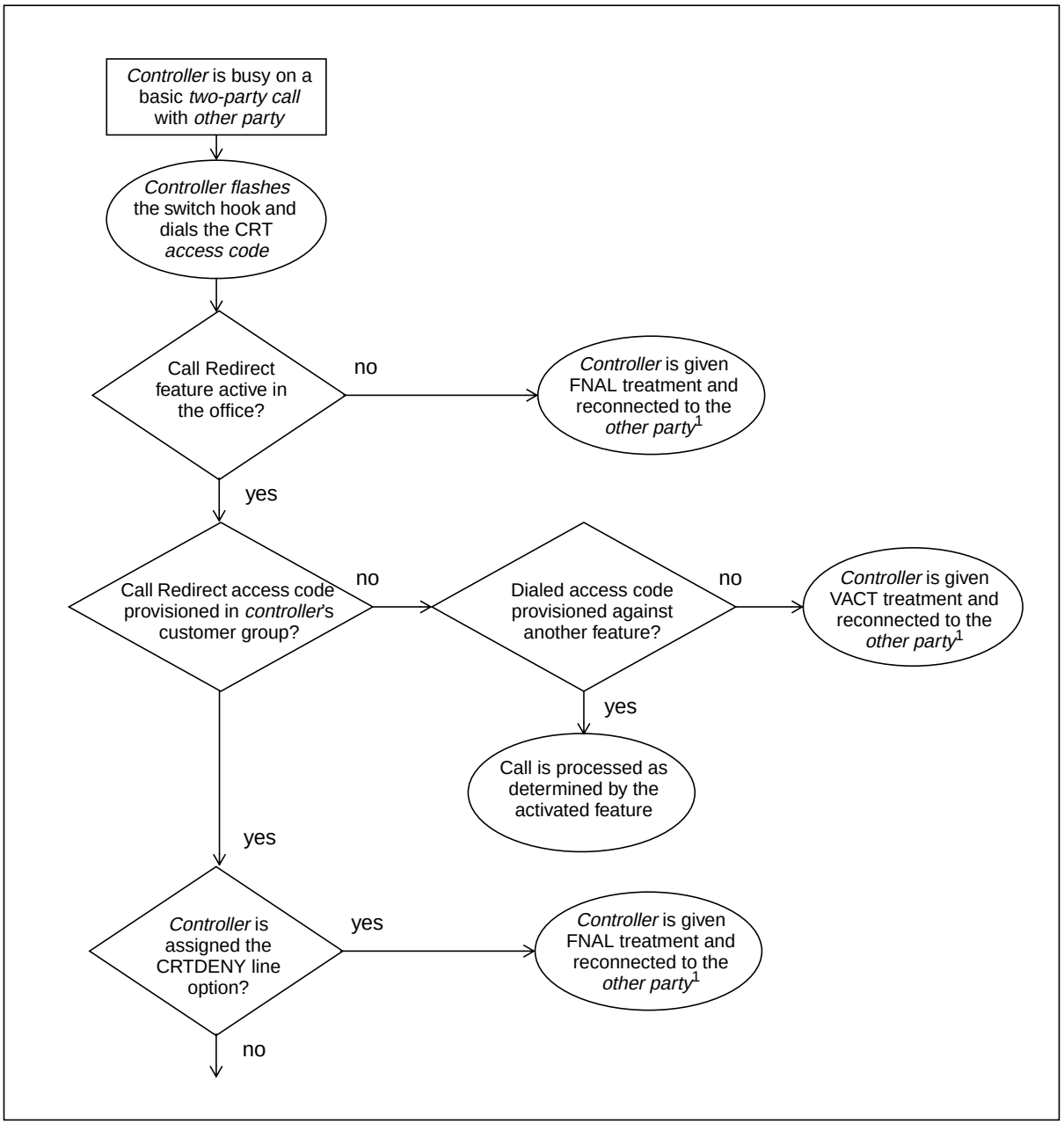


Figure 2: Call Redirect Feature Flow Diagram

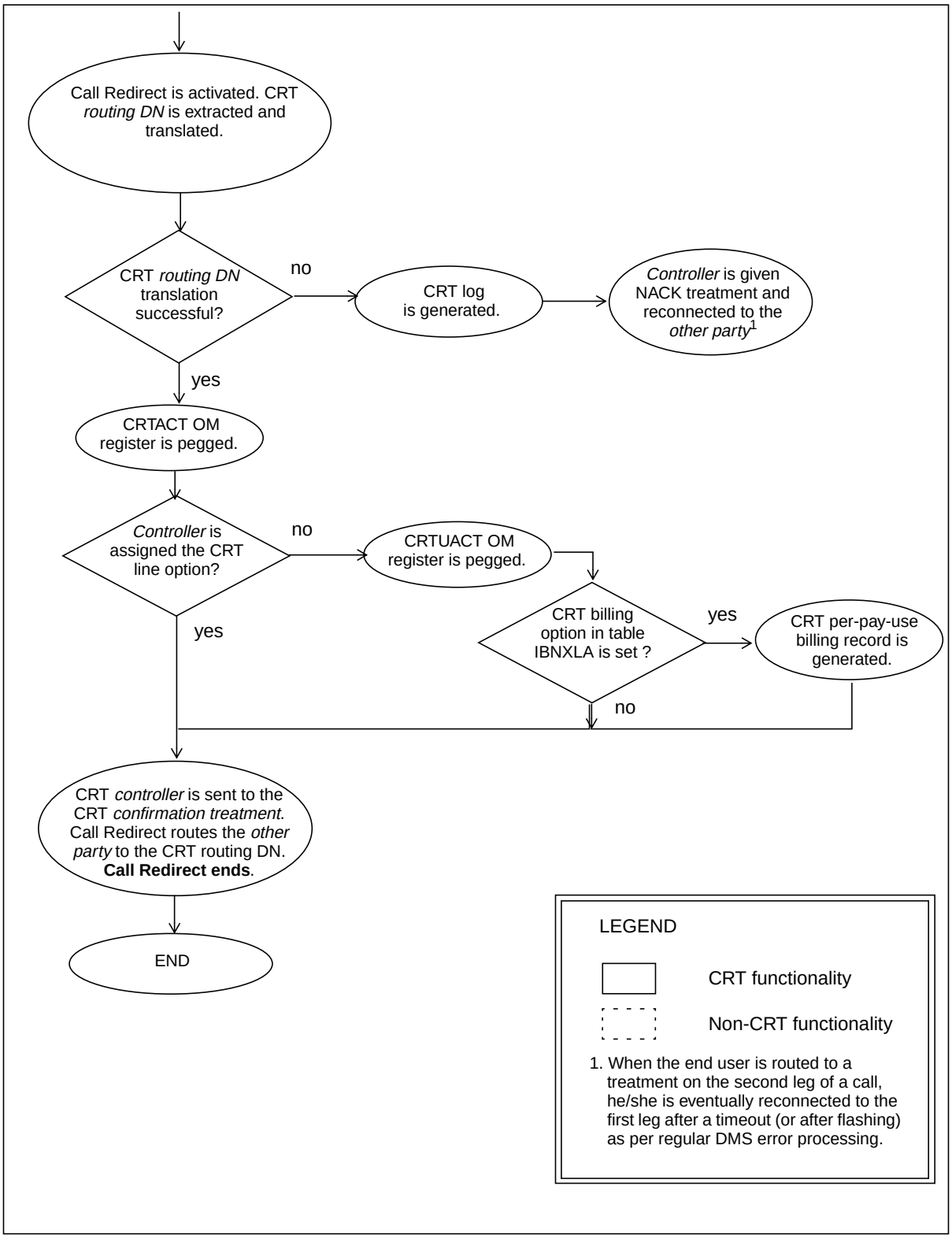


Figure 3: Call Redirect Feature Flow Diagram (cont'd)

2.4.6 Billing

2.4.6.1 CRT Usage billing

The Call Redirect feature is provided on either pay-per-use or line subscription basis.

For pay-per-use, the operating company can use switch-based billing. Pay-per-use billing record is generated for CRT activation, when the CRT line option is not assigned on the controller's line and the billing option is set to Y, for the CRT access code in table IBNXLA. The switch-based billing record has call code 049. It is generated upon successful usage sensitive CRT feature activation. In case of line subscription, the CRT line option must be assigned on the controller's line and the Call Redirect feature access code must be provisioned on the controller's customer group.

2.4.6.2 Redirected call billing

If there are any long distance charges in the redirected call from the CRT controller to the CRT routing DN, these charges will be billed against the CRT controller as if the call is forwarded from the controller to the routing DN.

In the case when the call between the *other party* and the CRT *controller* is long distance, and the redirected call from the CRT controller and the CRT routing DN is local, the *other party* will still be billed for the call when it gets redirected to the CRT routing DN.

The operating company controls the generation of the redirected call billing record by the office parameter CRT_BILLING in table AMAOPTS. If CRT_BILLING is set to ON, the billing record of the redirected call is generated when routing the other party from the controller to the CRT routing DN. If CRT_BILLING is set to OFF, the billing of the redirected call is suppressed. Note that by default the CRT_BILLING parameter is set to OFF and will have to be turned to ON for generation of redirected call billing record.

2.4.7 Feature translation

The operating company defines for each customer group the CRT access code that will be used by the members of the customer group to activate the CRT feature. The CRT access code can be a star or an octothorpe between 1 and 18 digits in length.

When the CRT controller flashes and dials the CRT access code, the access code digits are translated and then the CRT feature is activated. Afterwards, the CRT feature extracts the CRT routing DN and the pay-per-use AMA billing

option from table IBNXLA. It then performs translations between the controller and the CRT routing DN.

The CRT controller is provided with a confirmation treatment upon successful translation of the CRT routing DN and the other party is connected to the CRT routing DN. If the CRT routing DN translation fails, a CRT log will be generated, the CRT controller will be given NACK treatment and reconnected to the other party.

2.4.8 Competitive Access

The CRT feature provides limited support in order to allow it to be offered to competitive service providers (CSP). One way to allow for competitive access is when a competitive service provider provisions the CRT feature for some of his residential (non-IBN) customer groups. The CSP can use the same announcement platform as the operating company or use its own. This is illustrated in the following figure.

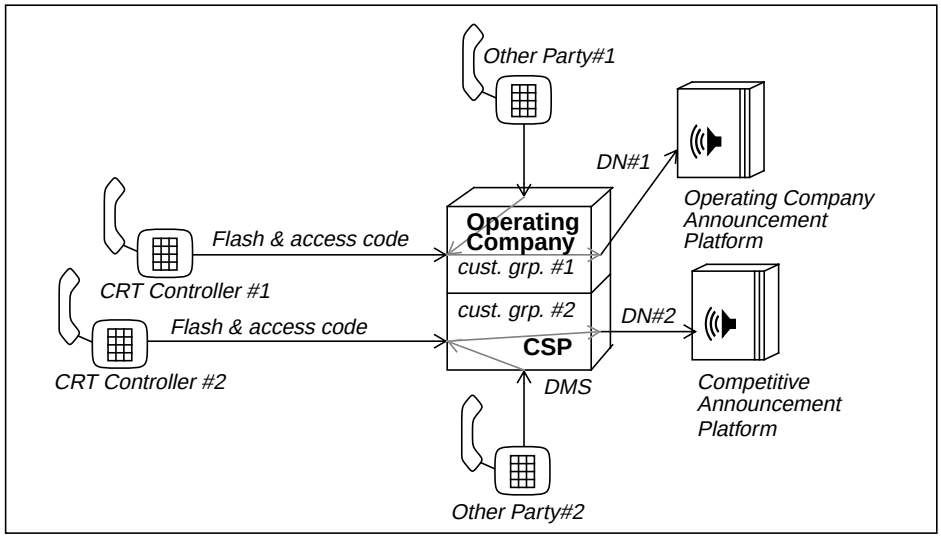


Figure 4: Competitive access from multiple customer groups

Customer group #2 belongs to the CSP. The CSP used its own announcement platform as the CRT routing DN for customer group #2. The CSP can change that and use the operating company announcement platform instead.

Another way to allow for competitive access is when the operating company provisions more than one access code for a given residential (non-IBN) customer group with a different routing DN for every access code. In this case, the CRT announcement can be provided by a different competitive service provider for each CRT access code. This case is illustrated in the following figure.

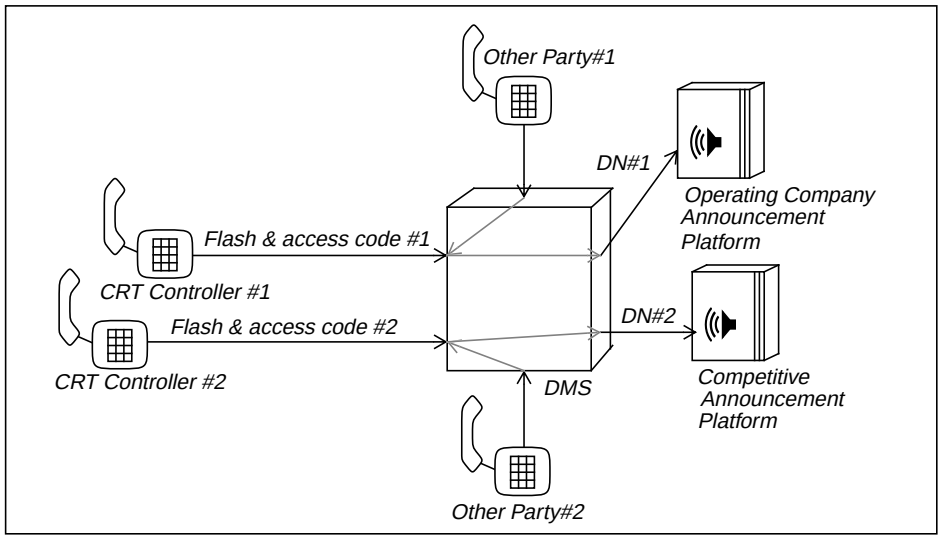


Figure 5: Competitive access from single customer group

CRT controller #1 and CRT controller #2 belong to the same customer group. Two different CRT access codes are provisioned for their customer group. Every CRT access code is associated with a different CRT routing DN. When CRT controller #1 flashes and dials the CRT access code #1, the other party #1 is routed to the operating company announcement platform (the CRT routing DN associated with CRT access code #1). When CRT controller #2 flashes and dials the CRT access code #2, the other party #2 is routed to the competitive announcement platform (the CRT routing DN associated with CRT access code #2).

2.5 Hardware requirements

The transfer capability of the CRT feature does not require a conference port.

The operating company can choose to use switch-based announcements for CRT, in which case the appropriate announcement hardware must be available in the serving office.

The operating company should ensure that the appropriate tones or announcements hardware is available in the serving office to provide the CRT confirmation treatment as datafilled in table TMTCNTL.

2.6 Limitations and restrictions

No restrictions and limitations have been identified for this feature.

2.7 Interactions

This section describes the interactions of Call Redirect with the following features:

- Automatic-Call Back (ACB)
- Advanced Intelligent Network (AIN)
- Call Waiting (CWT)
- Local Number Portability (LNP)
- Redirecting Features
- Special Delivery Service (SDS)
- Speed Call
- Spontaneous Call Waiting (SCWID)/ SCWID with Dispositions (DSCWID)
- Three-Way Call Usage Sensitive 3WC/Conference/ Call Waiting Conference (CXR/3WC/Conf/CWTC)

2.7.1 Automatic-Call Back (ACB)

Automatic-Call Back (ACB) enables a subscriber to call back the last number that was called.

The Call Redirect feature does not update the last number that was called from the line before CRT activation. Therefore, CRT activation does not change the behavior of ACB. ACB will call back the last number that was called before the CRT feature was activated.

CRT feature will also take care that if the Other Party is sent to the routing DN by the CRT controller,then the Outgoing Call memory will not be over written with the routing DN. It will still contain the CRT controller’s DN.

2.7.2 Advanced Intelligent Network (AIN)

There will be no AIN interaction on the call between the Other Party and the routing DN.

If the CRT controller is subscribed to the Off-Hook Immediate (OHI) trigger, OHI will take precedence and the CRT controller will not be able to activate CRT feature.

An AIN Collect Info response that contains the CRT access code in the collecteddigits field will not be able to startup the CRT feature. The call will be be given FNAL (Feature Not allowed) treatment.

In the call from the other party to the CRT controller, no AIN trigger will be allowed to be activated.

2.7.3 Call Waiting / Call Waiting Conference (CWT / CWTC)

The CWT feature notifies the subscriber of an incoming call via CWT tones when the subscriber is already busy on a basic two-party call. The subscriber can put the current party on hold, answer the incoming call, and then alternate between the two other parties by flashing.

When CWT is already active on a line, i.e. the CRT controller has a call waiting either ringing or on hold, the controller cannot activate CRT because CWT has precedence over CRT. Therefore, flashing will toggle between the two other parties. Only when the controller ends one of the calls, he/she will be able to activate the CRT feature.

The CWTC feature provides conference functionality to CWT users by offering the capability to join a calling party into an existing call. CRT interacts with CWTC feature the same way as that with CWT.

2.7.4 Local Number Portability (LNP)

Local Number Portability (LNP) provides the capability for customers to retain their geographic or non-geographic DNs when they change their location, service provider, or service.

The CRT routing DN can be ported.

2.7.5 Redirecting Features

Redirecting features include all variations of call forwarding and AIN-based call redirecting (for example TAT with Forward_call response).

The CRT feature does not update the redirecting data. Thus the CRT related data will not be sent over PRI/ISUP trunks.

2.7.6 Special Delivery Service (SDS)

SDS is an end office feature that provides operating companies with the capability to offer the end users in-line access to call completion services. Call completion services can be offered upon detection of a busy or no-answer condition and they consist of either office-based features or off-board services provided by an external platform. SDS enables all residential and business end users to access a call completion service without having to hang up.

SDS cannot be activated by either the controller or the other party if the CRT feature is activated. Once the CRT feature terminates, SDS is available to the controller and to the other party.

2.7.7 Speed Call

The Speed Call feature allows end users to associate a string of digits (for example DNs) against access codes (*XX) so they can be dialed quickly.

The CRT feature takes precedence over the Speed Call feature. This means that if an end-user programs a speed dial access code to be the same as the CRT access code, the CRT feature will be initiated whenever the end-user dials this access code.

2.7.8 Spontaneous Call Waiting (SCWID)/ SCWID with Dispositions (DSCWID)

The SCWID feature allows subscribers to receive calling party information on their phone display during call waiting. SCWID uses its own protocol between the peripheral and the customer premise equipment (CPE) to send the tone and the calling party information to the subscriber.

Along with calling party information, DSCWID also provides subscribers with a set of dispositions to handle incoming calls.

SCWID and DSCWID have the same interaction with the CRT feature as the CWT feature. The controller cannot activate the CRT feature while a SCWID or DSCWID session is active. The controller has to terminate the SCWID or DSCWID session before using the CRT feature.

2.7.9 Three-Way Call / Usage Sensitive 3WC / Conference (CXR/3WC/ Conf)

The three-way call and Conference features allow more than two parties to be connected together in a conference.

Usage Sensitive Three-Way Call allows an end user to use the 3WC feature on a pay-per-use basis.

The controller of the three-way call is the party who added the second leg of the call by flashing and calling another party. The controller of the three-way call puts the three parties in conference by flashing after calling the other party, and can also drop the added party by flashing while the three parties are in conference.

Participants in a three-way call (or conference) can activate the CRT feature if they are not controller of the three-way call (that is, three-way call initiators).

If the participant of a three-way call (not the controller) activates the CRT feature, the other two participants are sent to the CRT routing DN.

The three-way call feature has precedence over the CRT feature; therefore, the controller of a three-way call cannot activate the CRT feature.

When an end user who either subscribes to 3WC /CXR or is eligible to U3WC flashes and dials the CRT access code during a basic two-party call, the CRT feature is activated as usual and no conference takes place between the other party, the controller and the CRT announcement. Furthermore, no U3WC billing is generated. This is true for both flash-only and access-code activation methods of U3WC.

2.8 Logs (LG)

The CRT feature generates a CRT600 log when the CRT routing DN translation fails. The CRT600 log contains the following data:

- the call ID
- the controller DN (10-digit CRT controller DN)
- the routing DN (7 or 10-digit CRT routing DN)
- the reason (translation failure)

The following figure gives an example of the new CRT600 log.

Figure 6: Example of CRT log

```
MTLEN12AP  CRT600  MAI10  12:30:55  3800  INFO  CRT
Call ID:              6789 7654
Controller DN:        6136211500
Routing DN:           6131234567
Reason:               TRANSLATION_FAILURE
```

2.8.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)
CRT	600	New	SOS

For more details, refer to the Log changes (LG) section.

2.9 Data schema (DS)

2.9.1 New/modified tables

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
IBNXLA	Changed	Unchanged
IBNLINES	Changed	Unchanged
OPTOPT	Changed	Unchanged
TMTCNTL	Changed	Unchanged
LCCOPT	Changed	Unchanged
AMAOPTS	Changed	Unchanged

2.9.2 Modified Table IBNXLA

Table IBNXLA is modified to support a new option CRT to the FTR selector. The new option CRT will store the CRT routing DN and the billing option for a selected customer group.

2.9.3 Modified Table IBNLINES

Table IBNLINES is modified to support the new line options CRT and CRTDENY as valid values for the field OPTLIST.

2.9.4 Modified Table OPTOPT

Two tuples are added to table OPTOPT to define the list of incompatible line options for CRT and CRTDENY.

2.9.5 Modified Table TMTCNTL

The subtable TREAT of table TMTCNTL is modified to support the CRTC treatment as a valid value for the field TREATMT. One tuple is added to subtable TREAT of table TMTCNTL to describe the CRTC treatment.

2.9.6 Modified Table LCCOPT

Table LCCOPT is modified in order to add the line options CRT and CRTDENY to the list of compatible options for the supported LCCs.

2.9.7 Modified Table AMAOPTS

A new parameter CRT_BILLING is added to table AMAOPTS.

For more details, refer to the Data schema changes (DS) section.

2.10 Office parameters

The CRT feature introduces a new parameter, CRT_BILLING, in table AMAOPTS. CRT_BILLING enables the telephone company to control the generation of the redirected call billing record. If CRT_BILLING is set to ON, the billing record of the redirected call is generated when routing the other party from the controller to the CRT routing DN. If CRT_BILLING is set to OFF, the billing of the redirected call is suppressed.

2.10.1 New/modified office parameters

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED
AMAOPTS	CRT_BILLING	New

The following example shows sample datafill for table AMAOPTS:

```
PARMNAME        PARMVAL
------------------------------------
CRT_BILLING     ON
```

For more details, refer to the Data schema changes (DS) section.

2.11 Service orders (SO)

Two new line options, CRT and CRTDENY, are introduced with this feature. The service order system (SERVORD) is enhanced to support these new line options. SERVORD is used to add or remove CRT or CRTDENY from a subscriber's line. The two new line options can be assigned to Residential Enhanced Services (RES) lines with LCC of One-party Flat Rate (RES/1FR) or One-party Message Rate (RES/1MR).

The ADO, DEO and NEW commands of the Servord tool are modified to accept the CRT or CRTDENY line option. The CRT and CRTDENY line options can be added to a line through SERVORD commands NEW and ADO. SERVORD checks that the LCC of the line is compatible and it also checks

that the line options on the line are compatible. The SERVORD command DEO can be used to remove the CRT or CRTDENY options from a line.

No new LCC are introduced by this feature.

The CRT and CRTDENY line options are incompatible.

For more details, refer to the Service orders (SO) section.

2.12 Alarms (AL)

The Call Redirect feature does not create or change any alarms.

2.12.1 New/modified directories

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES
-	-	-	-	-

2.13 Command interface (CI)

The Query Directory Number (QDN) and Query Line Equipment Number (QLEN) commands are modified to display the CRT or CRTDENY line options when they are assigned to a line.

The following figure shows a QDN example.

```
>qdn 6218008
------------------------------------------------------------
DN:     6218008
TYPE: SINGLE PARTY LINE
SNPA: 613   SIG: DT    LNATTIDX:  262
LINE EQUIPMENT NUMBER:     HOST  00 0 04 07
LINE CLASS CODE:      1FR
IBN TYPE: STATION
CUSTGRP:        RESG200     SUBGRP: 0  NCOS: 0
CARDCODE:  6X17AC    GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER     :    34
PM TERMINAL NUMBER :    136
OPTIONS:
DGT
RES OPTIONS:
ACB NOAMA AR NOAMA CRT
OFFICE OPTIONS:
U3WC
```

new line option

The following figure shows a QLEN example.

```
>qlen HOST  00 0 04 08
------------------------------------------------------------
LEN:                  HOST  00 0 04 08
TYPE: SINGLE PARTY LINE
SNPA: 613   SIG: DT    LNATTIDX:  262
DIRECTORY NUMBER:    6210001
LINE CLASS CODE:      1FR
IBN TYPE: STATION
CUSTGRP:        RESG200     SUBGRP: 0  NCOS: 0
CARDCODE:  6X17AC    GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER     :    35
PM TERMINAL NUMBER :    135
OPTIONS:
DGT
RES OPTIONS:
ACB NOAMA AR NOAMA CRTDENY
OFFICE OPTIONS:
U3WC
```

new line option

2.13.1 New/modified commands

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN
QDN	Changed	-	CI	-
QLEN	Changed	-	CI	-

For more details, refer to the Command interface changes (CI) section.

2.14 Operational measurements (OM)

A new OM group is created for the Call Redirect feature with one tuple for each customer group. The new OM group, CALLRDT, has the following registers:

- CRTACT is pegged whenever the CRT feature is activated successfully by an eligible end user during a basic two-party call.
- CRTUACT is pegged whenever the CRT feature is activated successfully using a pay-per-use access by an eligible end user during a basic two-party call.
- CRTOPHUP is pegged when the other party hangs-up before getting routed according to the CRT routing DN.

2.14.1 New/modified OM groups

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason
CALLRDT	Call Redirect	New	CALLRDT measures the Call Redirect usage per customer group. This new OM group has four registers.

For more details, refer to the Operational measurement changes (OM) section.

2.15 AMA/Billing information (AM)

The CRT feature introduces a call type (049) but it reuses an existing structure code (00028). The following fields in the structure have a special CRT setting:

- Call Type = 049 (Activation)
- Originating NPA = Indicates the NPA of the CRT controller (i.e. the party that activated the CRT feature)

- Originating Number = Controller invoking CRT.
- Called Party Off-Hook= Default Value.
- Connect Time = Time that the other party gets routed to the CRT routing DN.

2.15.1 New/changed AMA/billing information

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards
Bellcore	New	Local	LSSGR

For more details, refer to the AMA/billing changes (AM) section.

2.16 Software optionality control (SOC)

The CRT feature will be enabled/disabled in an office using SOC. The CRT feature is included in the Functional Order Code RES00099. The two supported SOC states are ON and IDLE. When the SOC state is ON, all CRT functionality is allowed. When the SOC state is IDLE, all datafill and provisioning activities with respect to CRT are allowed but the CRT feature activation is disabled in the office.

For each switch, a Right To Use (RTU) password may be required from Nortel in order to enable the features in any Functional Order Group.

Table 8 SOC information on the CRT feature

SOC option name:	RES_Call_Redirect
SOC option title:	Call Redirect
SOC option control type:	state
New SOC option?	Yes
SOC option order code	RES00099
Option defined in DRU:	CCM
Affected products:	LEC013 and LET013

2.17 Glossary

Term	Description
1FR	One-party Flat Rate line
1MR	One-party Message Rate line
3WC	Three-Way Call
ACB	Auto-Call Back
AIN	Advanced Intelligent Network
AL	Alarm
AM	Automatic Messaging
AMA	Automatic Message Accounting
CI	Command Interpreter
CRT	Call Redirect
CRTDENY	Call Redirect Deny
CSP	Competitive Service Provider
CWT	Call Waiting
CWTC	Call Waiting Conference
DMS	Digital Multiplex System
DN	Directory Number
DS	Data Schema
DSCWID	SCWID with Dispositions
FNAL	Feature Not ALlowed
IBN	Integrated Business Network
ISDN	Integrated Services Digital Network
LCC	Line Class Code
LG	Log
LNP	Local Number Portability
MAP	Maintenance Application Position
NACK	Negative ACKnowledgment
NPA	Numbering Plan Area
OM	Operational Measurements

ONP	One Night Process
POTS	Plain Old Telephone Service
PPU	Pay-Per-Use
PSTN	Public Switched Telephone Network
QDN	Query Directory Number
QLEN	Query Line Equipment Number
RES	Residential Enhanced Services
SCP	Service Control Point
SCWID	Spontaneous Call Waiting Identification
SDS	Special Delivery Service
SS7	Signaling System number 7
SO	Service Order
SOC	Software Optionality Control
TDP	Trigger Detection Point
VACT	VACanT

2.18 References

#	Documents
1	CRT Feature Specification Document, FAS9726FSD, latest version
2	NTP 297-1001-450 Provisioning
3	NTP 297-1001-830 Bellcore Format Automatic Message Accounting Reference Guide
4	NTP 297-1421-503 Subscriber Services Maintenance Guide
5	NTP 297-8021-350 North American DMS-100 Translation Guide
6	NTP 297-8021-801 North American DMS-100 Feature Description Manual
7	NTP 297-8021-808 North American DMS-100 SERVORD Reference Manual
8	NTP 297-8021-814 NA DMS-100 Operational Measurements Reference Manual

2: Functional description (FN)

2.1 Feature name

Number Pooling Servord Interface

2.2 Description

Number pooling is a measure to slow the rate of numbering resource exhaust within the North American Telephony network. The plan involves breaking NPANXX codes into blocks of numbers (initially 1000) and assigning these blocks to several different operating companies within the same rate center. One of those operating companies, termed the code holder, would be assigned the NXX code in the Local Exchange Routing Guide (LERG). Calls to numbers assigned to the other operating companies, known as block holders would be routed using the capabilities of Number Portability as though the directory numbers had been ported. All the DNs within a block which have been assigned to a block holder are associated in the Number Portability Data Base (NPDB) with the Location Routing Number (LRN) of the block holder. Initially, not all the DNs in the block will be allocated to service. This is known as preporting the numbers.

The T1S1.6 Technical Requirements for Number Portability version T1S1.6/99-002 R2 include a capability to mark a DN or range of DNs as NP-reserved. Feature A59007321 in NA012 introduced the table NPRESERV. The contents of table NPRESERV identify ranges of numbers that are to be considered NP-Reserved (NP-R) numbers. Presence of a BLDN-treated DN within a digit range in table NPRESERV is all the information required to determine it is an NP-R number. At the code-holder, if the NPANXX of a BLDN-treated DN has the CODE-HOLDER option against it and it is not contained in a range in NPRESERV, the DN is considered to be ported out for number pooling reasons. Although the table existed in NA012, it was not writable. This activity provides the interface to table NPRESERV.

With the introduction of Number pooling, the porting of DNs both for number pooling and number portability increases in complexity with regard to the required changes to table data. It is hence desirable to provide a provisioning interface that would facilitate the porting of DNs.

In order to provide this interface, this feature introduces new functionality to the NEWDN and OUTDN Servord commands.

In addition to bringing virtual DNs (VDNs) into service, this activity allows the NEWDN command to be used to:

- pool in a thousands block of DNs
- port in a single or block of DNs (to be assigned to service at a later time)
- introduce a new LERG-assigned NPANXX to the switch.

The OUTDN command functionality is also increased. Aside from using the OUTDN command to take VDNs out of service, it can also be used to:

- pool out a thousands block of DNs.
- port out a single or block of DNs

It should be noted that in order to port out a single or block of DNs which are assigned to a physical line, the DNs must first be removed from service (put on BLDN or UNDN intercept) before using the OUTDN command to port them out.

In order to port out a single or block of VDNs which are not supported by OUTDN, the DNs must also first be removed from service (put on BLDN or UNDN intercept) before using the OUTDN command to port them out.In other words, this feature does not expand on the list of VDNs which are supported by single or block of DNs OUTDN.

Also, in order to pool out a block of physical or virtual DNs, the DNs must first be removed from service (put on BLDN or UNDN intercept) before using the OUTDN command to pool them out (Any DNs in the block on PODN intercept must also be put back on BLDN or UNDN).

In the case that Servord is not available, a CI command NPRESERVE is introduced by this feature. It serves as an interface to table NPRESERV only and does not provide all the table provisioning available with the Servord interface of NEWDN and OUTDN. Hence NEWDN and OUTDN are the recommended means by which to provision number pooling.

In addition, existing CI query commands QDN, QLEN and QPDN used to obtain information regarding the ported status of a DN(s) are updated to work in a number pooling environment. A new CI query command, QRDN is introduced by this activity to provide information regarding reserved DNs and the pooled status of DNs. Also included in this activity is the modification of QDN and QLEN such that when querying an unassigned DN using QDN or QLEN, information is displayed regarding whether the DN is owned by this switch. These functionalities are controlled via a SOC (Software Optionality Control) code NPE00005.

In summary, this feature consists of the following components:

- Additional NEWDN functionality
- Additional OUTDN functionality
- Implementation of the NPRESERVE CI command
- Modification of the QDN/QLEN CI commands for number pooling
- Modification of the QPDN CI command
- Conversion of QRNF treatment to RSVD marking
- Implementation of a new CI command QRDN
- Modification of the QDN/QLEN commands for an unassigned DN

These are discussed in further detail in the following sections.

2.2.1 Additional NEWDN functionality

Prior to this feature, the NEWDN command was used to create a virtual DN. It prompted the user for the following information:

- SONUMBER
- SNPA
- BLOCK_OF_DNS
- DN (if ‘no’ was entered at the block_of_dns prompt)
- FROM_DN and TO_DN (if ‘yes’ was entered at the block_of_dns prompt)
- VDNTYPE
- Depending on what VDN type was entered at the VDNTYPE prompt, further information needed to bring the VDN into service.

By introducing a new VDN type, this activity adds to the NEWDN functionality, the provisioning capability to:

1. pool in a thousands block of DNs
2. port in a single or block of DNs without assigning it to service (assigning it to service would require a second step). This functionality would most likely be used to port in a single or block of DNs whose NPANXX does not already exist in table TOFCNAME.
3. introduce a new LERG-assigned NPANXX to the switch.

If the NEWDN command is used to introduce a duplicate NXX to the switch (either via porting in DN(s), pooling in DNs, or a new LERG assignment), the DN entered at the FROM_DN or DN prompt must be 10 digits in length.

Otherwise, the NEWDN command will mistakenly assume the NPA of the DN to be what is already associated with that NXX in table TOFCNAME.

If it is the first time a duplicate NXX is introduced onto the switch, the following warning message is displayed:

> "*** WARNING: This change will result in two TOFCNAME entries with the same office code. Service Order prompting will change to compensate for the resulting DN ambiguity, possibly preventing automated systems from performing Service Orders. Please contact your next level of support before confirming this change."

It should be noted that even though the warning says to contact the next level of support before confirming this change, the message is in fact displayed after the command has already been confirmed by the user. Hence the change has already occurred.

This added NEWDN functionality is controlled via SOC NPE00005.

2.2.1.1 NEWDN Prompts

The user of NEWDN must be prompted for information regarding which of the above he/she is using NEWDN to accomplish. The following table summarizes the additional information that is required to be input by the user in order to execute the functionality described above.

Table 1 Additional information prompted for.

NEWDN functionality	Required information prompted from the user.
Pooling in a thousands block of DNs	• this block is being pooled in • whether this switch is the codeholder or blockholder • contaminant DNs in the block
Porting in a single DN without assigning it to service	• this DN is being ported in
Porting in a block of DNs without assigning it to service	• these DNs are being ported in
Introducing a new LERG-assigned NPANXX to the switch.	• the NPANXX of the single or block of DNs input at the prompt is being introduce onto the switch as LERG-assigned.

The following diagram illustrates the functionality of the NEWDN command.

Figure 1 NEWDN functionality

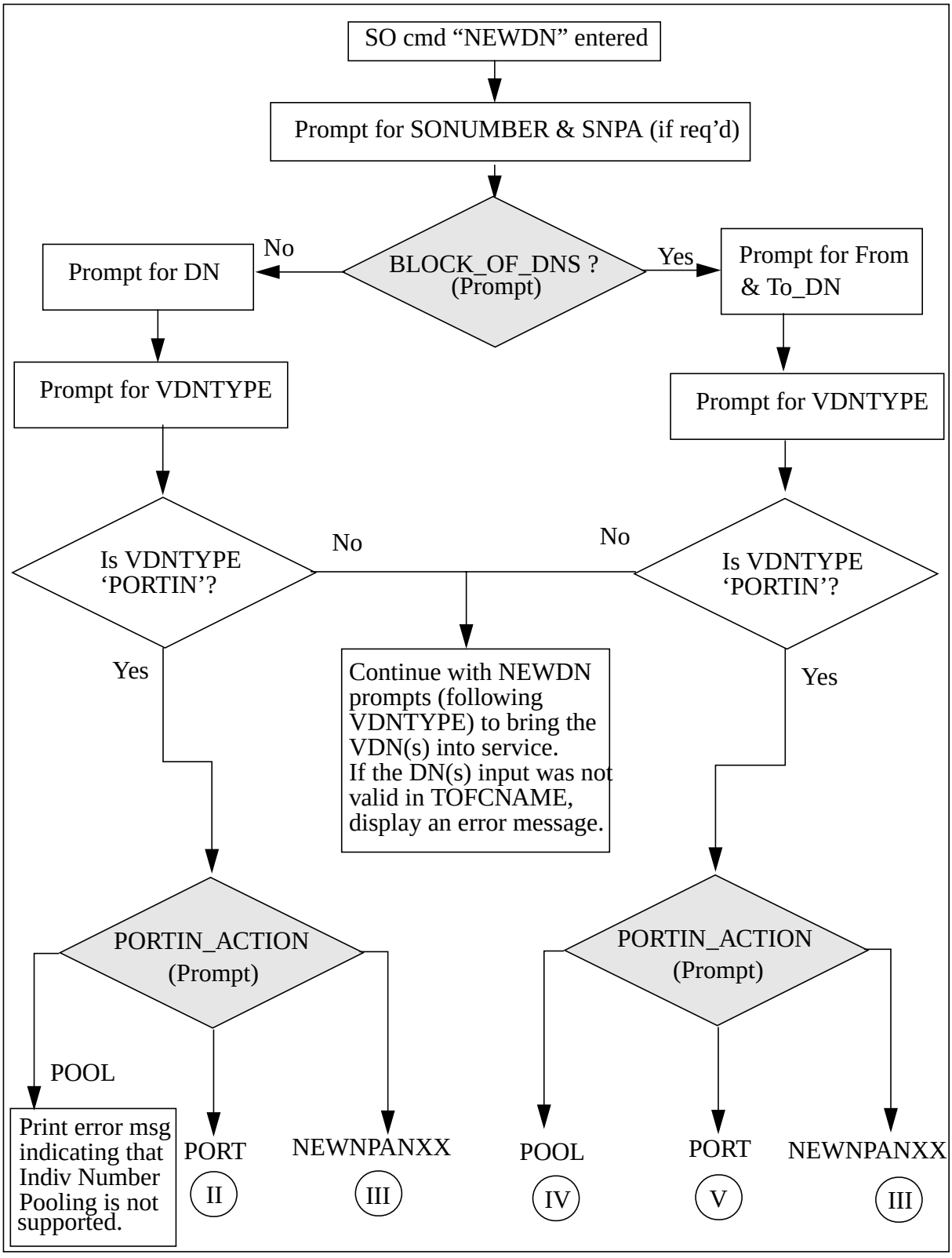


Figure 1(continued)

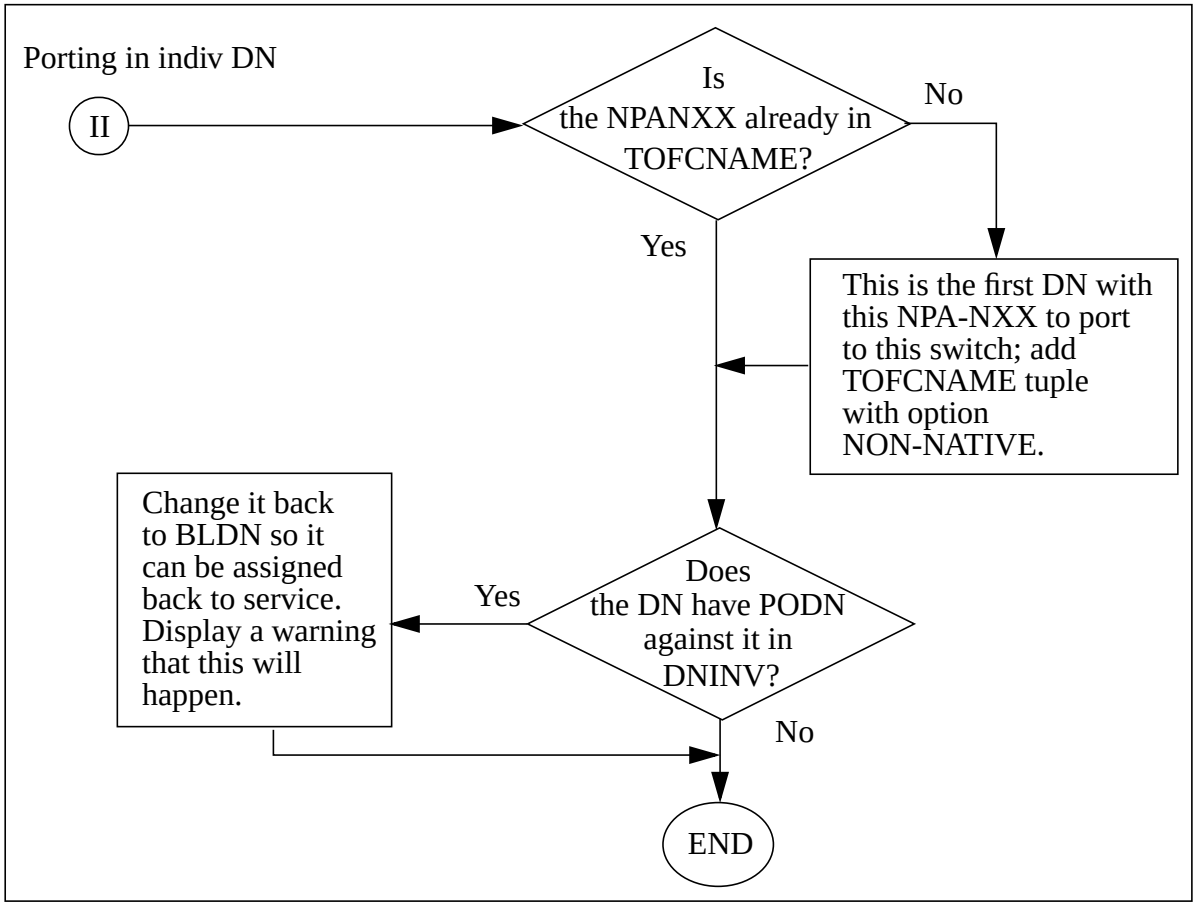


Figure 1 (continued)

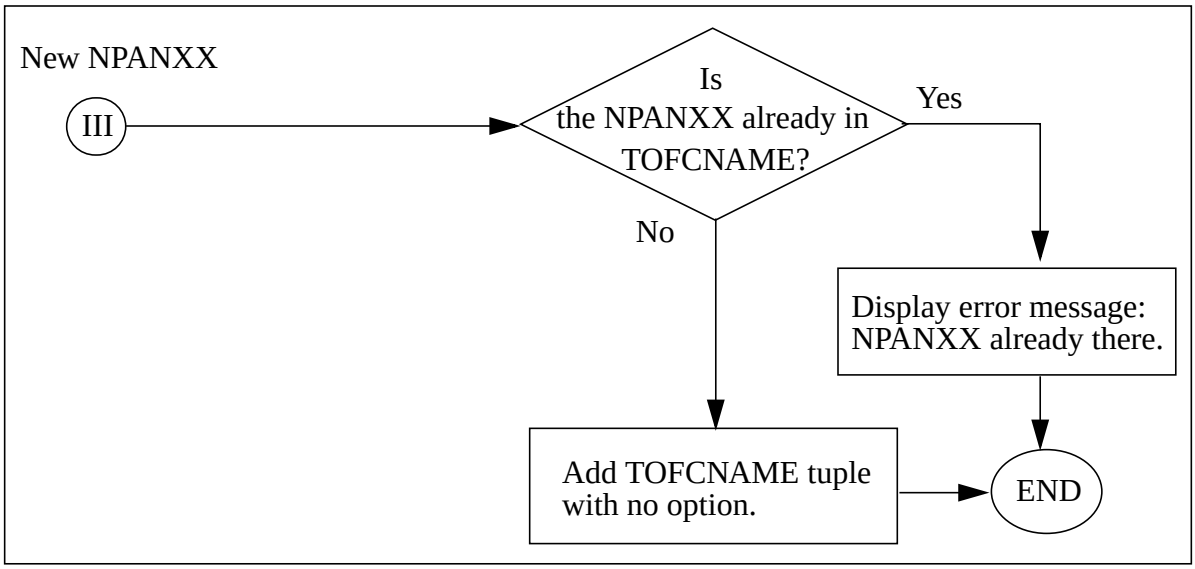


Figure 1 (continued)

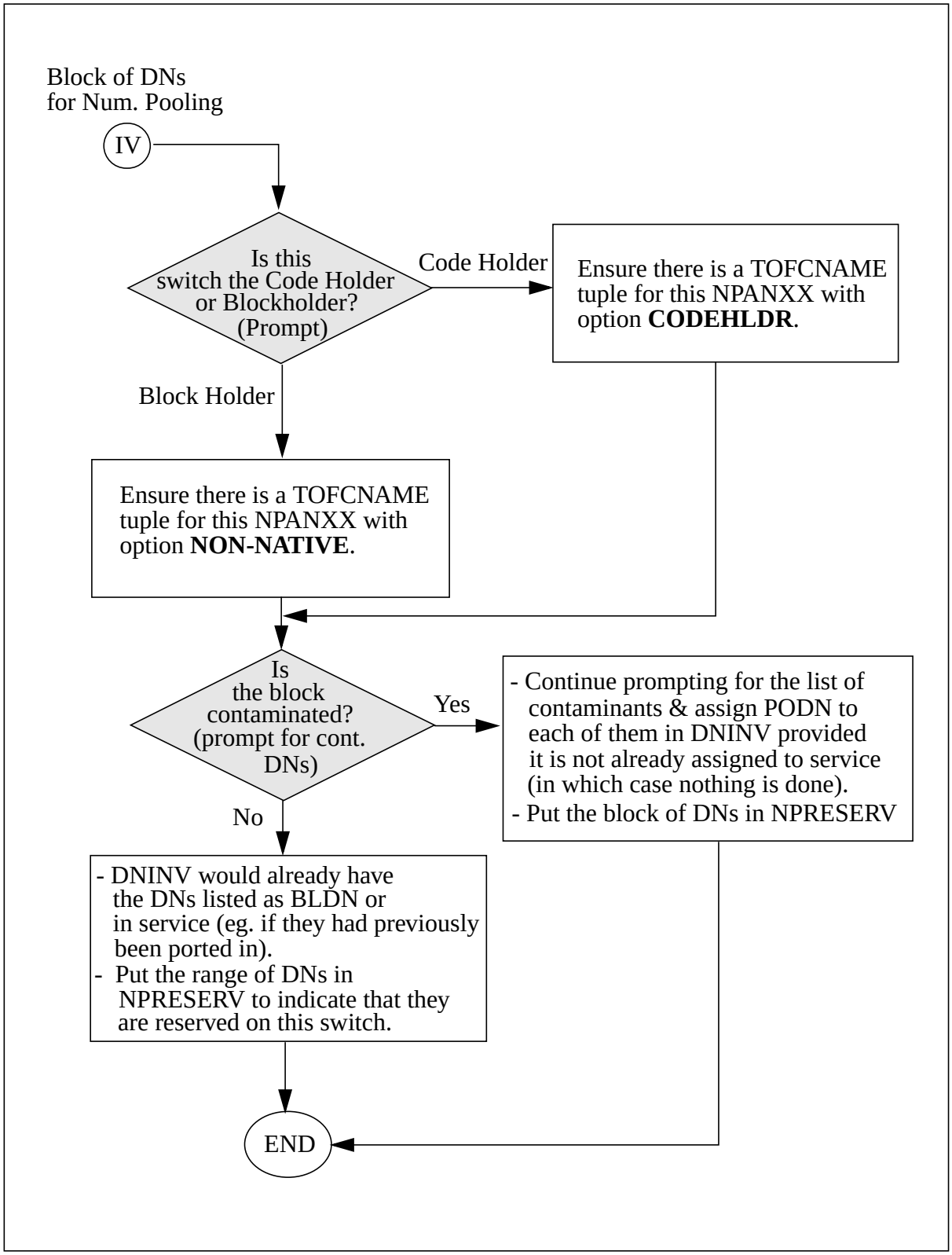
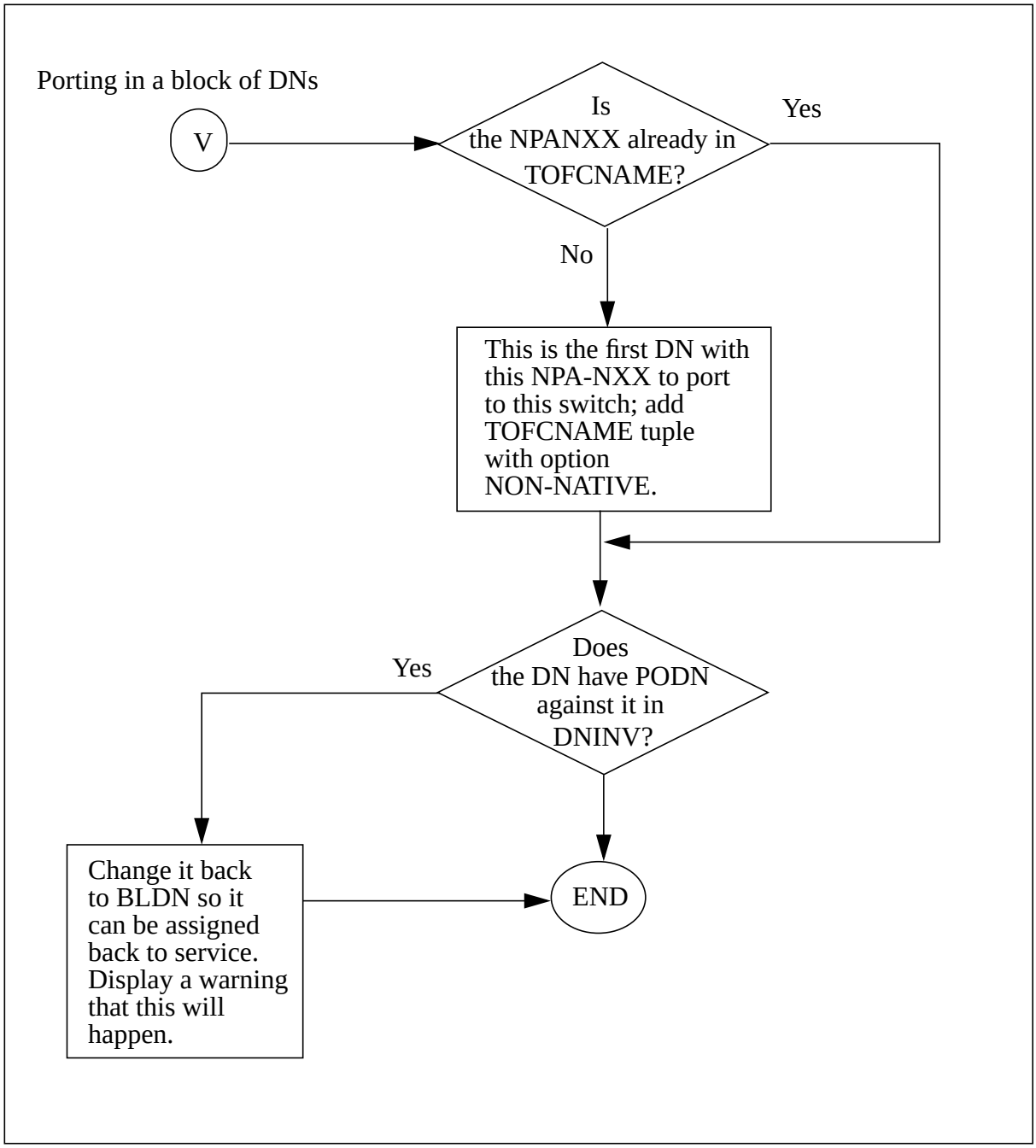


Figure 1 (continued)



If NEWDN is used to create a virtual DN (VDN), the prompting sequence remains unchanged.

In order to use the added functionality of the NEWDN command, the user must, at the VDNTYPE prompt, enter a newly defined value ‘PORTIN’ rather than one of the existing supported VDN types. At this point, the prompting

continues to gather additional information such as whether the DN(s) is(are) being ported in for number pooling reasons, or whether a new LERG-assigned NPANXX is to be introduced into the switch.

Additional prompts are added to the NEWDN command:

- PORTIN_ACTION (accepts a enumerated type indicating which of 3 new NEWDN functionalities is desired: POOL(porting in DN(s) for number pooling reasons), PORT (porting in DN(s) for non-number pooling reasons) or NEWNPANXX (introducing a new NPANXX as LERG-assigned into the switch.)
- CODEHOLDER (accepts a boolean input indicating whether the switch is to be the codeholder of the block of dns input). If the NPANXX of the DN(s) entered already exist in table TOFCNAME, a default value is provided for the CODEHOLDER prompt according to the option associated with the NPANXX in TOFCNAME.
- CONTAMINANT (accepts a single or range of DN station codes which is(are) a contaminant of the specified block of DNs). This prompt is repeated up to a maximum of 100 times until the '$' is entered, collecting a list of contaminant DNs. The contaminant prompt accepts a single or range of contaminant station codes. If the number of contaminants entered surpasses a maximum indicated by a field in table LNPOPTS, an error message is displayed.

Not all the above prompts will occur with every invocation of the NEWDN command. The prompting sequence is dependent on the value of previously entered input. For example:

- if 'pool' is entered at the PORTIN_ACTION prompt, prompting for the CODEHOLDER and CONTAMINANT information is turned on.
- if either 'port' or 'newnpanxx' is entered at the PORTIN_ACTION prompt, the CODEHOLDER and CONTAMINANT prompts are turned off. There is no need to gather such information if the DN(s) is(are) not being pooled in.

As mentioned earlier, the maximum allowed percentage of contamination of a thousands block is indicated by the NP_MAX_CONTAM key in table LNPOPTS. This field is datafilled with an integer value between 0 (no contaminants allowed) and 40 (40% contamination or 400 contaminants allowed). An example of NP_MAX_CONTAM datafill is shown below.

Figure 2 LNPOPTS NP_MAX_CONTAM tuple example

Table LNPOPTS:

KEY OPTIONS

NP_MAX_CONTAM NP_MAX_CONTAM 10

The default value for this field is 10 (indicating a maximum of 10% contamination is allowed). Contaminants are entered at the "CONTAMINANT" prompt of NEWDN either as an individual 4-digit station code (ex. 1001) or a range of station codes (ex. 1001to1005).

It should be stressed that although the number of contaminants allowed in a thousands block is dependent on the value of NP_MAX_CONTAM in table LNPOPTS, the maximum number of times contaminants are prompted for in the NEWDN command remains at a constant of 100.

2.2.1.2 Added NEWDN Provisioning

As mentioned in the previous section, if the new VDN type called PORTIN is input at the ‘VDNTYPE’ prompt, the user is prompted for additional information in order to determine the functionality requested by the user and do the corresponding provisioning.

The following table indicates the added NEWDN provisioning capabilities introduced by this feature.

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Pool in a single DN	Not Applicable. Individual number pooling is not supported in this release.	N/A
Pool in a block of DNs whose NPANXX already exists in table TOFCNAME with the CODEHLDR option. Contaminants in the block are specified.	1. Use the NEWDN command. >newdn SONUMBER: NOW 99 7 13 PM > SNPA: >416 BLOCK_OF_DNS: >yes FROM_DN: >4164631000 TO_DN: >2999 VDNTYPE: >portin PORTIN_ACTION: >pool CODEHOLDER: Y > CONTAMINANT: >1001to1003 CONTAMINANT: >1005 CONTAMINANT: >$ COMMAND AS ENTERED: NEWDN NOW 99 7 13 PM 416 4164631000 2999 portin pool y (1001to1003) (1005) $ ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	Each of the contaminants listed is considered to have ported out of the switch. Hence, each contaminant DN specified, provided, it is not assigned to service on the switch, is assigned to PODN intercept. If the contaminant DN is in service on the switch, it had previously ported into this switch (before the block it was contained in was pooled in). This DN is treated as if it had been pooled in and then assigned. PODN is not assigned in this case. The range specified by the FROM_DN and TO_DN inputs is added to table NPRESERV.

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Pool in a block of DNs whose NPANXX already exists in table TOFCNAME with the NONNATIVE option. Contaminants in the block are specified.	1. Use the NEWDN command: >newdn SONUMBER: NOW 99 7 13 PM > SNPA: >905 BLOCK_OF_DNS: >yes FROM_DN: >9059631000 TO_DN: >999 VDNTYPE: >portin PORTIN_ACTION: >pool CODEHOLDER: N > CONTAMINANT: >1008 CONTAMINANT: >1010 CONTAMINANT: >$ COMMAND AS ENTERED: NEWDN NOW 99 7 13 PM 905 yes 9059631000 999 portin pool n (1008) (1010) $ ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	Each of the contaminants listed is considered to have ported out of the switch. Hence, each contaminant DN specified, provided, it is not assigned to service on the switch, is assigned to PODN intercept. If the contaminant DN is in service on the switch, it had previously ported into this switch (before the block it was contained in was pooled in). This DN is treated as if it had been pooled in and then assigned. PODN is not assigned in this case. The range specified by the FROM_DN and TO_DN inputs is added to table NPRESERV.

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Pool in a block of DNs whose NPANXX does not yet exist in table TOFCNAME. The switch is to be the codeholder of the block. Contaminants in the block are specified.	1. Add the NPA to table SNPANAME. 2. Use the NEWDN command: >newdn SONUMBER: NOW 99 7 13 PM > SNPA: >613 BLOCK_OF_DNS: >yes FROM_DN: >6136681000 TO_DN: >2999 VDNTYPE: >portin PORTIN_ACTION: >pool CODEHOLDER: > y CONTAMINANT: >1002to1005 CONTAMINANT: >1010 CONTAMINANT: >$ COMMAND AS ENTERED: NEWDN NOW 99 7 13 PM 613 yes 6136681000 2999 portin pool y (1002to1005) (1010) $ ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The NPANXX of the FROM_DN entered is added to table TOFCNAME with the CODEHLDR option. Each of the contaminants listed is considered to have ported out of the switch. Hence, each contaminant DN specified, provided, it is not assigned to service on the switch, is assigned to PODN intercept. If the contaminant DN is in service on the switch, it had previously ported into this switch (before the block it was contained in was pooled in). This DN is treated as if it had been pooled in and then assigned. PODN is not assigned in this case. The range specified by the FROM_DN and TO_DN inputs is added to table NPRESERV.

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Pool in a block of DNs whose NPANXX does not yet exist in table TOFCNAME. The switch is to be the blockholder of the block. Contaminants in the block are specified.	1. Add the NPA to table SNPANAME. 2. Use the NEWDN command: >newdn SONUMBER: NOW 99 7 13 PM > SNPA: >613 BLOCK_OF_DNS: >yes FROM_DN: >6136681000 TO_DN: >2999 VDNTYPE: >portin PORTIN_ACTION: >pool CODEHOLDER: > n CONTAMINANT: >1002to1005 CONTAMINANT: >1010 CONTAMINANT: >$ COMMAND AS ENTERED: NEWDN NOW 99 7 13 PM 613 yes 6136681000 2999 portin pool y (1002to1005) (1010) $ ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The NPANXX of the FROM_DN entered is added to table TOFCNAME with the NONNATIVE option. Each of the contaminants listed is considered to have ported out of the switch. Hence, each contaminant DN specified, provided, it is not assigned to service on the switch, is assigned to PODN intercept. If the contaminant DN is in service on the switch, it had previously ported into this switch (before the block it was contained in was pooled in). This DN is treated as if it had been pooled in and then assigned. PODN is not assigned in this case. The range specified by the FROM_DN and TO_DN inputs is added to table NPRESERV.

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Pool in a block of DNs with an NXX that will result in a duplicate NXX being introduced to the switch for the first time. The switch is to be the blockholder of the block.	1. Add the NPA to table SNPANAME. 2. Use the NEWDN command: Note: The DN entered at the FROM_DN prompt must be 10 digits in length. >newdn SONUMBER: NOW 99 7 13 PM > SNPA: >604 BLOCK_OF_DNS: >yes FROM_DN: >6046681000 TO_DN: >2999 VDNTYPE: >portin PORTIN_ACTION: >pool CODEHOLDER: > n CONTAMINANT: >$ COMMAND AS ENTERED: NEWDN NOW 99 7 13 PM 604 yes 6046681000 2999 portin pool y $ ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y *** WARNING: This change will result in two TOFCNAME entries with the same office code. Service Order prompting will change to compensate for the resulting DN ambiguity, possibly preventing automated systems from performing Service Orders. Please contact your next level of support before confirming this change. >	The NPANXX of the FROM_DN entered is added to table TOFCNAME with the NONNATIVE option. The range specified by the FROM_DN and TO_DN inputs is added to table NPRESERV. A warning is displayed indicating that a duplicate NXX is being added and SERVORD prompting will change to compensate (i.e. SNPA will no longer be prompted for separately). This warning is only displayed the first time a duplicate NXX is introduced. It is not displayed upon introduction of a subsequent duplicate NXX.

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Porting in a single DN whose NPANXX does not yet exist in table TOFCNAME.	1. Add the NPA to table SNPANAME. 2. Use the NEWDN command: >newdn SONUMBER: NOW 99 7 14 AM > SNPA: >613 BLOCK_OF_DNS: >no DN: >6136631000 VDNTYPE: >portin PORTIN_ACTION: >port COMMAND AS ENTERED: NEWDN NOW 99 7 14 AM 613 NO 6136631000 PORTIN PORT ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >	The NPANXX of the DN entered is added to table TOFCNAME with the NONNATIVE option.

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Porting in a single DN whose NPANXX already exists in table TOFCNAME. The DN is on PODN intercept.	>newdn SONUMBER: NOW 99 7 14 AM > SNPA: >416 BLOCK_OF_DNS: >no DN: >4164631000 VDNTYPE: >portin PORTIN_ACTION: >port COMMAND AS ENTERED: NEWDN NOW 99 7 14 AM 416 NO 4164631000 PORTIN PORT ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED SHOULD ORDER BE DONE ANYWAY? (Y OR N) >y 4164631000 : is on PODN. *** Warning: It will be changed to BLDN. >	The PODN intercept is removed and the DN is put back on BLDN. (A warning is displayed)

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Porting in a block of DNs whose NPANXX does not yet exist in table TOFCNAME.	>newdn SONUMBER: NOW 99 7 14 AM > SNPA: >613 BLOCK_OF_DNS: >yes FROM_DN: >6631000 TO_DN: >1020 VDNTYPE: >portin PORTIN_ACTION: >port COMMAND AS ENTERED: NEWDN NOW 99 7 14 AM 613 YES 6631000 1020 PORTIN PORT ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED SHOULD ORDER BE DONE ANYWAY? (Y OR N) >y	The NPANXX of the FROM_DN entered is added to table TOFCNAME with the NONNATIVE option.

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Porting in a block of DNs whose NPANXX already exists in table TOFCNAME. There are DNs in the block which are on PODN intercept.	>newdn SONUMBER: NOW 99 7 14 AM > SNPA: >416 BLOCK_OF_DNS: >yes FROM_DN: >4164670000 TO_DN: >0030 VDNTYPE: >portin PORTIN_ACTION: >port COMMAND AS ENTERED: NEWDN NOW 99 7 14 AM 416 YES 4164670000 0030 PORTIN PORT ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED SHOULD ORDER BE DONE ANYWAY? (Y OR N) >y 4164670010 : is on PODN. *** Warning: It will be changed to BLDN. 4164670015 : is on PODN. *** Warning: It will be changed to BLDN. >	Those DNs in the block which are on PODN intercept are changed back to BLDN intercept. (A warning is displayed)

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Port in a block of DNs with an NXX that will result in a duplicate NXX being introduced to the switch for the first time.	1. Add the NPA to table SNPANAME. 2. Use the NEWDN command: Note: The DN entered at the FROM_DN prompt must be 10 digits in length. >newdn SONUMBER: NOW 99 7 13 PM > SNPA: >604 BLOCK_OF_DNS: >yes FROM_DN: >6046681000 TO_DN: >2999 VDNTYPE: >portin PORTIN_ACTION: >port COMMAND AS ENTERED: NEWDN NOW 99 7 14 AM 604 YES 6046681000 2999 PORTIN PORT ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED SHOULD ORDER BE DONE ANYWAY? (Y OR N) >y *** WARNING: This change will result in two TOFCNAME entries with the same office code. Service Order prompting will change to compensate for the resulting DN ambiguity, possibly preventing automated systems from performing Service Orders. Please contact your next level of support before confirming this change. >	The NPANXX of the FROM_DN entered is added to table TOFCNAME with the NONNATIVE option. A warning is displayed indicating that a duplicate NXX is being added and SERVORD prompting will change to compensate (i.e. SNPA will no longer be prompted for separately). This warning is only displayed the first time a duplicate NXX is introduced. It is not displayed upon introduction of a subsequent duplicate NXX.

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Introducing a new LERG assigned NPANXX to the switch.	1. Add the NPA to table SNPANAME. 2. Use the NEWDN command (with either a block of DNs or a single DN to provide the NPANXX to be added). **Using a block of DNs to specify the NPANXX to be added:** >newdn SONUMBER: NOW 99 7 14 AM > SNPA: >450 BLOCK_OF_DNS: >yes FROM_DN: >4503001000 TO_DN: >999 VDNTYPE: >portin PORTIN_ACTION: >newnpanxx COMMAND AS ENTERED: NEWDN NOW 99 7 14 AM 450 YES 4503001000 999 PORTIN NEWNPANXX ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y **Using a single DN to specify the NPANXX to be added:** >newdn SONUMBER: NOW 99 7 14 AM > SNPA: >450 BLOCK_OF_DNS: >no DN: >4505001000 VDNTYPE: >portin PORTIN_ACTION: >newnpanxx COMMAND AS ENTERED: NEWDN NOW 99 7 14 AM 450 NO 4505001000 PORTIN NEWNPANXX ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The NPANXX of the DN entered is added to table TOFCNAME with no option.

Table 2 NEWDN provisioning

Desired functionality	Steps required	NEWDN provisioning
Introducing a new LERG assigned NPANXX to the switch with an NXX that will result in a duplicate NXX being introduced to the switch for the first time.	1. Add the NPA to table SNPANAME if it doesn't already exist. 2. Use the NEWDN command: Note: The DN entered at the FROM_DN prompt must be 10 digits in length. >newdn SONUMBER: NOW 99 8 11 AM > SNPA: >416 BLOCK_OF_DNS: >no DN: >4164661000 VDNTYPE: >portin PORTIN_ACTION: >newnpanxx COMMAND AS ENTERED: NEWDN NOW 99 8 11 AM 416 NO 4164661000 PORTIN NEWNPANXX ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED SHOULD ORDER BE DONE ANYWAY? (Y OR N) >y *** WARNING: This change will result in two TOFCNAME entries with the same office code. Service Order prompting will change to compensate for the resulting DN ambiguity, possibly preventing automated systems from performing Service Orders. Please contact your next level of support before confirming this change.	The NPANXX of the FROM_DN entered is added to table TOFCNAME with no option. A warning is displayed indicating that a duplicate NXX is being added and SERVORD prompting will change to compensate (i.e. SNPA will no longer be prompted for separately). This warning is only displayed the first time a duplicate NXX is introduced. It is not displayed upon introduction of a subsequent duplicate NXX.

2.2.2 Additional OUTDN functionality

Prior to this feature, the OUTDN command was used only to take virtual DNs out of service. It prompted the user for the following information:

- SONUMBER
- SNPA
- BLOCK_OF_DNS
- DN (if ‘no’ was entered at the block_of_dns prompt)
- FROM_DN and TO_DN (if ‘yes’ was entered at the block_of_dns prompt)
- INTERCEPT_NAME

This activity adds to the OUTDN functionality the provisioning capability to:

1. Pool out a thousands block of DNs

2. Port out a single or block of DNs.

In order to port out a single or block of DNs which are assigned to a physical line, the DNs must first be removed from service before using the OUTDN command to port them out.

In order to port out a single or block of VDNs which are not supported by OUTDN, the DNs must also first be removed from service (put on BLDN or UNDN intercept) before using the OUTDN command to port them out. In other words, this feature does not expand on the list of VDNs which are supported by single or block of DNs OUTDN.

In order to pool out a block of physical or virtual DNs, the DNs must first be removed from service (put on BLDN or UNDN intercept) before using the OUTDN command to pool them out. All DNs in the block previously marked with PODN intercept, must also be put back on BLDN or UNDN.

This added OUTDN functionality is controlled via SOC NPE00005.

2.2.2.1 OUTDN Prompts

The user of OUTDN is prompted for information regarding which of the above he is using OUTDN to accomplish. The following table summarizes the additional information that is required to be input by the user in order to execute the functionality described above.

Table 2 Additional information prompted for.

OUTDN functionality	Additional required information prompted from the user.
Pooling out a thousands block of DNs	• this block is being pooled out • whether this switch is the codeholder or blockholder • contaminant DNs in the block
Porting out a single DN	• this DN is being ported out • intercept (existing prompt)
Porting out a block of DNs	• this block of DNs is being ported out • intercept (existing prompt)

The following diagram illustrates the prompting sequence of the OUTDN command.

Figure 3 OUTDN Prompting sequence

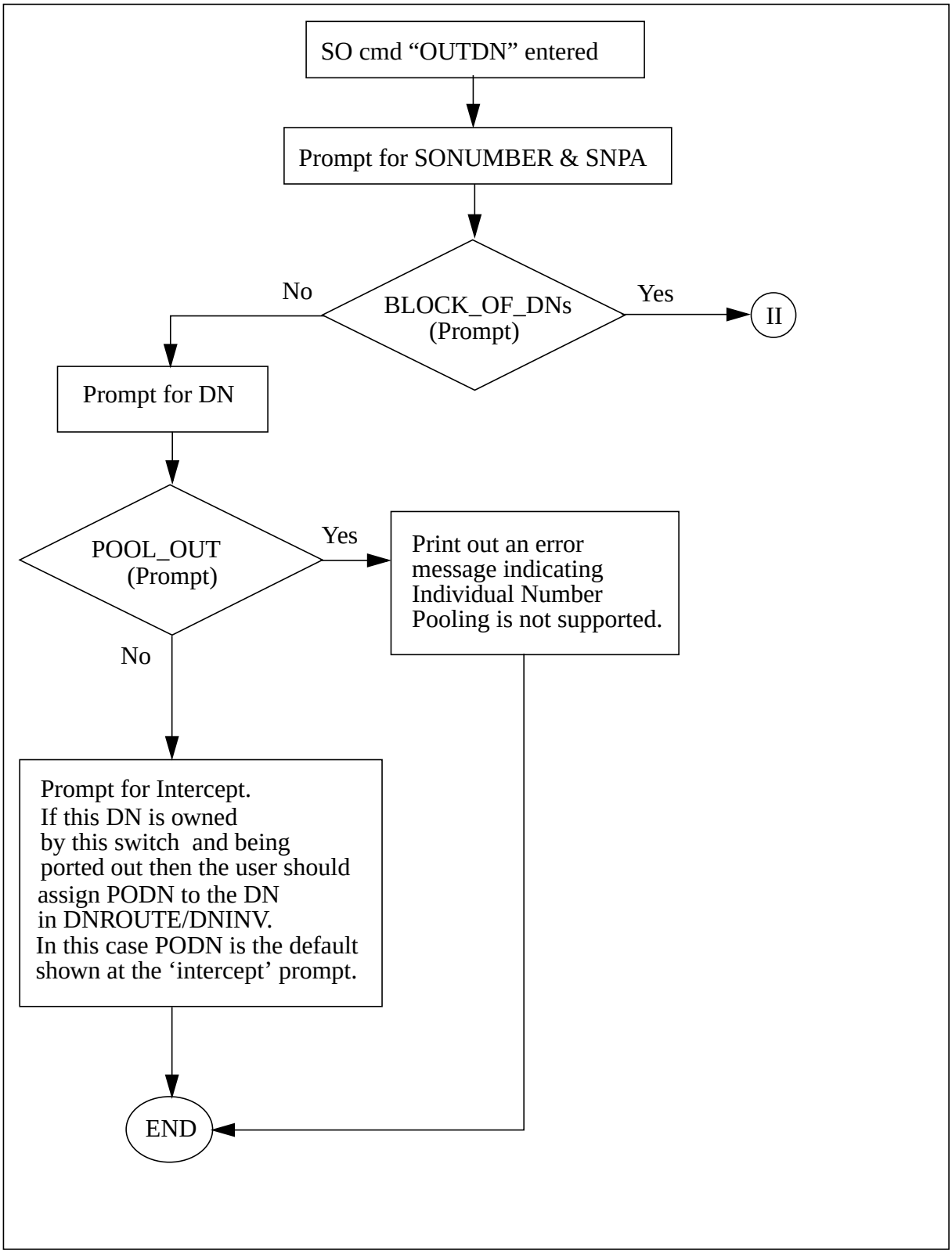
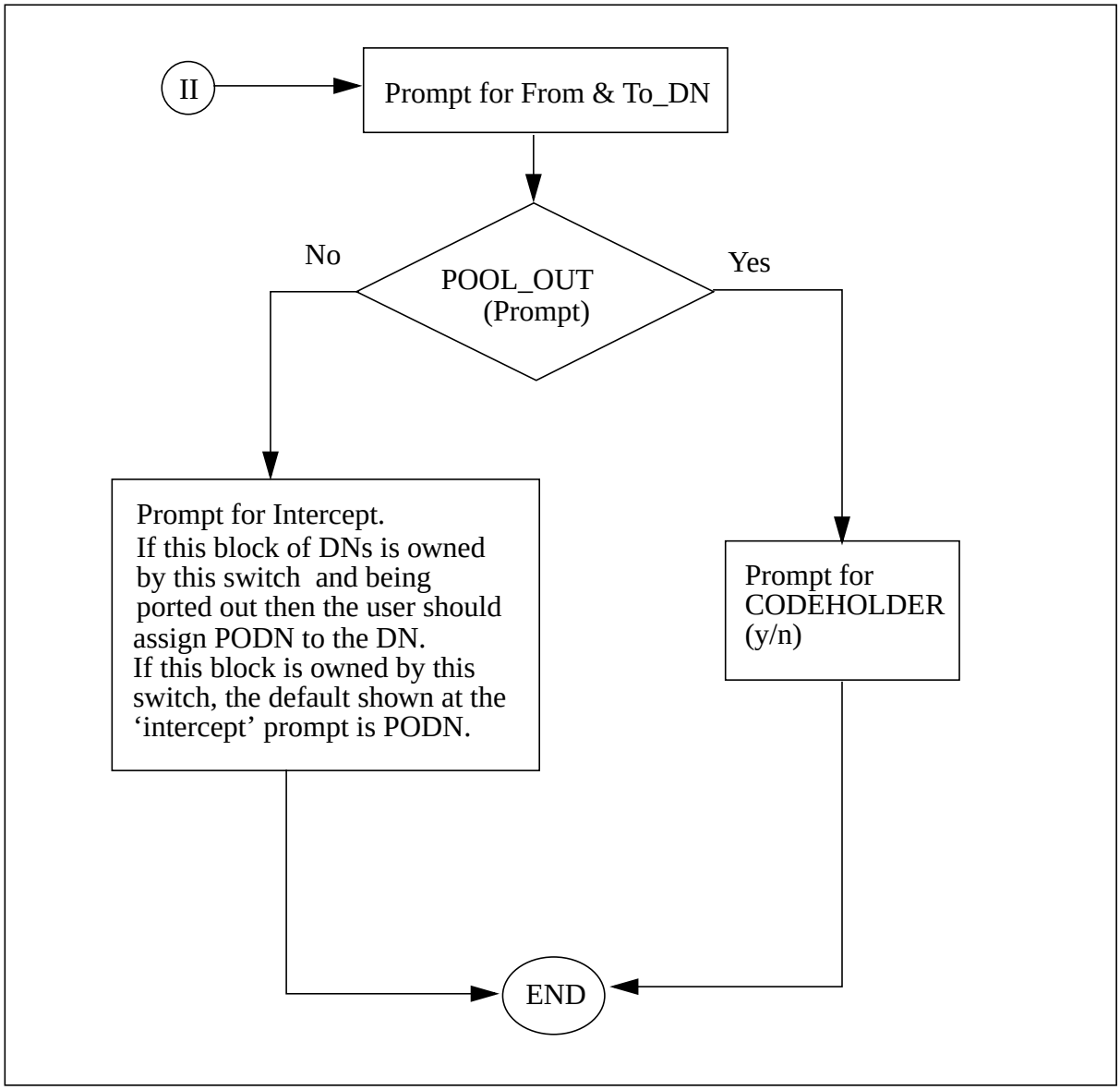


Figure 4



Additional prompts are added to the OUTDN command:

- POOL_OUT (accepts a boolean input indicating whether the DN(s) entered is(are) being ported out for number pooling reasons.)
- CODEHOLDER (accepts a boolean input indicating whether the switch is to be the codeholder of the block of dns input). If the NPANXX of the DN(s) entered already exist in table TOFCNAME, a default value is provided for the CODEHOLDER prompt according to the option associated with the NPANXX in TOFCNAME.

Not all the above prompts will occur with every invocation of the OUTDN command. The prompting sequence is dependent on the value of previously entered input. For example:

- if ‘yes’ is entered at the POOL_OUT prompt, prompting for the CODEHOLDER information is turned on and the prompting for INTERCEPT information is turned off.
- if ‘no’ is entered at the POOL_OUT prompt, prompting for the CODEHOLDER information is turned off and the prompting for INTERCEPT information is turned on.

When pooling out a thousands block, any DNs within the block which are still assigned to service are considered to be contaminants of the block. After user confirmation of the command, the OUTDN command displays a list of contaminants in a warning message. As mentioned in section 2.2.1, the maximum percentage of contamination is specified by the NP_MAX_CONTAM tuple in table LNPOPTS. If the number of contaminants is greater than the maximum specified, an error message is displayed indicating that too many contaminants were found in the block.

2.2.2.2 Added OUTDN provisioning

The following table indicates the added OUTDN provisioning capabilities introduced by this feature.

Desired functionality	Steps required	OUTDN provisioning
Pooling out a single DN.	Not Applicable. Individual number pooling is not supported in this release.	N/A

Desired functionality	Steps required	OUTDN provisioning
Pooling out a block of DNs. All DNs in the block are on BLDN intercept. The switch is the codeholder for the block (NPANXX is in TOFCNAME with the CODEHLDR option).	1. Use the OUTDN command: >outdn SONUMBER: NOW 99 7 15 PM > SNPA: >416 BLOCK_OF_DNS: >yes FROM_DN: >4164451000 TO_DN: >999 POOL_OUT: >y CODEHOLDER: Y > COMMAND AS ENTERED: OUTDN NOW 99 7 15 PM 416 YES 4164451000 999 Y Y ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The block of DNs is removed from table NPRESERV.
Pooling out a block of DNs. All DNs in the block are on BLDN intercept. The switch is the blockholder for the block (NPANXX is in TOFCNAME with the NONNATIVE option).	1. Use the OUTDN command: >outdn SONUMBER: NOW 99 7 15 PM > SNPA: >613 BLOCK_OF_DNS: >yes FROM_DN: >6136630000 TO_DN: >999 POOL_OUT: >y CODEHOLDER: N > COMMAND AS ENTERED: OUTDN NOW 99 7 15 PM 613 YES 6136630000 1999 Y N ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The block of DNs is removed from table NPRESERV.

Desired functionality	Steps required	OUTDN provisioning
Pooling out a block of DNs. There are DN(s) in the block which are still assigned to service.	1. Use the OUTDN command: >outdn SONUMBER: NOW 99 7 15 PM > SNPA: >613 BLOCK_OF_DNS: >yes FROM_DN: >6136630000 TO_DN: >1999 POOL_OUT: >y CODEHOLDER: N > COMMAND AS ENTERED: OUTDN NOW 99 7 15 PM 613 YES 6136630000 1999 Y N ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y *** WARNING: The following contaminant station codes were found *** 1023 1025 MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED SHOULD ORDER BE DONE ANYWAY? (Y OR N) >	The block of DNs is removed from table NPRESERV. The contaminant DNs found are considered to have ported into this switch. A warning message is displayed indicating that contaminant station codes were found in the block. (This occurs regardless of whether the switch is the codeholder or blockholder of the DNs). These contaminant DNs are untouched by the OUTDN command and are considered to have ported into this switch.

Desired functionality	Steps required	OUTDN provisioning
Pooling out a block of DNs. This is the first time a block of this NPANXX has been pooled out of the switch (The NPANXX is presently in TOFCNAME with no option against it). The switch is to remain the codeholder of this NPANXX.	1. Use the OUTDN command: >outdn SONUMBER: NOW 99 7 15 PM > SNPA: >416 BLOCK_OF_DNS: >yes FROM_DN: >4164451000 TO_DN: >999 POOL_OUT: >y CODEHOLDER: >y COMMAND AS ENTERED: OUTDN NOW 99 7 15 PM 416 YES 4164451000 999 Y Y ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The TOFCNAME tuple for the NPANXX of the entered DNs is assigned the CODEHLDR option. The members of the NPANXX not specified in the block to be pooled out is added to NPRESERV.
Pooling out a block of DNs. This is the first time a block of this NPANXX has been pooled out of the switch (The NPANXX is presently in TOFCNAME with no option against it). This switch is to remain the codeholder of this NPANXX. There are DN(s) in the block which are assigned to PODN intercept.	1. Remove the PODN intercept from the DNs. (This can be done using the NEWDN command to “port” the DNs back in. This will put the DNs back on BLDN intercept.) 2. Use the OUTDN command: >outdn SONUMBER: NOW 99 7 15 PM > SNPA: >416 BLOCK_OF_DNS: >yes FROM_DN: >4164451000 TO_DN: >999 POOL_OUT: >y CODEHOLDER: >y COMMAND AS ENTERED: OUTDN NOW 99 7 15 PM 416 YES 4164451000 999 Y Y ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The TOFCNAME tuple for the NPANXX of the entered DNs is assigned the CODEHLDR option. The members of the NPANXX not specified in the block to be pooled out is added to NPRESERV.

Desired functionality	Steps required	OUTDN provisioning
Porting out a single VDN.	1. Use the OUTDN command: >outdn SONUMBER: NOW 99 7 15 PM > SNPA: >416 BLOCK_OF_DNS: >no DN: >4164631000 POOL_OUT: >n INTERCEPT_NAME: PODN > COMMAND AS ENTERED: OUTDN NOW 99 7 15 PM 416 NO 4164631000 N PODN ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The VDN is removed from service and placed on PODN intercept in DNINV.
Porting out a single DN assigned to a physical line.	1. Use the OUT command to remove the DN from service and assign BLDN intercept to it. 2. Use the OUTDN command: >outdn SONUMBER: NOW 99 7 15 PM > SNPA: >416 BLOCK_OF_DNS: >no DN: >4164631001 POOL_OUT: >n INTERCEPT_NAME: PODN > COMMAND AS ENTERED: OUTDN NOW 99 7 15 PM 416 NO 4164631001 N PODN ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The DN is placed on PODN intercept.

Desired functionality	Steps required	OUTDN provisioning
Porting out a block of VDNs supported by the OUTDN command.	1. Use the OUTDN command: >outdn SONUMBER: NOW 99 7 15 PM > SNPA: >416 BLOCK_OF_DNS: >yes FROM_DN: >4164632002 TO_DN: >2005 POOL_OUT: >n INTERCEPT_NAME: PODN > COMMAND AS ENTERED: OUTDN NOW 99 7 15 PM 416 YES 4164632002 2005 N PODN ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The VDNs are removed from service and placed on PODN intercept.
Porting out a block of DNs assigned to physical lines.	1. Remove all the DNs in the block from service, placing them on BLDN intercept. 2. Use the OUTDN command: >outdn SONUMBER: NOW 99 7 15 PM > SNPA: >416 BLOCK_OF_DNS: >yes FROM_DN: >4164632002 TO_DN: >2005 POOL_OUT: >n INTERCEPT_NAME: PODN > COMMAND AS ENTERED: OUTDN NOW 99 7 15 PM 416 YES 4164632002 2005 N PODN ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	All the DNs in the block are placed on PODN intercept.

Desired functionality	Steps required	OUTDN provisioning
Porting out a block of VDNs not supported by the OUTDN command.	1. Remove all the VDNs in the block from service, placing them on BLDN intercept. 2. Use the OUTDN command: >outdn SONUMBER: NOW 99 7 15 PM > SNPA: >416 BLOCK_OF_DNS: >yes FROM_DN: >4164632002 TO_DN: >2005 POOL_OUT: >n INTERCEPT_NAME: PODN > COMMAND AS ENTERED: OUTDN NOW 99 7 15 PM 416 YES 4164632002 2005 N PODN ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT >y	The DNs are placed on PODN intercept.

2.2.3 The NPRESERVE CI command

In cases where the Servord NEWDN and OUTDN interfaces are not available, table NPRESERV may be datafilled using the NPRESERVE CI command introduced by this feature.

The input parameters for the NPRESERVE command are shown in the following table.

Table 3 NPRESERVE input parameters

Input Parameter	Description	Mandatory
in/out	Indicates whether DN(s) are being pooled in or out. (i.e. whether ranges are being added to/ deleted from table NPRESERV). Allowed values are: IN, OUT	Yes
From_DN	Indicates the start of the range to be pooled in/ out. It must be a 10 digit DN in the form of NPA-NXX-XXXX.	Yes
To_DN	Indicates the end of the range to be pooled in/ out. It must be a 10 digit DN in the form of NPA-NXX-XXXX.	Yes

The NPRESERVE CI command only datafills table NPRESERV with the range specified by the From_DN and To_DN input parameters. It does not, like the Servord interfaces described in Sections 2.2.1 and 2.2.2, provide provisioning of TOFCNAME and DNINV.

The command format for NPRESERVE is shown below.

Figure 5 NPRESERVE command format.

```
>help npreserve
NPRESERVE - A tool that updates table NPRESERV.
Parms: <IN_OR_OUT> {IN,
                    OUT}
      <FROM_DN> STRING
      <TO_DN> STRING
```

The input for the From_DN and To_DN parameters must have an NPANXX which already exists in table TOFCNAME.

Access to the NPRESERVE CI command is controlled via the NPRESERV_CI field in table LNPOPTS. The default value for this tuple is ‘OFF’. In order to use the NPRESERVE CI command, this value must be turned to ‘ON’ as shown below.

Figure 6 NPRESERV_CI tuple in LNPOPTS

```
Table LNPOPTS:

KEY OPTIONS
-----------
NPRESERV_CI NPRESERV_CI ON
```

When the NPRESERV_CI is changed from ‘OFF’ to ‘ON’, the following warning is displayed.

Figure 7 Warning message when changing NPRESERV_CI from OFF to ON

```
------------
** WARNING:
  Setting NPRESERV_CI to ON allows the NPRESERVE CI
  command to be used to datafill NPRESERV.
  Note however that the servord commands NEWDN and OUTDN.
  are the recommended means with which to provision
  number pooling.
```

2.2.3.1 Provisioning Number Pooling using the NPRESERVE CI command

The following tables illustrate how the NPRESERVE CI command is used to pool DN blocks when the Servord interface is not available. Aside from table NPRESERV, all the table datafill mentioned below may be done with table editor.

Table 4 Pooling in blocks of DNs using the NPRESERVE CI command

Desired functionality	Steps required
Pooling in a single DN	Not Applicable. Individual number pooling is not supported in this release. An error message is displayed if the FROM_DN and TO_DN parameters contain the same DN.

Desired functionality	Steps required
Pool in a block of DNs. The switch is to be the codeholder. The block contains no contaminants.	1. If the NPANXX of the DNs is not already in TOFCNAME, add it with the CODEHLDR option. 2. Use the NPRESERVE CI command to add the pooled in block to table NPRESERV. > NPRESERVE IN 4164451000 4164451999
Pool in a block of DNs. The switch is to be the blockholder. The block contains no contaminants.	1. If the NPANXX of the DNs is not already in TOFCNAME, add it with the NONNATIVE option. 2. Use the NPRESERVE CI command to add the pooled in block to table NPRESERV. > NPRESERVE IN 4164451000 4164451999
Pool in a block of DNs. The switch is to be the codeholder. There are contaminants in the block.	1. If the NPANXX of the DNs is not already in TOFCNAME, add it with the CODEHLDR option. 2. For each of the contaminant DNs, in table DNROUTE put the DN on PODN intercept. Ensure that the number of contaminants in a thousands block does not exceed the percentage indicated by NP_MAX_CONTAM in table LNPOPTS. 3. Use the NPRESERVE CI command to add the pooled in block to table NPRESERV. > NPRESERVE IN 4164451000 4164451999
Pool in a block of DNs. The switch is to be the blockholder. There are contaminants in the block.	1. If the NPANXX of the DNs is not already in TOFCNAME, add it with the NONNATIVE option. 2. For each of the contaminant DNs, in table DNROUTE put the DN on PODN intercept. Ensure that the number of contaminants in a thousands block does not exceed the percentage indicated by NP_MAX_CONTAM in table LNPOPTS. 3. Use the NPRESERVE CI command to add the pooled in block to table NPRESERV. > NPRESERVE IN 4164451000 4164451999

Table 5 Pooling out blocks of DNs using the NPRESERVE CI command

Desired functionality	Steps required
Pooling out a single DN.	Not Applicable. Individual number pooling is not supported in this release. An error message is displayed if the FROM_DN and TO_DN parameters contain the same DN.
Pooling out a block of DNs. The switch is the codeholder for the block (NPANXX is in TOFCNAME with the CODEHLDR option). The block contains no contaminants.	1. Ensure that all DNs in the block are on either BLDN or UNDN intercept in table DNINV. 2. Use the NPRESERVE CI command to remove the pooled out block from table NPRESERV. > NPRESERVE OUT 4164451000 4164451999
Pooling out a block of DNs. The switch is the blockholder for the block (NPANXX is in TOFCNAME with the NONNATIVE option). The block contains no contaminants.	1. Ensure that all DNs in the block are on either BLDN or UNDN intercept in table DNINV. 2. Use the NPRESERVE CI command to remove the pooled out block from table NPRESERV. > NPRESERVE OUT 4164451000 4164451999
Pooling out a block of DNs. There are contaminants in the block (ie. there are DN(s) in the block which are still assigned to service).	1. Ensure that all DNs in the block other than the contaminants are on either BLDN or UNDN intercept in table DNINV. (The contaminants are now considered to have ported into this switch). Ensure that the number of contaminants in a thousands block does not exceed the percentage indicated by NP_MAX_CONTAM in table LNPOPTS. 2. Use the NPRESERVE CI command to remove the pooled out block from table NPRESERV. > NPRESERVE OUT 4164451000 4164451999
Pooling out a block of DNs. This is the first time a block of this NPANXX has been pooled out of the switch (The NPANXX is presently in TOFCNAME with no option against it). The switch is to remain the codeholder of this NPANXX. The block contains contaminants (DNs still assigned to service).	1. Ensure that all DNs in the block other than the contaminants are on either BLDN or UNDN intercept in table DNINV. (The contaminants are now considered to have ported into this switch). Ensure that the number of contaminants in a thousands block does not exceed the percentage indicated by NP_MAX_CONTAM in table LNPOPTS. 2. Add the CODEHLDR option to the TOFCNAME tuple for the NPANXX of the DNs to be pooled out. 3. Use the NPRESERVE CI command to add the entire NPANXX to table NPRESERV. (The block which is to be pooled out will be removed later). > NPRESERVE IN 4164451000 4164459999 4. Use the NPRESERVE CI command to remove the pooled out block from table NPRESERV. > NPRESERVE OUT 4164451000 4164451999

Desired functionality	Steps required
Pooling out a block of DNs. This is the first time a block of this NPANXX has been pooled out of the switch (The NPANXX is presently in TOFCNAME with no option against it). This switch is to remain the codeholder of this NPANXX. There are DN(s) in the block which are assigned to PODN intercept. There block contains contaminants (DNs still assigned to service).	1. Ensure that all DNs in the block other than the contaminants are on either BLDN or UNDN intercept in table DNINV. (The contaminants are now considered to have ported into this switch). The DNs on PODN intercept must also be changed back to BLDN or UNDN intercept. Ensure that the number of contaminants in a thousands block does not exceed the percentage indicated by NP_MAX_CONTAM in table LNPOPTS. 2. Add the CODEHLDR option to the TOFCNAME tuple for the NPANXX of the DNs to be pooled out. 3. Use the NPRESERVE CI command to add the entire NPANXX to table NPRESERV. (The block which is to be pooled out will be removed later). > NPRESERVE IN 4164451000 4164459999 4. Use the NPRESERVE CI command to remove the pooled out block from table NPRESERV. > NPRESERVE OUT 4164451000 4164451999

2.2.4 Modification of the QDN/QLEN CI commands for number pooling

Prior to number pooling, the QDN/QLEN commands considered a DN to be "PORTED-IN" if the following conditions were met:

- the DN was assigned to service
- the DN's NPANXX was non-native

With number pooling, the QDN/QLEN commands consider a DN to be "PORTED-IN" if all the following conditions are met:

- the DN is assigned to service
- the DN's NPANXX is non-native or code-holder on the switch
- the DN is not in the Reserved number database (NPRESERV)

Prior to number pooling, the QDN command considered a DN to be "PORTED-OUT" if the following conditions were satisfied:

- the DN was assigned PODN intercept
- the DN's NPANXX was native

This feature modifies the QDN command such that it considers a DN to be "PORTED-OUT" only if

- the DN is assigned PODN intercept

The current functionality when QLEN is performed on a ported out DN remains unchanged.

The functionality change to the QDN command also applies to the QDNWRK command.

2.2.5 Modification of the QPDN CI command

The QPDN command can list all native and/or non-native ported DNs, as well as the totals of the ported DNs.

The same modified criteria outlined in "2.2.4 Modification of the QDN/QLEN CI commands for number pooling" on page 112 apply to QPDN when determining whether the DN is ported in or ported out.

Within a number pooling environment, the concept of native or non-native does not have much meaning when it applies to a NPANXX. For example, a DN with a non-native NPANXX can be owned by the switch and the QPDN command considers this DN as native. Based on this consideration, this activity changes the functionality of the QPDN command such that it does not output information regarding the NPANXX.

Note: This functionality change only applies to QPDN when it is performed on a switch equipped with number pooling capability and SOC NPE00005 is activated.

This activity also includes a change in the format of the QPDN output. Instead of printing individual DNs, it prints a range of DNs wherever possible. Below is an example of QPDN output. The bold type illustrates the change made by this activity.

```
> QPDN I D
------------------------------------------------------------------------
PORTED IN NUMBERS:
613 621 1001
613 621 1003  -  613 621 1009
...
Total number of ported in numbers is: 329
```

2.2.6 Conversion of QRNF treatment to RSVD marking

This feature will convert the obsolete treatment QRNF into the RSVD treatment. Treatment QRNF (QoR Number not Found) was intended to indicate the DN which is the subject of a QoR routing attempt that was no longer served at the Donor switch.

Since the QoR treatment has no meaning outside of QoR routing, the treatment registry is converted to a new RSVD marking for Number Portability. RSVD provides a marking for aging Ported DNs at the recipient switch prior to snapback to the donor switch. By marking DNs in this manner, Cause Code 26 is not returned to the originating switch when LNP calls terminate to DNs marked with RSVD.

The RSVD treatment is defined as a valid intercept in Servord, to allow for its use with the OUTDN and CICP commands.

Finally, during a data transfer to the NA013 or subsequent releases where the dump side of the transfer is NA012 or earlier, any instance of the QRNF treatment is converted to the RSVD treatment.

2.2.7 Implementation of the new CI command QRDN

This feature introduces a new CI command which is controlled via SOC NPE00005. A Craftperson can use the new QRDN command to:

- list pooled in assigned and/or unassigned DNs
- list pooled out assigned and/or unassigned DNs
- list pooled in assigned and/or unassigned DNs of a particular NPANXX
- list pooled out assigned and/or unassigned DNs of a particular NPANXX
- list aging DNs
- generate totals of each of the above.

The following is the detailed explanation of the key concepts:

- pooled in DNs are ones whose NPANXX is non-native and are reserved for use by this switch. They are counted as assigned if they are assigned to service, otherwise, they are counted as unassigned.
- Pooled out DNs are ones whose NPANXX is code-holder and are not reserved for use by this switch. They are counted as assigned if they are assigned to service on this switch, otherwise, they are counted as unassigned.
- Aging DNs are ones who are on RSVD intercept.

Note: Aging DNs and PODN assigned DNs are not counted as assigned as they are not assigned to service; They are not counted as unassigned either to avoid mistakenly assigning them to service.

It should also be noted that when using QRDN to list aging DNs on the switch, the list of DNs output resembles the contents of table DNINV.

Please refer to “2.11 Command interface (CI)” for more information.

2.2.8 Modification of QDN and QLEN command for an unassigned DN

The QDN and QLEN are changed to be able to display the DN’s ownership when they are performed on an unassigned DN. This allows the user to know whether or not the switch owns the DN to avoid mistakenly assigning it to service.

The followings are examples of the QDN and QLEN commands when they are performed on an unassigned DN prior to this activity.

```
> qdn 6136631001
------------------------------------------------------------------------------
DN:          6631001
TYPE: UNASSIGNED
------------------------------------------------------------------------------


> qlen 6136631001
THE DN IS UNASSIGNED
```

This QDN and QLEN enhancement is controlled via SOC code NPE00005 and does not affect the unassigned DN with native NPANXX.

Within a number pooling environment, once it is determined that the switch does not own the DN, it displays “(NOT-OWNED)”; if the switch owns the DN, it outputs “(NP-RESERVED)”. The following examples show the different outputs when a block of thousand DNs (6136631000 - 6136631999) is pooled out from a switch.

```
> qlen 6136631001
THE DN IS UNASSIGNED        (NOT-OWNED)


> qdn 6136632001
THE DN IS UNASSIGNED        (NP-RESERVED)
```

2.3 Hardware requirements

None.

2.4 Limitations and restrictions

Presently, only thousands block number pooling is supported.

2.5 Interactions

None.

2.6 Logs (LG)

Not applicable.

2.7 Data schema (DS)

2.7.1 New/modified tables

Table 6 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

NOTE:

Although this activity does not modify nor add any table, it provides the interface to the NPRESERV table via the modified NEWDN and OUTDN commands. Table NPRESERV is used to mark numbers as NP-Reserved. Presence of the DN in the table signifies its status as an NP-R number, provided the number is BLDN in table DNINV. Please refer to the FN and DS section of NA012 activity A59007321 for more information on table NPRESERV.

Access to the table is restricted through the Servord utility. Datafill changes can only be accomplished through the modified NEWDN and OUTDN commands.

2.8 Office parameters (OP)

Not Applicable.

2.9 Service orders (SO)

As described in section 2.2.1 and section 2.2.2, the NEWDN and OUTDN Servord commands are modified to introduce new prompts and functionality.

2.10 Alarms (AL)

Not Applicable.

2.11 Command interface (CI)

2.11.1 New/modified commands

Table 7 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN
QRDN	NEW		PROGDIR	NON-MENU
QPDN	CHANGED		PROGDIR	NON-MENU
QDN	CHANGED		PROGDIR	NON-MENU
QLEN	CHANGED		PROGDIR	NON-MENU

2.12 Operational measurements (OM)

Not applicable.

2.13 AMA/Billing information (AM)

Not applicable.

2.14 Software optionality control (SOC)

Table 8 SOC NPE00005

SOC option name:	NPE00005
SOC option title:	1000 BLK Nmbr Pooling
SOC option control type:	state
New SOC option?	Yes
SOC option order code	NPE00005
Option defined in DRU:	CNA
Affected products:	NA100

2.15 Glossary

BLDN	Blank DN
CI	Command Interpreter

DN	Directory Number
DNINV	DN INVentory table
LERG	Local Exchange Routing Guide
LRN	Location Routing Number
NP-R	Number Portability Reserved
NPDB	LNP Database
PODN	Ported Out DN intercept
Pooled in	introduced into a switch for number pooling reasons; The DN(s) is considered owned by the switch.
Pooled out	taken out of a switch for number pooling reasons; The DN(s) is no longer owned by the switch.
Contaminants	In the context of pooling out DNs, it is DNs which are still in service on the switch from which the block is pooling out. They are viewed as having ported into the switch on which they reside. In the context of pooling in DNs, it is DNs which are still in service on a switch other than the one to which the block is pooling in. They are viewed as having ported out of the switch to which the block has been pooled in.
QDN	Query DN CI command
QLEN	Query LEN CI command
QPDN	Query Ported DN CI command
QRNF	Query on Release Number not Found
RSVD	Reserved DN treatment (proposed rename for QRNF treatment)
TOFCNAME	Terminating OFfiCe name table
VDN	Virtual DN

2.16 References

T1S1.6 Working Document for Number Pooling (Project T1S1-27), version T1S1.6/99-002 R2

2: Functional description (FN)

2.1 Feature name

Number Pooling Feature Interactions

2.2 Description

Number Pooling increases the occurrence of ported DNs both in the Public Switched Telephone Network and within Multi-DN groups such as Centrex customer groups. may be required to support ported and/or pooled DNs. Features which did not interact with LNP because Centrex groups were either non-ported or ported in entirety may be required to support ported and/or pooled DNs. This is due to the fact that multi-DN groups may be composed of ported and non-ported DNs, (creating a Number Pooling environment) and the fact that networks will experience a dramatic increase in ported DNs due to number pooling.

Features that have interactions with LNP within a Number Pooling environment are:

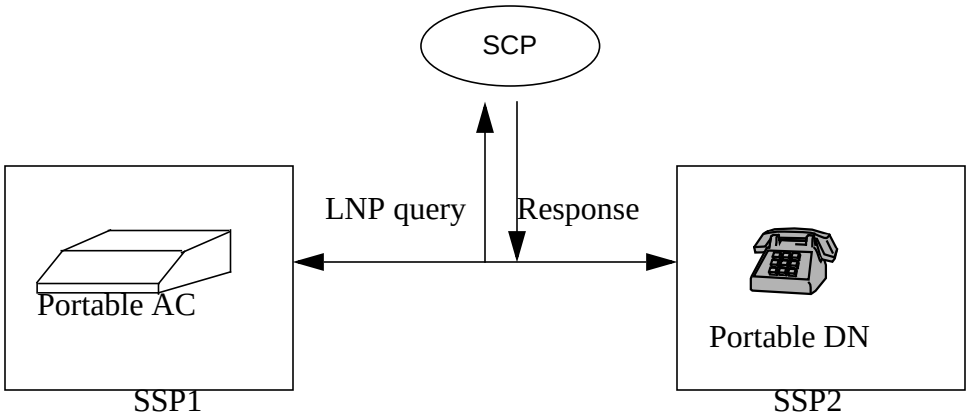
1. Network Attendant Console
2. Network Ring Again
3. NET ESN/PVT selector
4. Single Line Queueing
5. Network Automatic Call Distribution
6. Outpulsing on IBN SS7 trunks

2.2.1 Network Attendant Console

Attendant Console(AC) is an optional feature of Meridian Digital Centrex (MDC). A Console works with the controlling DMS-100 switch to perform a full range of call answering, handling, and tracking features that allow a customer to provide the service of an information and message center. An AC is associated with a customer group, which is an entity on a switch in which individuals can request special IBN services. Network AC (NAC) is largely the same hardware and software as the MDC Console. The largest difference is the NAC features are permitted to operate interswitch.

The following list indicates supported NAC features by this activity. The features, which query LNP, still function as expected.

1. Network Attendant Busy Verification Line(BVL)
2. Network Attendant Control.
3. Network Attendant Recall.
4. Network Camp-on l/ll.
5. Network NCOS and CLID Display on AC.
6. Network CLID and NCOS display l/A 3WC
7. Network Attendant Feature Optionality.



Number Pooling requires the ability for multi-DN groups to be composed of both ported and non-ported numbers. For each of the above Network AC features, it is expected that the feature will behave as expected regardless of the ported status of the originator or terminator, and the regardless of the necessity of an LNP query to terminate the call.

2.2.1.1 Network Attendant Busy Verification Line (BVL)

Busy Verification-line(BVL) enables an attendant to barge into a busy station that is actively involved in conversation. This procedure allows the attendant to speak to the station user. One could call the attendant and have the attendant break into that individual’s conversation using BVL in order to request the parties to hang up. If the line is idle, the attendant may choose to ring it by

depressing the signal source key. If the line is out of order, the attendant will receive reader tone. The Network Attendant Busy Verification Line to extend the scope of the BVL feature to include the ability to BVL a station on a different switch but same customer group in the network. Network BVL Network is expected that the feature will behave as expected regardless of the ported status of the originator or terminator, and the regardless of the necessity of an LNP query to terminate the call. There is one restriction which is if the BVL feature encounter LNP query in the intermidate switch, BVL will not works.

2.2.1.2 Network Attendant Control

Network Attendant Control provides that when an Attendant Console is talking with a party in the same customer group, that party is not permitted to disconnect the call. This applies whether the call was initiated by AC or initiated by the other party calling over plain ordinary telephone services (POTS) integrated Services Digital Network User Part(ISUP) or integrated Business Network (IBN) ISUP trunks. However, it applies only if the party goes on-hook with the call being extended by AC or while in the recall queue for AC, the call will be taken down. If a party goes on-hook while under Network Attendant Control, the Attendant will be notified by a message on the console's display. Subsequently, if the party goes off-hook, the Attendant will be notified again.AC can ring a party under Network Attendant Control by pressing SIGNAL SRC to SIGNAL DST key on the console. AC can also release Source (Destination) by pressing RELEASE SRC (RELEASE DST) key on the console.

2.2.1.3 Network Attendant Recall

The Attendant Recall feature allows any call that is not answered that attendant extends to return to attendant. There are three scenarios for which an attendant requires recall.

1. When a console extends a call to an idle line in the same customer group, and that line does not answer. This is the NO Answer recall.
2. When a console extends a call to a busy line in the same customer group, and either call waiting or attendant camp-on is applicable. The busy line does not answer the attendant extended call. The attendant camp-on or call wait recall is then initiated.
3. When a console extends a call to line that does not answer and the source wants to recall back to the console. This is the source flash recall.

2.2.1.4 Network Camp-on I/II

This feature allows an attendant console to queue an incoming calls to a busy station in the attendant network. Camp-On is only applicable to attendant extended calls when the called party is in the same customer group of the

attendant. Also the calling party must be in a different customer group or terminate on the attendant by way of a trunk not associated with the attendant's customer group. (i.e. an IBN trunk with the same Customer Group.)

2.2.1.5 Network NCOS and CLID display on AC.

This feature provides Calling Number and NCOS Display on Attendant Console for network calls. This information provides over ISUP trunk by inserting the optional network information(NETINFO) ISUP parameter in the initial address message (IAM).The NETINFO parameter is only included in the IAM when the originator is an IBN line and when the originating customer group has an associated entry datafilled in Table CUSTNTWK. When the ISUP call terminates on an AC, the systems extracts the NETINFO parameter and, if the ISUP trunk is in the same customer group as attendant, display the NCOS and CLID of the originator.

2.2.1.6 Network CLID and NCOS display I/A 3WC

This feature provides the capability for the display of calling line and NCOS information at the attendant console (AC) when connected to a 3WC (three way call) conference involving an ISUP trunk(s), and one of the agents is eventually transferred to the attendant. This feature will ensure that all AC display updates involving 3WC/call transfer and ISUP trunks function similarly to the nodal case.

2.2.1.7 Network Attendant Services Features optionality

The Network Attendant Services (NAS) Features Optionality allows the operating company to control customer groups. The feature allows to determine which customer groups in a DMS-100 switch can access the NAS feature. The NAS features optionality contain capability to control the following features

1. -Network Attendant Control with Network No-Answer Time-out Recall and Network Flash Recall.
2. - Network Busy Verification Lines (BVL).
3. - Network Camp-On. It includes Network Camp-On Recall.
4. - Network Calling Line Identification (CLID) and Network Class of Service (NCOS) Display.

Any customer group within the network must subscribe to these NAS features in order to have required subscribed Network AC Services. These NAS Feature Optionality datafill in table CUSTNTWK.

2.2.2 Network Ring Again

Ring Again allows a user encountering a busy station to queue against that station and be recalled when it becomes idle. If the user accepts the recall, the original call will be set up again automatically. Network Ring Again (NRAG) extends the ability to a different switch in the network in the same customer group.

The following 4 tables required datafill for NRAG: C7NETSSN, C7LOCSSN, CUSTNTWK and CUSTSTN. Table C7NETSSN contains nodes accessible within the network and applications at those nodes that can be addressed by singling connection control part(SCCP). Table C7LOCSSN contains information for the local subsystem. Table CUSTNTWK provides the operating company client with the ability to specify a network name with which a customer group is associated. It also provides a predetermined global numeric identifier (NETCGID) within the specified network name that is for the customer group throughout the network. The Table CUSTSTN contains the station options assigned to each customer groups to specify the length of the RAG call time.

As with the Network AC, Network Ring Again is expected to function directly regardless of the ported status of the originator and terminator and the neccessity of performing an LNP triger to terminate the call.

2.2.3 NET ESN/PVT selector

The IBN Translations NET Selector allows customer group members to access various networks. The networks include DOD, ESN, GEN, LOC, MBG, OWT and PVT.

The NET Selector allows access to various features, some of which are considered to be part of the “public” environment. Calls which encounter the NET selector, and are then routed to the public environment, are then able to encounter the LNP trigger and terminate to ported numbers. These features include; Direct Outward Dial (DOD), General Network Selector (GEN) and OUTWATS (OWT).

The NET Selector also allows calls in the “private” environment to use public translations while still being considered private. Calls which encounter these features do not encounter the LNP trigger while using public translations. These features include; Electronic Switched Network (ESN), Private Network (PVT), Multiswitch business group (MBG) and MBG with Location (LOC).

This work item makes changes to the NET ESN and NET PVT selectors, to allow the call to encounter the LNP trigger while using public translations.The rationale for this item is to maintain consistency between the ESN, PVT, and MBG(*Ref. NA013 activity A59012468)* selectors when routing between Centrex locations where LNP services are required due to ported/pooled DNs in the customer groups.

This functional change is enabled by the creation of an LNP option in table IBNXLA. Restricted to just the NET ESN and PVT selectors, the option is an indication by the customer that the ESN or PVT call in question should be considered eligible for triggering. Calls of this nature should match National Significant format when the prefix is removed.

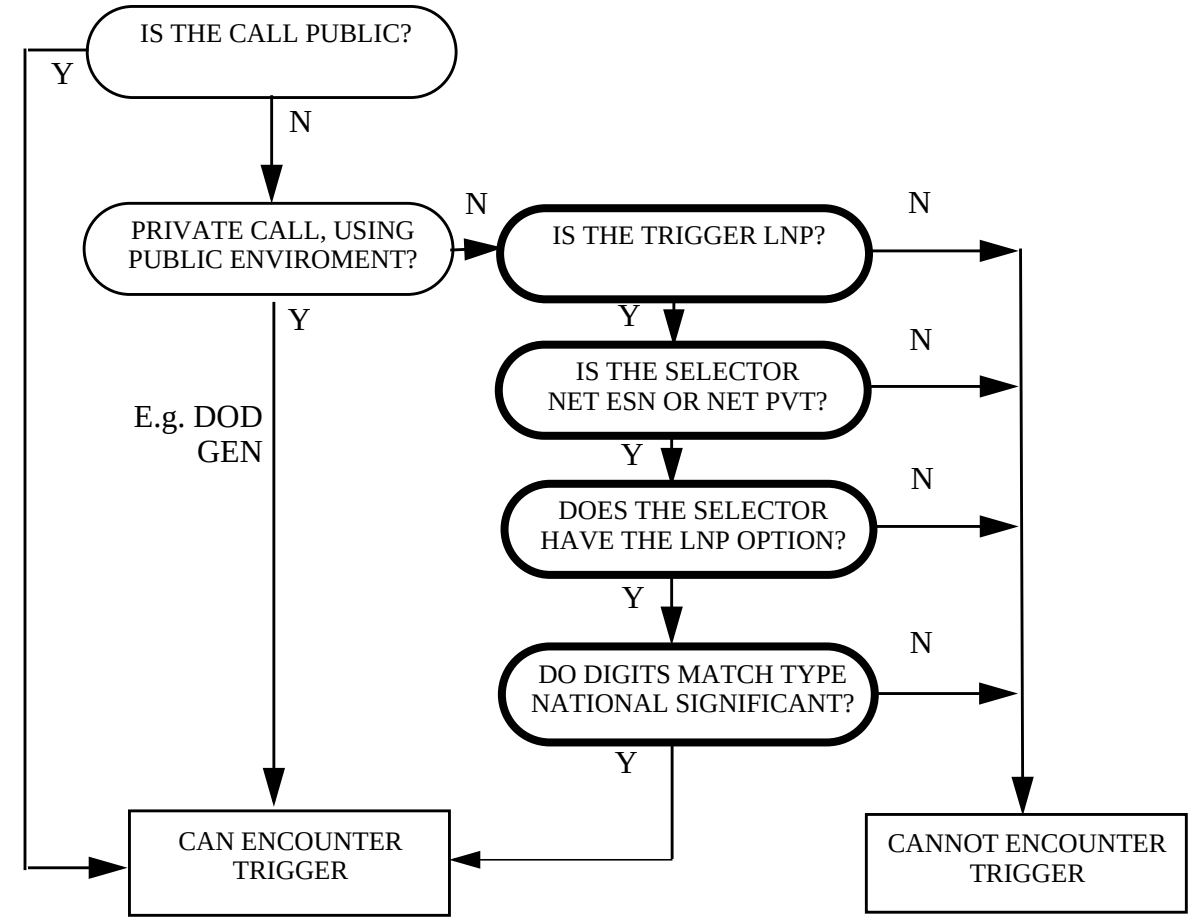
If the dialed number is an ESN or PVT code (i.e. not in National Significant format), it is still possible to have it considered eligible for triggering. This is done through a combined use of the LNP and DMI options on the IBNXLA tuple. The DMI option is normally not allowed on NET ESN/PVT tuples, but now is allowed, if in the presence of the LNP option. The DMI option points towards an index in table DIGMAN, which must contain digit manipulation commands to render the number into National Significant format.

Please refer to the DS section for examples of these changes.

To further refine the scope of this functional change, it must be done for only the LNP trigger, not for all AIN triggers. Number Pooling introduces ported numbers in multi-DN groups; nothing outside the workings of the LNP framework. As AIN currently disallows these private calls from encountering AIN triggers, this should not change with the introduction of this activity.

Lastly, allowing ESN/PVT routed calls to encounter the LNP trigger does not mean that every call will encounter it. Only those calls whose digit count would correspond to that of a National Significant call will match the criteria for the trigger; i.e. 7 or 10 digits. This evaluation is made excluding the dialed prefix (in the case of the LNP option) or on the full dialed DN (in the case of the LNP and DMI options, since it has been thus manipulated).

Trigger Criteria Checking Logic Flow



=new functionality

Pooled numbers can be used to expand customer groups, introducing ported numbers to the private dialing environment. With this new functionality in place, calls to ported numbers in the customer group will be able to terminate properly, as LNP processing will properly direct the call. These provisioning guidelines are to be included in the appropriate LNP customer documents

2.2.4 Single Line Queueing (SLQ)

The Single Line Queueing (SLQ) feature provides end users of the Meridian business set (MBS) with the ability to queue calls against a single directory number (DN). When the SLQ feature is activated on an MBS set, calls coming into a busy MBS set are queued until the queue threshold is reached. If the queue has reached its limit, the caller is routed to an overflow route or DN if a valid route or DN has been datafilled

SLQ allows the queuing of incoming LNP calls, and the DN against which the calls are queued may be portable or ported. The overflow route (provisioned as either a 7 or 10 digit number) can overflow to a DN which requires LNP interswitch termination.

For overflowing to intraswitch DNs, successful completion to ported-in numbers occurs if the overflow DN is provisioned as a 10 digit number. If the overflow DN is provisioned as a seven digit number, the call will encounter VACT treatment unless a tuple in table FNPA7DIG exists to map the non-native NXX to a proper terminating NPA for this switch.

This component of the activity will ensure that the SLQ feature will function properly in the presence of LNP services. This entails updating the LNP customer documentation.

2.2.5 Network Automatic Call Distribution

Network ACD (NACD) is a set of feature that increases the power of ACD (Automatic Call Distribution). With NACD, a user's ACD groups can reside on more than one DMS-100 switch. Calls are presented to the queue that will answer them most quickly within user-defined guidelines of speed versus cost. A NACD can be in a single-node or a multi-node configuration.

NACD can be applied to a set of call queue overflows: Immediate overflow, time delayed overflow, and priority promotion.

Network ACD (NACD) will allow the calls to perform the networking required among ported ACD groups (or ported ACD DN) when a call overflow occurs. The networking could happen within a single node (local NACD) or among multiple nodes (remote NACD). Local NACD overflow calls terminate properly to ported-in ACD groups.

NACD overflow to remote ACD groups has limitations on interworking with the LNP trigger. Similar to DNH hunting, only direct routing is applied, and no feature interactions are directly permitted. Calls can overflow to ported remote groups, given correct provisioning on both switches

Five tables are associated with networking ACD across different switches:

Illustration of NACD Table Flow

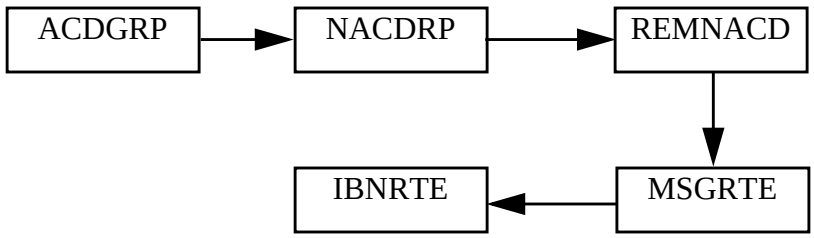


Table ACDGRP identifies ACD groups on the switch.

Table NACDGRP links up ACD groups, local and remote, to a networked ACD group.

Table REMNACD gives the DN and route for an overflow call to use to connect to a remote ACD group.

Table MSGRTE is a routing table, typically used for direct routing between switches in lieu of STP communications. The signalling connection control parts (SCCPs) utilize MSGRTE for TCAP messaging between switches.

NACD uses table MSGRTE to communicate between remote ACD groups in an NACDGRP. TCAP messages are exchanged between switches on the status of each ACD group to determine where new incoming calls to the NACDGRP should be directed; those TCAP messages are routed via table MSGRTE.

Table MSGRTE has two methods of routing that are of relevance to LNP: via System Signalling 7 (SS7) and Global Title Translations (GTT). For SS7, an NACD overflow call is routed using the SS7 route set specified. This route set (and its link set counterparts) are direct connections to the switch the remote ACD group resides on. In this manner, while it is not possible for the overflow call to encounter LNP on the way, termination to a ported ACD DN is not an issue as the terminating switch will perform standard ported-in DN termination on the remote ACD group, if necessary. Use of an LNP query and response is not needed as the SS7 route directs the call to the recipient switch.

For with the SS7 router, the destination node is determined intra-switch, and the call is routed accordingly. Call termination is possible to ported ACD groups but the GTT entries in table MSGRTE must be kept up to date to the increasing reality of ported groups, in which case ported-DN termination is the norm. As with the SLQ feature, the proper provisioning of NACD to interwork in a NP environment is to be captured in the appropriate LNP customer documents.

2.2.6 Outpulsing on IBN SS7 trunks

Logic has been added such that when LNP response translations return a foreign LRN and the call is to be routed over an IBN SS7 trunk, the trunk behaves as if it has the Signal Ported Number (SPN) option on it.

LNP ISUP signalling parameters are public parameters, and as private ISUP trunks are not to send public parameters, this saves the customer from having to datafill the SPN option against all their private ISUP trunks.

This enhancement is also necessary to facilitate the interworkings of the NRAG feature with LNP.

2.3 Hardware requirements

None

2.4 Limitations and restrictions

if the BVL feature encounter LNP query in the intermidate switch then BVL will not works.

2.5 Interactions

Activity A59012468: LNP/MBG Interworking.

2.6 Logs (LG)

Not Applicable

2.7 Data schema (DS)

Please see the DS section for full details of the LNP option in table IBNXLA.

2.8 Office parameters (OP)

Not Applicable

2.9 Service orders (SO)

Not Applicable

2.10 Alarms (AL)

Not Applicable

2.11 Command interface (CI)

Not Applicable

2.12 Operational measurements (OM)

Not Applicable

2.13 AMA/Billing information (AM)

Not Applicable

2.14 Software optionality control (SOC)

Table 1 SOC

SOC option name:	NPE0005
SOC option title:	1000 Blk Nbr Pooling
SOC option control type:	state
New SOC option?	Yes

SOC option order code	<order code>
Option defined in DRU:	CNA
Affected products:	NA100

2.15 Glossary

Term	Description
AC	Attendant Console
ACD	Automatic Call Distribution
BVL	Busy Verification Lines
CLID	Calling Line Identification Display
DOD	Direct Outward Dialing
ESN	Electronic Switching Network
IAM	Initial Address Message
IBN	Integrated Business Network
LNP	Local Number Portability
MBG	Multilocation Business Group
MBS	Meridian Business Set
NACD	Network Automatic Call Distribution
NCOS	Network Class of Service
PVT	Private
SLQ	Single Line Queuing

2.16 References

ref: A59012574: NPE00005 SOC / LNP Enhancements

ref: A59012468: LNP/MBG Interworking

2: Functional description (FN)

2.1 Feature name

19-Next Generation Line Access RDTINV Provisioning

2.2 Description

This feature allows a DMS CallP Spectrum Peripheral Module (SPM) to be provisioned as a host for a Remote Digital Terminal (RDT). An SPM will be capable of hosting 32 GR-303 RDTs or 84 D4 Integrated Channel Banks (ICBs). This is an increase from the previous number of 8 RDTs and 48 ICBs that are supported by an ESMA. Additionally, an SPM will provide up to 84 DS1 links to the subtending RDTs. An ESMA can provide only 48 DS1 links.

The SPM will be capable of hosting RDTs that conform to the GR-303 generic Timeslot Management Channel (TMC) interface, the Common Signaling Channel (CSC) interface, and Multi-Link ICBs.

As is the case with the SMA and SMA2 in supporting variable lines sizes from 96 lines to 2048 lines, the SPM will have the same capability.

This feature is a part of a feature set needed to add Lines to the existing SPM product. This feature set consists of the following:

- A59012259 18-NGLA Static Data
- A59012259 19-NGLA RDTINV Provisioning
- A59012291 26-NGLA OAMP Miscellaneous
- A59012324 1-NGLA CallP Messaging

2.3 Hardware requirements

Not applicable.

2.4 Limitations and restrictions

The SPM, as an RDT host, can support a maximum of 32 RDTs or 84 ICBs or a combination that does not exceed the available 84 DS1 carrier links.

2.5 Interactions

2.6 Logs (LG)

2.6.1 New/modified logs

None.

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

2.7.1 New/modified tables

2.7.1.1 Table RDTINV

The IDTNAME field currently accepts SMA and SMA2 as valid host types for the IDT. It will now include SPM as a valid host type.

The LINKTAB field currently has a range of 0 to 47 for the XPMLINK subfield. This range will be changed to 0 to 181 since an SPM will use the circuit numbers defined in table MNHSCARR as its DS1 links and the maximum circuit number is currently 181. The RDTLINK subfield will remain unchanged.

Since SPM is allowable as a valid IDT host, existing error messages will be modified, as indicated below, and displayed during provisioning in Table RDTINV:

- Displayed when the IDTNAME field does not contain either SMA, SMA2, nor SPM.

  ```
  Error: IDT Host must be of type SMA, SMA2 or SPM.
  ```

- Displayed when VARTYPE is ICB and the IDTNAME field does not contain either SMA2 nor SPM.

  ```
  Error: IDT Host must be of type SMA2 or SPM for ICB IDTs.
  ```

- Displayed when the SPM number in IDTNAME and the XPMLINK number in LINKTAB were not found in Table MNHSCARR.

  ```
  Error: SPM nn XPMLINK yyy (CCTNO in table MNHSCARR) was
  NOT found.
  ```

- Displayed when IDTNAME contains SPM and the XPMLINK number in LINKTAB number in LINKTAB is not of the correct type, DS1P.

  ```
  Error: Invalid link. SPM nn XPMLINK yyy (CCTNO in table
  MNHSCARR) must have CARRTYPE of DS1P.
  ```

  Note: In the above examples, nn is the SPM number and yyy is the SPM's link number.

- This error message will be displayed when the SPM number (0 to 63) for a given SPM Node number (0 to 4095) cannot be found in the SPM OAM database.

  ```
  Error: Inconsistent MNNODE table data found when translating
  SPM nn to it's internal SPM OAM database index.
  Consult SWERR Logs.
  ```

  Note: nn is the SPM number.

- This error message will be displayed when the maximum number of lines allowed on an SPM will exceed 21504.

  ```
  Error: Cannot have more than 21504 lines for this SPM.
  ```

- This error message will be displayed when the class type of the SPM cannot be determined.

  ```
  Error: Could not determine CLASS type for SPM nn.
  ```

  Note: nn is the SPM number

- This error message will be displayed when the SPM specified in the IDTNAME field does not have a class type of DMSCP, as indicated in table MNNODE.

  Error: Invalid SPM type. SPM nn must have a CLASS type of DMSCP in table MNNODE to host IDTs.

  Note: nn is the SPM number

- This error message will be displayed during provisioning if the IDT cannot successfully be registered with the CPP subsystem. The CPP subsystem will re-route Callp messages to IDTs subtending SPM nodes.

  ```
  Error: Failed to register IDT with CPP.
  ```

- This error message will be displayed during deprovisioning if the IDT cannot successfully be deregistered with the CPP subsystem.

  ```
  Error: Failed to deregister IDT from CPP.
  ```

2.7.1.2 Table MNHSCARR

Table MNHSCARR is used for provisioning carriers for the SPM.

Provisioning of carriers will remain unchanged. However, the association of a carrier with an IDT (in table RDTINV) will change the internal class of the carrier to ‘HSREMOTE’.

A carrier associated with an IDT cannot be deleted from table MNHSCARR.

The following new error message will be introduced:

```
Error: Pside equipped on modified port - change failed
```

This error message will be displayed when the carrier is a remote link to an IDT.

(Note: this is the error that is displayed when deleting a link in LTCPSINV that is attached to an IDT. An alternate should be chosen that identifies the pside device)

2.7.1.3 Table TRKMEM

Table TRKMEM is used for Trunk Members.

Carriers that are associated with an IDT cannot be added to table TRKMEM. The following error message is displayed when an attempt is made to add a trunk member that is associated with a remote device:

```
NO CHANNEL AVAILABLE
```

This error message will be displayed when the physical link is a remote link assigned to an IDT (datafilled in RDTINV).

(Note: again- this is the existing message. If possible, this error message will be modified to list that it is a remote- and the IDT associated with it)

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
RDTINV	Changed	Unchanged
MNHSCARR	Changed	Unchanged
TRKMEM	Changed	Unchanged

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

None.

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

Not applicable.

2.10 Alarms (AL)

2.10.1 New/modified directories

None.

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

2.11.1 New/modified commands

None.

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

None.

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

None.

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

None.

Table 8 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.15 Glossary

Term	Description
New term	definition

2.16 References

NGLAOAMP - Next Generation Line Access OAM&P HLD.
Document located in PLS library FMDOC.

2: Functional description (FN)

2.1 Feature name

18-Next Generation Line Access Static Data - CM

2.2 Description

The purpose of this feature is to provide the ability to download Line call processing and RDT Static Data to the Spectrum Peripheral Module (SPM) using the Data Distribution Manager (DDM). This feature is part of the OAM &P feature set needed to add Lines to the existing SPM product. The provisioning feature set is listed below:

- A59012259 - 18-NGLA Static Data - CM
- A59012232 - 19-NGLA RDTINV Provisioning - CM
- A59012291 - 26-NGLA OAMP Miscellaneous - CM

2.2.1 Functional Overview

The activities implemented by this feature to support Static Data download for Lines and RDT are outlined as follow:

- RDT, LAPD, CRV, CDT_NODE, CDT_PORT Static Data download from RDTINV.
- TERMTYPE (LNINV), ELN (SERVORD), and SLLC Static Data download.
- Providing new SPM POTS and KSET EXECs via MNNODE table and Digit Collection and Ring Static Data download.
- CMR (Softkeys) and Unsol OM Static Data download

2.2.2 Downloading Terminal Type Data

The downloading of terminal type data to SPM is invoked when a change is made to static data table LNINV or by a SERVORD command. However, the ISDN and Multiparty lines are not supported at this time on an SPM. A new error message for table LNINV, is being added when RDTISN or RDTMPY card codes are added to RDTs provisioned on a SPM.

2.2.3 Exec Lineup Provisioning

The SPM exec lineups are provisioned in table MNNODE. Two new exec lineups, SPMPEX and SPMKEX, are defined to support POTS and KeySet Lines on the SPM. The new exec lineups support new execs specific to Lines on the SPM.

2.2.4 Exec Downloading

Execs are sequences of predefined primitives or call processing instructions that are needed by a peripheral to perform various call processing and maintenance actions. An exec lineup identifies a list of execs to be downloaded to a peripheral. Execs are downloaded to the SPM when the SPM goes in service.

2.3 Hardware requirements

See Next Generation Line Access Universal Port Commercial Specification v1.1, May 14, 1999.

2.4 Limitations and restrictions

This feature will not support the following on IDT provisioned on a SPM.

- Multiparty and ISDN lines
- SPMPEX and SPMKEX uses only the execs used by an SMA (20)

2.5 Interactions

None.

2.6 Logs (LG)

2.6.1 New/modified logs

None.

2.7 Data schema (DS)

2.7.1 New/modified tables

- **Table MNNODE**

Two new exec lineups, SPMPEX for POTS lines and SPMKEX for KeySet Lines has been added to table MNNODE for the EXECTAB field. These lineups contains all the necessary execs required to allow the existing POTS and Keyset (Pphone) lines be supported by the SPM.

- **Table LNINV**

A new error message, “The specified CARDCODE is not allowed in an SPM,” has been added for unsupported cardcodes (RDTISN and RDTMPY) on RDTs provisioned on a SPM.

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

None.

2.9 Service orders (SO)

2.9.1 New/modified office parameters

None.

2.10 Alarms (AL)

2.10.1 New/modified directories

None.

2.11 Command interface (CI)

2.11.1 New/modified commands

None.

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

None.

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

None.

2.14 Software optionality control (SOC)

Table 1 SOC

SOC option name:	SPMS0034
SOC option title:	26-NGLA OAMP Miscellaneous(CM)
SOC option control type:	usage (hard)
New SOC option?	Yes
SOC option order code	SPMS0034
Option defined in DRU:	CNA
Affected products:	LLT (DMS500)

2.15 Glossary

Term	Description
SPM	Spectrum Peripheral Module
NGLA	Next Generation Line Access
ELN	Essential Line
POTS	Plain Old Telephones
KSET	KeySet (Pphone)
RDT	Remote Digital Terminal
CMR	Class Modem Receiver
SPMPEX	Spectrum Peripheral Module POTS Exec
SPMKEX	Spectrum Peripheral Module KeySet Exec
SLLC	Site Line Load Control

2.16 References

[1] Next Generation Line Access Commercial Specification v1.0

[2] HLD for Next Generation Line Access - Operations, Administration, Maintenance and Provisioning (NGLAOAMP - PLS FMDOC)

[3] 59012232 in PLS FMDOC

[4] 59012829 in PLS FMDOC

2: Functional description (FN)

2.1 Feature name

59012291: 26-NGLA OAM Misc.

2.2 Description

This feature provides Software Optionality Control for the GR303 / ICB Line Access option, SPMS0034. It provides for the following service:

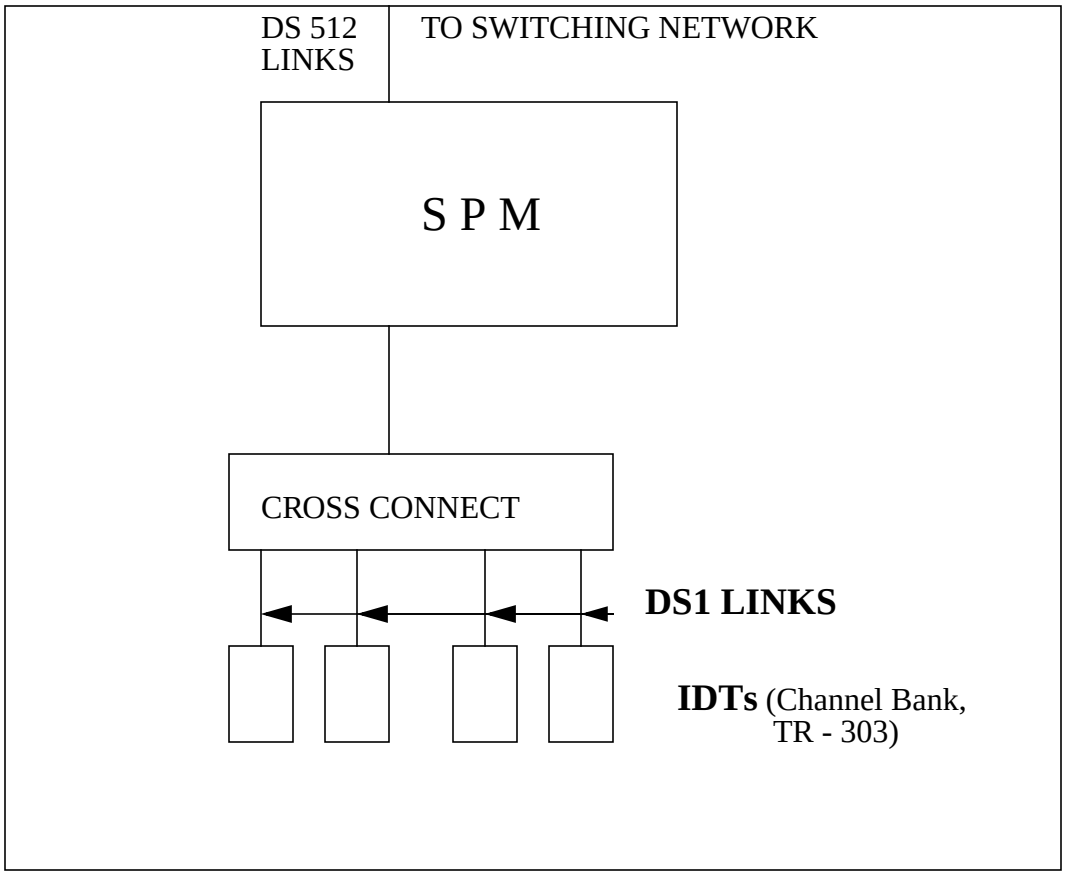
- Hard usage control for DS1 links to IDTs subtending from the SPM provisioned in Table RDTINV.

SOC functionality allows operating company personnel to select optional groups of one or more features, called options. Customers control these options through the SOC CI Level. Nortel support personnel control passwords for activation, deactivation, and limits of the right-to-use (RTU) on all options. See NTP 297-8991-901 for further information on the SOC functionality and its implementation.

This activity implements a hard usage option, which controls its feature by assigning a limit to the number of resources that the option controls.

This activity restricts the number of DS1 links to IDTs subtending from a SPM (see Figure 1) provisioned in table RDTINV to a limit set through the SOC CI Level. Initially, the limit of links allowed to be provisioned will be zero. Using an RTU password purchased from Nortel Networks, this number may be increased up to a maximum of 5376 in single increments. A threshold value may also be set as either a percentage of the current allowed number or as an actual number of links in order that a warning message be generated when this threshold is reached. When a new link is provisioned in RDTINV, a count increments provided that the limit has not been reached. Similarly, the count decrements when a link is deleted from RDTINV. Once the limit has been reached any attempts to provision another link will be denied.

Figure 1



2.3 Hardware requirements

There are no new hardware requirements associated with this feature.

2.4 Limitations and restrictions

N/A

2.5 Interactions

This activity adds additional SOC functionality with no impact to existing DMS switch functionality or SOC options.

2.6 Logs (LG)

Standardized SOC logs are generated so that the user can tell which options are activated and deactivated. This activity will use these logs to display its status.

2.7 Data schema (DS)

A new error message will be output when datafilling table RDTINV if the limit of DS1 link resources has been reached. The error message will read: “SPMS0034: Usage limit exceeded.”

2.8 Office parameters (OP)

N/A

2.9 Service orders (SO)

N/A

2.10 Alarms (AL)

N/A

2.11 Command interface (CI)

Information regarding the option can be displayed from the SOC level and from the SOCDEBUG level. On line help on the DMS is available for the SOC commands or reference the SOC User’s Manual for a complete reference guide to all SOC commands.

2.12 Operational measurements (OM)

N/A

2.13 AMA/Billing information (AM)

N/A

2.14 Software optionality control (SOC)

Table 1 SOC

SOC option name:	SPMS0034
SOC option title:	GR-303 / ICB Line Access
SOC option control type:	USAGE (hard)
New SOC option?	YES
SOC option order code	SPMS0034
Option defined in DRU:	CNA13
Affected products:	LLT (DMS500)

2.15 Glossary

N/A

2.16 References

[1] Soc User’s Manual, (NTP 297-8991-901, Standard 02.03)

[2] HLD for Next Generation Line Access - Operations, Administration, Maintenance and Provisioning (NGLAOAMP.AB01 (FMDOC)

2: Functional description (FN)

2.1 Feature name

A59012324 - NGLA CallP Messaging

2.2 Description

This feature allows IDTs hosted by SPM nodes to receive call processing messages from the CM. The SPM nodes, as with previous development, are registered with CPP; this allows the CM to send call processing messages through CPP and through FTS to the appropriate SPM node. In similar fashion, this activity requires the IDT nodes subtending SPM nodes be registerd with CPP; this is done at provisioning time. When an IDT is deprovisioned, deregistration from CPP occurs. If a problem occurs with CPP registration or deregistration, then an error message will be shown on the screen. The only impacts to the customer are these error messages which would be shown while modifying table RDTINV.

2.3 Hardware requirements

Not applicable.

2.4 Limitations and restrictions

Not applicable.

2.5 Interactions

Not applicable.

DDOC section summaries

2.6 Logs (LG)

Not applicable.

2.7 Data schema (DS)

2.7.1 New/modified tables

2.7.1.1 Table RDTINV

See document A59012232 in PLS FMDOC for updated error messages.

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

Not applicable.

2.9 Service orders (SO)

Not applicable.

2.10 Alarms (AL)

2.10.1 New/modified directories

Not applicable.

2.11 Command interface (CI)

2.11.1 New/modified commands

Not applicable.

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

Not applicable.

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

Not applicable.

2.14 Software optionality control (SOC)

Not applicable.

2.15 Glossary

Not applicable.

2.16 References

NGLAMESG - Next Generation Line Access Maintenance HLD. Document located in PLS library FMDOC.

2: Functional description (FN)

2.1 Feature name

OFFHKDEL Support for Public Exchange (PX) Trunk

2.2 Description

This activity addresses the requirement of subscription and support of AIN query/response messages associated with the Off-Hook-Delay(OHD) trigger for PX agents. This feature will be SOC controlled for the DMS-500/100 market.

OHD trigger can be provisioned using both the Trigger Item data model and Trigger Group data model. The triggering enhancements is applicable to both AIN 0.1(Essentials) and AIN 0.2(Service Enablers) message sets.

2.2.1 Background Information

Currently, OHD trigger is not supported on public trunks(including PX). However, the trigger is supported on private trunks (i.e. IBNT2 trunk).

In order to utilize the appropriate trigger, PX trunks are currently being converted to IBNT2 trunks. The conversion requires that the trunks be taken down, which results in end-user down time.

This feature allows Public Exchange (PX) trunks to subscribe to and use the OHD trigger without the downtime associated with converting PX trunk to IBNT2.

2.2.2 AIN Overview

The AIN call model is characterized by various Points In Call (PIC) where the DMS basic call processing can be interrupted. At each PIC, there may be a Trigger Detection Point (TDP) supported by AIN Essentials, or AIN Service Enablers. At the TDP, the DMS Service Switching Point (SSP) checks to see

if the originating or terminating agent in the call is subscribed to an AIN trigger. If defined criteria are met at the PIC for the trigger, a query message is sent from the DMS SSP to a Service Control Point (SCP).

The SCP is an off-board database that responds to the AIN query message with an AIN response message. Based on the contents of the response message, the SSP determines what to do with the call. The response message may indicate to re-route the call to a different terminator, forward the call to another agent, continue normal processing, route the call to treatment, etc.

2.2.3 Feature Requirements

This activity has the following functional requirements:

Table 1 Feature requirements.

No.	Feature requirement	Section
1	Allow OHD to be provisioned for PX trunks using both Trigger Group and Trigger Item data model.	2.2.3.1
2	Introduce new trigger detection point (Info_collected) for PX trunks.	2.2.3.2
3	Allow PX trunks to trigger at OHD supporting the required messages and parameters.	2.2.3.3
4	Follow OHD requirements for billing, escape code lists, and response processing, based on existing functionality of OHD for IBNT2 trunks.	2.2.3.4
5	TRAVER tool must be supported	2.2.3.5

2.2.3.1 Provisioning

This requirement is to allow OHD to be provisioned for PX trunks using both the new(Trigger Item) and old(Trigger Group) data model.

2.2.3.2 Info_Collected TDP

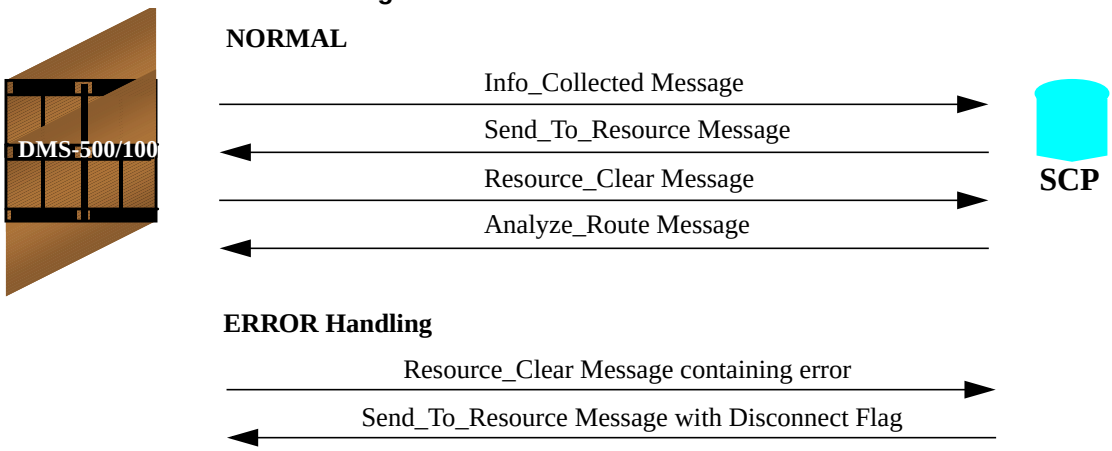
Previously, PX trunks could only trigger at the Info_Analyzed DP or the Network_Busy DP. This requirement extends the trigger detection point for PX to include Info_Collected.

2.2.3.3 OHD Trigger Support

This requirement is to allow PX trunks to trigger at OHD supporting the required messages. The parameter population of the following messages should follow GR-1298-Core with the following exceptions:

- The USERID parameter should be encoded as the TrunkGroupID format instead of the PrivateFacilityGid format.
- The CallingPartyID, ChargeParty, and Carrier should be populated with the contents specified against the trunk in table CXGRP.

Table 2 Message Flow



The following messages and parameters are already supported, there is no change to the existing parameter set for these messages.

Info_Collected

```
infoCollected              OPERATION
PARAMETER SEQUENCE {
                           UserID,
                           BearerCapability,
                           ChargeNumber
                           Lata
                           Carrier                 OPTIONAL,
                           TriggerCriteriaType
                           CallingPartyID          OPTIONAL,
                           ChargePartyStationType
                           CollectedAddressInfo    OPTIONAL,
                           ACGEncountered          OPTIONAL,
                           }
```

Send_To_Resource - Prompt

```
sendToResource             OPERATION
PARAMETER SEQUENCE {
                           ResourceType,
                           StrParameterBlock
                           }
```

Resource_Clear

```
resourceClear           OPERATION
PARAMETER SEQUENCE {
                        ClearCause,
                        CollectedDigits         OPTIONAL,
                        FailureCause            OPTIONAL,
                        }
```

Analyze_Route - Success

```
analyzeRoute            OPERATION
PARAMETER SEQUENCE {
                        ChargeNumber            OPTIONAL,
                        CallingPartyID          OPTIONAL,
                        ChargePartyStationType  OPTIONAL,
                        CalledPartyID
                        OutpulseNumber          OPTIONAL,
                        Carrier                 OPTIONAL,
                        RedirectingPartyID      OPTIONAL,
                        AMAslpID
                        SEQUENCE SIZE (1..5) OF
                        AMADigitsDialedWC       OPTIONAL,
                        RedirectionInformation  OPTIONAL,
                        GenericAddressList      OPTIONAL,
                        ForwardCallIndicator    OPTIONAL,
                        }
```

Send_To_Resource - Failure

```
sendToResource          OPERATION
PARAMETER SEQUENCE {
                        ResourceType,
                        StrParameterBlock,
                        DisconnectFlag          OPTIONAL,
                        AMAslpID
                        SEQUENCE SIZE(1..5) OF
                        AMADigitsDialedWC       OPTIONAL
                        }
```

2.2.3.4 Billing, Escape Codes, Response Processing

This requirement is to ensure that OHD processing is followed:

- The billing should be identical to that of a IBNT2 trunk triggering at OHD.
- The PX trunk should not trigger if the address digits are on the escape code list.

Current functionality supports this functional requirement.

Table TIESCDIG administers the digit-based escape criteria for OFFHKDEL triggers in table TRIGITM, and Table TRIGESC handles escape criteria for OFFHKDEL triggers in table TRIGGRP.

- The processing of Send_to_Resource, Analyze_Route, and Resource_Clear should be equivalent to that of an IBNT2 trunk triggering at OHD.

2.2.3.5 TRAVER

TRAVER (Translation Verification) tool will support AIN Call Processing functionality for PX trunks triggering at OHD.

2.3 Hardware requirements

This feature does not require any special hardware or firmware.

2.4 Limitations and restrictions

The PX trunk originated calls can only trigger at OHD, if the state controlled SOC AIN00061 is purchased and is ON.

2.5 Interactions

The CallingPartyID parameter (Info_Collected message) is populated with datafill specified against the PX trunk in table CXGRP. This functionality is controlled by PXCLID SOC (option code CSTC0100), if the SOC is in IDLE state, no CallingPartyID will be present in the message.

2.6 Logs (LG)

There is no new log or change to existing logs introduced by this feature.The new SOC option, AIN00061, can be seen in various standard SOC logs, the SOC logs' formats can be obtained from NTP 297-8021-8407 North American DMS-100 Log Report Reference Manual.

2.7 Data schema (DS)

2.7.1 New/modified tables

The PX trunk type is allowed to be provisioned in table TRKAIN to subscribe to the OHD AIN trigger defined in table TRIGITM (AINGRP = TIID), and this change does not depend on SOC state. No change is required for the triggers defined in table TRIGGRP. Otherwise, this feature introduces no new tables and does not modify the data schema for any existing tables.

Table 3 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
TRKAIN	Changed	Unchanged

2.8 Office parameters (OP)

Not applicable, there are no changes to the office parameters caused by this feature.

2.9 Service orders (SO)

Not applicable.

2.10 Alarms (AL)

Not applicable.

2.11 Command interface (CI)

The following CI areas are impacted by this feature: SOC, and TRAVER.

2.12 Operational measurements (OM)

No new OMs are being introduced by this feature. Existing AIN OMs will be pegged where applicable as with other AIN calls.

2.13 AMA/Billing information (AM)

No new AMA data elements are added or changed by this feature. AMA processing for PX agents prior to triggering at the OHD trigger is unaltered. Billing is unaffected on PX trunks which do not invoke the AIN OHD functionality. Following the query, AMA processing will mirror the processing of an IBNT2 agent triggering at OHD utilizing the existing AIN AMA elements.

2.14 Software optionality control (SOC)

The functionality of OHD trigger support for PX trunks is optionalized by a State controlled SOC, Ordercode AIN00061, which has a dependency

requirement for AIN00009. The SOC's initial state will be set to idle after One Night Process(ONP).

When TRAVER is performed on a PX trunk with the SOC in idle state, the TRAVER displays provisioned AIN triggers, and also displays a warning message indicating that AIN00061 SOC option is idle and continues processing.

The change in table TRKAIN which allows PX trunk type to be provisioned for Trigger Item data model (AINGRP=TIID) is not controlled by AIN00061.

When the SOC state is toggled fron ON to IDLE, a service affecting warning message is generated, stating that the transition will disable OHD trigger for PX trunks.

The following commands are used to toggle the SOC from the SOC CI utility:

Table 4 SOC

SOC option name:	AIN
SOC option title:	AIN OHD Trigger Support for PX Trunk
SOC option control type:	State
New SOC option?	Yes
SOC option order code	AIN00061
Option defined in DRU:	DMSCNA13
Affected products:	LEC00013, LET00013, LLT00013

2.15 Glossary

Term	Description
AIN	Advanced Intelligent Network
AMA	Automatic Message Accounting
BAF	Bellcore AMA Format
OHD	Off-Hook-Delay trigger
ONP	One Night Process
PIC	Point In Call
PX	Public Exchange

SCP	Service Control Point
SE	Service Enabler
SOC	Software Optionality Control
SSP	Service Switching Point
TCAP	Transaction Capabilities Application Part
TDP	Trigger Detection Point
TRAVER	Translation Verification

2.16 References

REF #	Description of Reference
1	Bellcore AINGR: Switching Systems - GR-1298-CORE issue 4, 1997
2	Bellcore AINGR: Switch - SCP Adjunct Interface - GR-1299-Core issue 4, 1997
3	NTP 297-5161-021 AIN Essentials Service Implementation Guide
4	NTP 297-5161-022 AIN SE Service Implementation Guide
5	NTP 297-8021-8407 North American DMS-100 Log Report Reference Manual.
6	Feature Specification Document PXOHD issue AA01
7	Feature Document AJ4372 PXCLID

2: Functional description (FN)

2.1 Feature name

LNP/MBG Interworking.

2.2 Description

MultiLocation Business Group is a feature providing operating companies with the ability to have Centrex Groups span multiple switches, while retaining the notion of a private dial plan between remote members. Since MBG uses public routing facilities to route interswitch calls between group members, and since Number Pooling allows for groups to be comprised of both ported and non-ported DNs, MBG must be able to interwork with LNP.

Number Pooling involves breaking NPANXX codes into blocks of numbers (initially 1000), and assigning these block to several different operating companies within the same rate center. One of those operating companies, termed the code holder, would be assigned the NXX code in the Local Exchange Routing Guide (LERG). Calls to numbers assigned to the other operating companies, known as block holders, would be routed using the capabilities of Number Portability as though the directory numbers had been ported. All of the DNs within a block which have been assigned to a block holder are associated in the Number Portability Data Base (NPDB) with the Location Routing Number (LRN) of the block holder. This is known as pre porting the numbers.

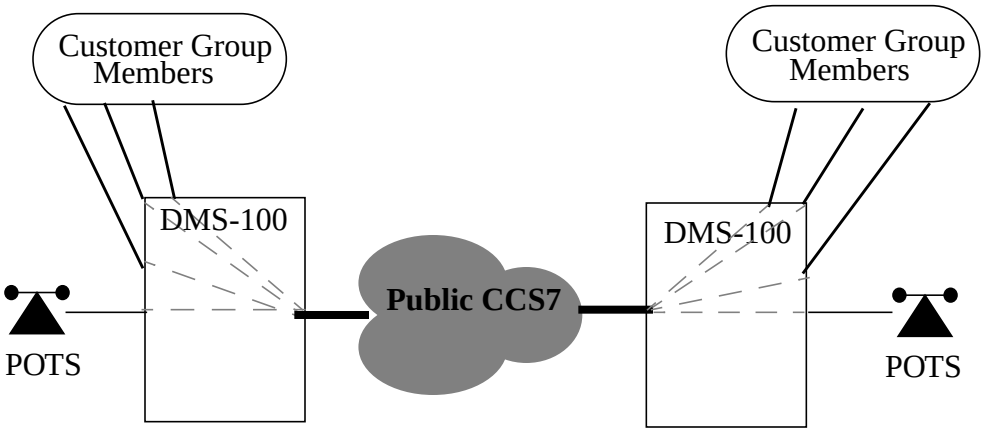
Since an operating company may encounter a scenario where multi-DN groups may be composed of both Pooled and non-Pooled DNs (i.e. this mix of DNs are the only DNs available on the switch), features which previously had no requirements to interact with LNP may now have to do so.

This feature focuses on the interworking of the Multilocation Business Groups (MBG) feature with LNP. MBG allow customer group members connected to different switches to share some of the same services. Centrex is an essential component of MBG. By networking two or more Centrex groups across the Public Switched Telephone Network (PSTN), they appear as one MBG group. MBG/LNP Interworking is offered under the NPE00005 SOC package.

2.2.1 Description of Existing Network Functionality

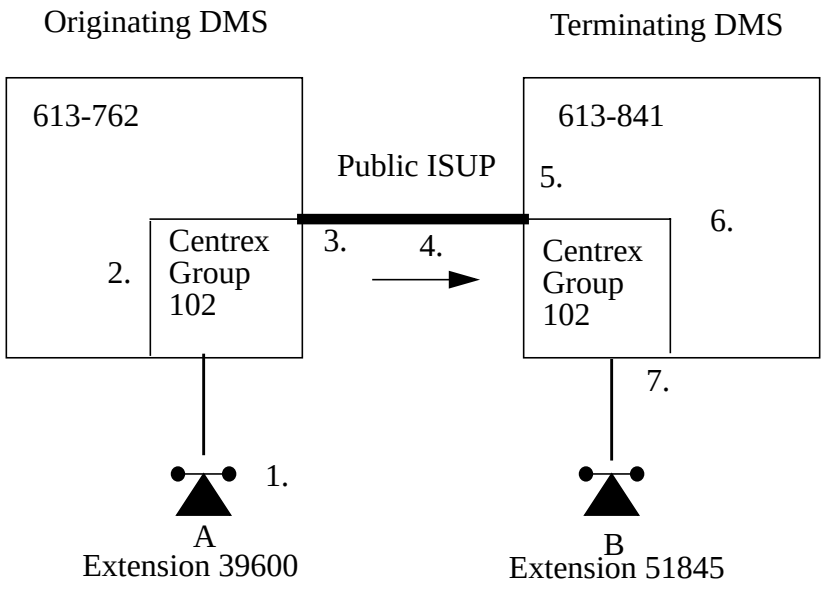
Figure 1 MBG Network Architecture" shows the network architecture for MBG.

Figure 1 MBG Network Architecture



A basic MBG call is described in "Figure 2 MBG call in non-LNP environment"

Figure 2 MBG call in non-LNP environment



1. A dials 6 (access code) and B’s extension 51845

2. SSP recognizes MBG call and sets BG = 102

3. IAM constructed- Extension 51845 translated into 613-841-1845 and placed in the Called Party ID, BG=102

4. Call routed based on CalledpartyID

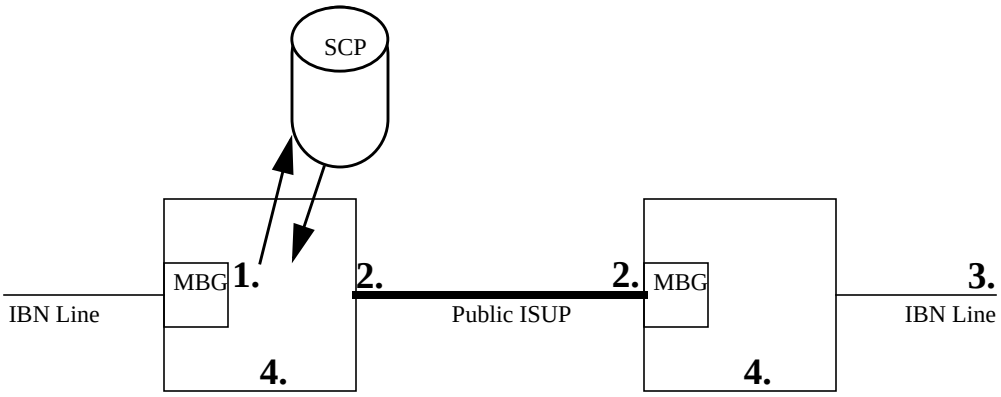
5. Terminating SSP detects BG parameter and routes to Centrex Group 102.

6. CalledpartyID retranslated into original extension(51845)

7. Call completes

2.2.2 Description of Functionality Introduced by this Feature

The figure below shows where this feature impacts existing functionality. The points in the call that are numbered are described in detail in the section following.



1. LNP trigger on an MBG call
Currently, a call between MBG members located in different end-offices are specifically blocked from encountering the LNP trigger during the public translations portion of the call. This feature removes those blocks which prevents triggering and allows the private to private call scenarios to interact with the LNP trigger. This functionality is controlled by the NPE00005 SOC. If NPE00005 is not active, then triggering remains suppressed for MBG calls.

- An IBN line originates an MBG call
- Route DN is determined to be portable
- Query sent to SCP, and the valid LNP response is returned

2. LNP/MBG Signaling

As of NA009, ISUP signalling has supported the inclusion of multiple GAP parameters in the IAM message. This feature merely introduces the combination of LNP and MBG information, which may result in the IAM message containing both the LNP ported number GAP, and the MBG dialled number GAP. Below is an example of such an IAM message.

```
CCS7 MESSAGE TYPE:  ISUP_IAM
NATURE OF CONNECTION:    ISUP_NO_SATELLITE,  ISUP_CONT_CHK_REQUIRED
                         ISUP_NO_HALF_ECHO_SUP
FORWARD CALL INDICATORS: ISUP_Call Type:       ISUP_NATIONAL_CALL
                         E_to_E_Method:        PASS_ALONG_METHOD_AVAIL
                         ISUP_Interworking:    NO_INTERWORKING
                         E_to_E_Info_Check:    NO_E_TO_E_INFO
                         ISDN_UP_Ind:          ISUP_ALL_THE_WAY
                         ISDN_UP_Pref_Ind:     ISDN_UP_PREF_ALL_THE_WAY
                         ISDN_Access_Ind:      ACCESS_NON_ISDN
                         Trans_Called_Num_Ind: NUMBER_TRANSLATED
                         Routing_Attempt_Ind:  NO_ROUTING_ATTEMPT
CALLING PARTY CATEGORY:  #0A - ISUP_CPC_SUBSCRIBER_1
MAND.VARIABLE PART:      Generic Base USI:
                           TRANSMISSION MEDIUM REQ:   TMR_NIL
                           INFORMATION TRANSFER CAP:  GEN_ITC_SPEECH
                           CODING STANDARD:           STD_CCITT
                           INFORMATION TRANSFER RATE: ITR_64KB
                           TRANSFER MODE:             MODE_CIRCUIT
                           LAYER1 INFORMATION:        LAYER1_G711_ULAW
                           USER RATE:                 USER_RATE_NIL
                           SYNCHRONIZATION:           SYNCHRONE
                           NEGOTIATION:               NEGOT_NOT_INBAND
                           MESSAGE PRIORITY:          1
                         CALLED PARTY:
                           EVEN_ODD_IND  :                      EVEN_NUM_NIBBLES
                           NATURE_OF_ADD :                      #03 - NATIONAL_SIG_NUMBER
                           NUMBERING_PLAN :                     ISDN_TELEPHONY_NUM_PLAN
                           ADDRESS_INFORMATION = 9059631099
OPTIONAL PART:           CALLING PARTY :
                           EVEN_ODD_IND:                        EVEN_NUM_NIBBLES
                           NATURE_OF_ADD :                      UNIQUE_NATIONAL_SIG_NUMBER
                           ADDR_PRES_RESTRICTED_IND :           PRESENTATION_ALLOWED
                           NUMBERING_PLAN :                     ISDN_TELEPHONY_NUM_PLAN
                           SCREENING_IND  :                     NETWORK_PROVIDED
                           ADDRESS_INFORMATION = 6136737351
                         BUSINESS GROUP :
                           PARTY_SELECTOR :                     CALLING_PARTY_NUMBER
                             LPII :                             CUSTOMER_DEFINED
                             ID_TYPE :                          MBG
                             ATTENDANT_STATUS :                 NO_INDICATION
                             SPARE :                            0
                             BGID :                             LOCAL          1
                             SUBGROUP_ID :                      0
                             LP :                               0
                         GENERIC_ADDRESS :
                           TYPE_OF_ADD   :                      DIALED_NUMBER
                           NATURE_OF_ADD :                      SUBSCRIBER_NUMBER
                           EVEN_ODD_IND  :                      ODD_NUM_NIBBLES
                           SCREENING     :                      USER_PROVIDED_NOT_SCREEN
                           ADDR_PRES_RESTRICTED_IND :           PRESENTATION_ALLOWED
                           NUMBERING_PLAN :                     PRIVATE_NUM_PLAN
                           TEST_CALL_IND :                      LNP_NOT_A_TEST_CALL
                             (or NI_INDICATOR)  :               CLG_PTY_COMPLETE
                           ADDRESS_INFORMATION = 39058
                         GENERIC_ADDRESS :
                           TYPE_OF_ADD   :                      PORTED_DIALED_NUMBER
                           NATURE_OF_ADD :                      NATIONAL_SIG_NUMBER
                           EVEN_ODD_IND  :                      EVEN_NUM_NIBBLES
                           SCREENING     :                      USER_PROVIDED_NOT_SCREEN
                           ADDR_PRES_RESTRICTED_IND :           PRESENTATION_ALLOWED
                           NUMBERING_PLAN :                     ISDN_TELEPHONY_NUM_PLAN
                           TEST_CALL_IND :                      LNP_NOT_A_TEST_CALL
                             (or NI_INDICATOR)  :               CLG_PTY_COMPLETE
                           ADDRESS_INFORMATION = 6136739058
                         JURISDICTION_INFO_PARM :
                           416463
```

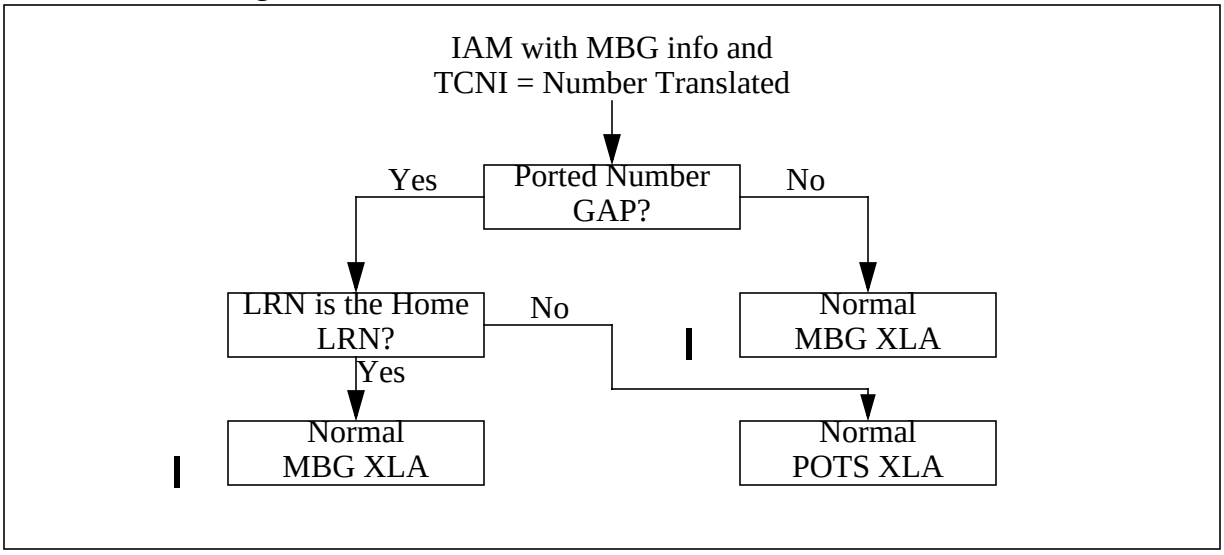
The above IAM message contains both LNP and MBG information. The LNP information is quite straight forward. The LRN is in the Called DN, and the

TCNI bit is set to Number Translated. The MBG information is not quite as straight forward. The MBG GAP is contained in the Dialled Number GAP. However, the Route DN which MBG expects to be in the Called DN, is actually stored in the Ported Number GAP.

In a Tandem scenario, where the above IAM is received by a switch which does not recognize the LRN as its home LRN, the MBG information will simply be tandemed through. This is true even if the NPE00005 SOC is inactive.

3. LNP/MBG Termination
When the switch receives an IAM with both LNP and MBG signalling, it must consider many factors before deciding how to continue with call processing. These factors are pictured below, and are described in more detail directly following the figure.

Figure 3. Termination Decision Flow



If the IAM message received does not contain a Ported Number GAP, then we know that the subscriber has not ported, and all the data is in place to do normal centrex translations.

If there is a Ported Number GAP present in the IAM, then we need to look at the LRN received in the Called DN parameter. If the LRN is foreign to the switch, then POTS translations should take over and the MBG call should be simply tandemed through the switch. If the LRN received is the Home LRN for the switch, then we will perform normal Centrex translations to complete call processing.

4. Traver
Traver currently does not allow for MBG and LNP information to be entered on the command line. But this functionality is necessary to validate translations on the switch, and to verify the type of signalling that the customer

should expect. There are two types of Travers which will be affected. The examples shown are for demonstration purposes only. The text in italics should be taken only as a rough estimate of the final production version of the traver.

- LNP Response Traver created by MBG call

```
traver l 6136737058 n cdn na 9059631099 ainres r01 lnpar mbg local 1 0 31351 4164731351 b
Warning: Routing characteristics are present.
         Originator must be able to send in
         characteristics specified.
LNP Info: Call Type set to NP for FLRN translations
TABLE RTECHAR
 . LECNA (CDN NA $) ( BC 3_1KHZ (CDN NA)$)$
TABLE IBNLINES
HOST 02 0 05 15 0 DT STN IBN 6737051 MDC613 0 0 613 $

... <cut> ...

NP Info: HNPA translation completed on Foreign LRN.
LNP Info: HNPA results are used.
TABLE CLSVSCRC
KEY NOT FOUND

+++ TRAVER: SUCCESSFUL CALL TRACE +++


DIGIT TRANSLATION ROUTES

1 C1S1_ISUPITOG         9059631099         ST
               MBG: LOCAL 1  LP: 0  GAP: 39058
               PORTED NUMBER GAP: 6136739058

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

The output of the above Traver would include the display of both the LNP and MBG signalling information. In all other respects, the Traver would resemble a normal LNP response Traver.

- Incoming LNP/MBG trunk call

```
traver tr c1s1_isupitic 4164631099 tcni mbg local 1 0 37051 6136637051 b
MBG CALL: LNP Call
MBG CALL: LNP GAP Present
MBG CALL: LRN Belongs to Office
MBG CALL: Route DN is resident
MBG CALL:CUST xla on GAP
TABLE TRKGRP
C1S1_ISUPITIC IT 63 ITTD NCRT IC NIL MIDL 613 PUB NSCR 613 000 N Y $

... <cut> ...

AIN Info Analyzed TDP: trigger criteria not met.
AIN Term Attempt TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++


DIGIT TRANSLATION ROUTES

1 LINE                  6136737051         ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 *OFLO

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

The output of the above Traver will resemble a normal incoming MBG trunk call, except for LNP information at the top which detailed whether or not the LRN received was the Home LRN or not.

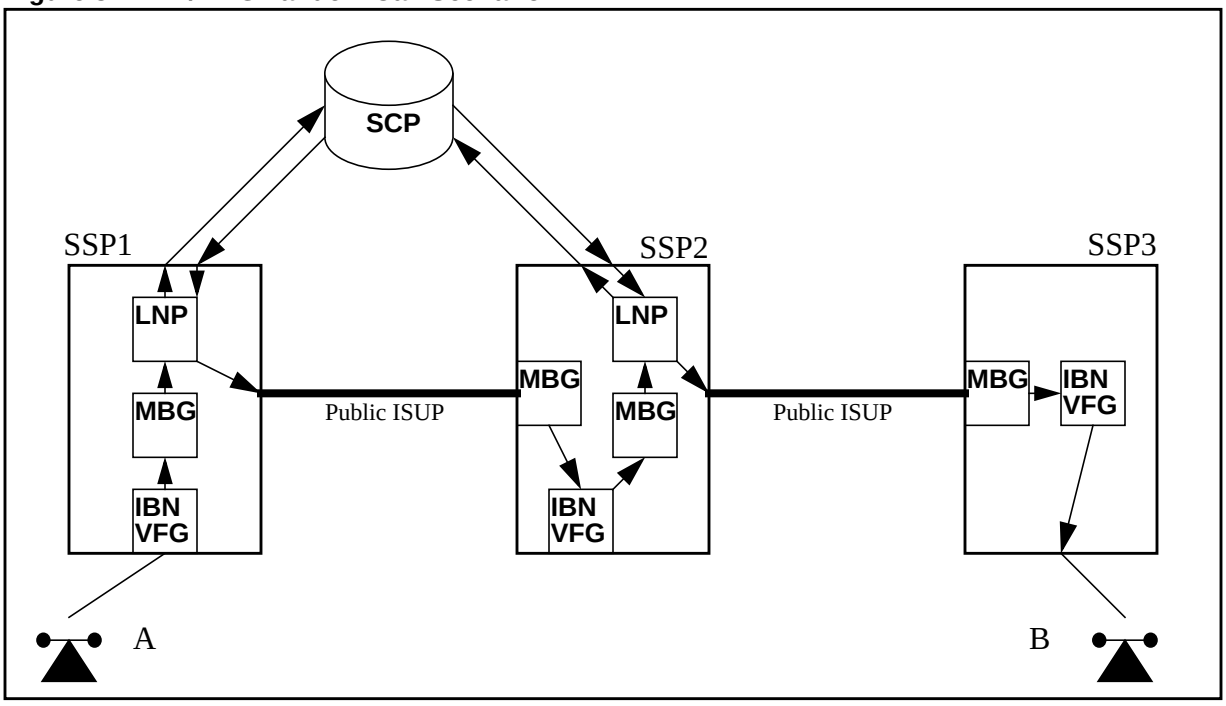
If the LRN received is a Foreign LRN, then the Traver will resemble a normal LNP call where the LRN received is a Foreign LRN, and POTS translations will be performed on the LRN. This Traver will also show both the LNP and MBG signalling in the no-trace portion of the Traver.

2.2.3 Description of VFG Tandeming Behavior

This section describes how this feature will interact with use of VFGs and a particular mode of tandeming a call that some customers use.

The figure below shows the call behavior, and the contents of the figure are explained in more detail below. Differences between current functionality and the new functionality will be highlighted.

Figure 3 LNP/MBG Tandem Call Scenario



1. A dials B's extension
2. Call is throttled through an IBN VFG
3. Translations recognizes the call as MBG and assigns a Route DN that is resident on SSP2, and a GAP of B's extension
4. *LNP detects that the Route Dn is portable (possibly part of a block of pooled numbers)*
5. *LNP query is sent, and the LRN of SSP2 is received in the response*

6. Translations selects trunk Public ISUP trunk to SSP2
7. MBG translations take place on the GAP since *the LRN received belongs to the switch* and the Route DN is resident
8. Centrex translations route the call through an IBN VFG
9. Translations recognizes the call as MBG and assigns a Route DN that is resident on SSP3, and a GAP of B's extension
10. *LNP detects that the Route Dn is portable (possibly part of a block of pooled numbers)*
11. *LNP query is sent, and the LRN of SSP3 is received in the response*
12. Translations selects trunk Public ISUP trunk to SSP3
13. MBG translations take place on the GAP since *the LRN received belongs to the switch* and the Route DN is resident
14. Centrex translations route the call through an IBN VFG
15. Call terminates to B

The only new pieces of functionality introduced by this feature are in italics. Otherwise, the functionality is exactly the same. Note that an LNP query does not have to take place, if the number is not portable or pooled. Also note that the SCP could have responded with the called digits, and the call would have proceeded as well.

2.3 Hardware requirements

None.

2.4 Limitations and restrictions

When an MBG call is originated, the MBG routing datafill will select a public ISUP trunk to be used to route the call to the terminating switch. In order to identify the call as a private call using public routing facilities, the outgoing ISUP signalling includes a Business Group (BG) parameter, and may include an MBG GAP [*Note: the presence of the MBG-GAP is dictated by the method of routing the MBG call. It is not included in all MBG call scenarios, however the BG parameter is always present.*]

It is important to note that MBG routing via the N and S selector in table IBNRTE is unable to encounter the LNP trigger at any point during translations, this form of routing an MBG call will NOT be supported for encountering the LNP trigger. This type of routing for MBG call encounters no type of public translations at the originating switch.

It is also important to note that the Routing Number must be the DID or it must reside on the same switch as the terminator, or else the results from the LNP query can be erroneous.

2.5 Interactions

- Activity 59012192: Number Pooling Feature Interactions

2.6 Logs (LG)

Not applicable.

2.7 Data schema (DS)

None.

2.8 Office parameters (OP)

Not Applicable.

2.9 Service orders (SO)

Not Applicable.

2.10 Alarms (AL)

Not Applicable.

2.11 Command interface (CI)

Not Applicable.

2.12 Operational measurements (OM)

Not Applicable.

2.13 AMA/Billing information (AM)

Not Applicable.

2.14 Software optionality control (SOC)

Figure 4 SOC NPE00005

SOC option name:	NPE00005
SOC option title:	
SOC option control type:	state
New SOC option?	Yes

SOC option order code	<order code>
Option defined in DRU:	CNA
Affected products:	NA100

2.15 Glossary

Term	Description
BG (also BGid)	Business Group Parameter
GAP	Generic Address Parameter
ISUP	ISDN User Part
LNP	Local Number Portability
LRN	Location Routing Number
LERG	Local Exchange Routing Guide
MBG	MultiLocation Business Group
NPDB	Number Portability Data Base

2.16 References

2: Functional description (FN)

2.1 Feature name

Services Interaction Environment Deployment NA013.

2.2 Description

The Services Interaction Environment (SIE) framework provides mechanisms to decouple agent to feature and feature to feature interactions. This framework provides an event processing environment that defines events and enables agents and services to raise and/or react to events.

The objective of this activity is to extend the presence of SIE in both the terminating and originating call processing model. This will be accomplished by introducing a subset of the ~40 SIE events. These events will be raised in the lines base call processing software thus providing an opportunity for services to eventually use SIE to react to the events.

This work will be done for 46 line threads listed in table below:

Table 1 Line Threads

Thread	Thread Index	Thread Name	#
1	LNDP_THRD	SIMPLE DP LINE	1
2	LNDGT_THRD	SIMPLE DGT LINE	2
39	XLDP_THRD	EXTENDED DP LINE	3
41	XLDGT_THRD	EXTENDED DGT LINE	4
52	TWXDP_THRD	TWX DP LINE	5
53	TWXDGT_THRD	TWX DGT LINE	6
18	PBXDP_THRD	DP PBX LINE	7
20	PBXDGT_THRD	DGT PBX LINE	8
56	OUTWDP_THRD	OUTWATS DP LINE	9

Thread	Thread Index	Thread Name	#
57	OUTWDGT_THRD	OUTWATS DGT LINE	10
58	INWDP_THRD	INWATS DP LINE	11
59	INWDGT_THRD	INWATS DGT LINE	12
195	TWWDP_THRD	TWO WAY WATS DP LINE	13
196	TWWDGT_THRD	TWO WAY WATS DGT LINE	14
69	MPBDP_THRD	MULTIPARTY BRIDGE DP LINE	15
68	MPBDGT_THRD	MULTIPARTY BRIDGE DGT LINE	16
81	CSDDSDGT_THRD	CSDDS LINE DGT	17
164	DATALN_THRD	MOC DATA LINE	18
23	CNDP_THRD	COIN LINE DP	19
24	CNDGT_THRD	COIN LINE MF	20
153	TPLDP_THRD	MOC TWOPARTY DP LINE	21
154	TPLDGT_THRD	MOC TWOPARTY DGT LINE	22
25	TFDP_THRD	TWO/FOUR PARTY DP LINE	23
26	TFDGT_THRD	TWO/FOUR PARTY DGT LINE	24
03	MPDP_THRD	MULTIPARTY DP LINE	25
04	MPDGT_THRD	MULTIPARTY DGT LINE	26
110	IBNDPLN_THRD	IBN DP LINE	27
111	IBNDGTLN_THRD	IBN DGT LINE	28
170	SPLDP_THRD	SPLIT LINE (SPL) DP	29
171	SPLDGT_THRD	SPLIT LINE (SPL) DGT	30
112	IBNXDPLN_THRD	IBN DP EXTENDED LINE	31
113	IBNXDGTLN_THRD	IBN DGT EXTENDED LINE	32
119	SVR_LN_THRD	PTE (SERVER) LINES	33
99	IBNFLTCTL_TRHD	SR.90036124 (AJ5109)	34
175	LNXVAD_THRD	VAD RES EXTENDED LINE	35
199	KEY_SET_THRD	KEY-SET LINE	36
223	PPHONE_ICM_THRD	PPHONE INTERCOM	37
203	MDNDP_THRD	MADN DP EXTENDED LINE	38
204	MDNDGT_THRD	MADN DGT EXTENDED LINE	39
235	PSAP_THRD	E911 LDT PSAP	40

Thread	Thread Index	Thread Name	#
60	RES_COIN_THRD	RES COIN LINE	41
225	FUNC_BRA_THRD	FUNCTIONAL ISDN BRA	42
230	BRI_ICM_THRD	BRI ICM THR-SR.50092700	42
176	VAD_BRA_THRD	BRA VAD LINE	43
206	MADNBRA_THRD	MADN - FUNC BRA	44
30	TWC_FEATURE_THRD	TWC FEATURE	45
148	IBN_CALL_XFER_THRD	IBN CALL TRANSFER	46

Only line to line calls will be considered for the 46 threads in table 1.

Out of ~40 SIE events only 21 events were selected, which will be raised as part of this activity. The Basic Call Class events that are going to be implemented in this feature are:

- SIE_Origination_attempt
- SIE_Origination_denied
- SIE_Orig_attempt_authorized
- SIE_Collected_info
- SIE_Analyzed_info
- SIE_Route_Selected
- SIE_Call_Setup_authorized
- SIE_Call_Offered
- SIE_O_Term_Seized
- SIE_O_Alerting
- SIE_O_Answer
- SIE_O_Disconnect
- SIE_Termination_Attempt
- SIE_Termination_Attempt_Authorized
- SIE_Facility_Selected
- SIE_Call_Presented
- SIE_Call_Accepted
- SIE_T_Alerting
- SIE_T_Answer
- SIE_T_Disconnect

- SIE_Agent_Dealloc

These events will be raised at the SIE_Line level of SIE notification hierarchy, as suggested in the selected design, HLD section 1.4.2.2. Also some of the events (SAPs) which are already being raised from the SAF will be changed from Basic_Call notification level to SIE_Line notification level.

2.3 Hardware requirements

None

2.4 Limitations and restrictions

1. This feature will address only basic success path call processing. It will not address any exception call paths.
2. Another restriction that this activity places on itself is that there will not be any hooks added to the line setup processor.
3. No decoupling of any services/feature hooks will be done as a part of this activity.

2.5 Interactions

Not applicable.

2.6 Logs (LG)

Not Applicable

2.6.1 New/modified logs

Table 2 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

Not applicable

2.7.1 New/modified tables

Table 3 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

2.8 Office parameters (OP)

Not applicable

2.8.1 New/modified office parameters

Table 4 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

Not applicable

2.10 Alarms (AL)

Not applicable

2.10.1 New/modified directories

Table 5 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

Not applicable

2.11.1 New/modified commands

e

Table 6 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.12 Operational measurements (OM)

Not applicable

2.12.1 New/modified OM groups

Table 7 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.13 AMA/Billing information (AM)

Not applicable

2.13.1 New/changed AMA/billing information

Table 8 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

Not applicable

Table 9 SOC

SOC option name:	

SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.15 Glossary

Term	Description
SIE	Services Interaction Environment
SAF	Static Agent Framework

2.16 References

REF #	Description of Reference / Location
AF7742	NA011 Line Agent OCM State Machine for 1FR
A59006853	NA012 OCM for Line Agent
A59008993	SIE Deployment for NA012
A59012488 HLD	SIE Deployment for NA013 / FMDOC library
AF7060, AF7404	PLS DOC library
SIEUG	PLS FMDOC library

2: Functional description (FN)

2.1 Feature name

LNP Enhancements/SOC

2.2 Description

Number Pooling is a means of reducing number exhaust in the North American Market. It involves breaking NPA-NXXs into blocks of numbers (initially 1000) and assigning these blocks to several different operating companies within the same rate center. One of those operating companies, termed the code holder, would be assigned the NPA-NXX codes in the Local Exchange Routing Guide (LERG). Calls to numbers assigned to the other operating companies, known as block holders would be routed using the capabilities of Number Portability as though the directory numbers had been ported. All the DNs within a block which have been assigned to a block holder are associated in the Number Portability Data Base (NPDB) with the Location Routing Number (LRN) of the block holder.

This activity implements several enhancements to the Local Number Portability Software, and base functionality for Number Pooling including:

- Software Optionality Control for Thousand Block Number Pooling.
- Range Marking of NP-Reserved numbers (avoiding Cause Code 26)
- Code Holder option in table TOFCNAME
- LATAXLA translations enhancement for FLRN translations
- CLASS (ACB, AR, SLE, SMDI) interworking enhancements for LNP
- Three-Way Call Interworking enhancement for LNP
- LNP Response Processing Realtime Enhancements

2.2.1 Software Optionality Control for Thousands Block Number Pooling

Thousand Block Number Pooling support is controlled by the NPE00005 option. When this option is in the IDLE state, functionality controlled under option NPE00005, including Servord interface prompting, and new LNP

feature interactions will not be encountered. When this option is ON, any functionality specific to the Thousands Block Number Pooling development will be encountered if the given call scenario or provisioning scenario indicates it is appropriate to do so.

The NPE00005 SOC option controls only the specific functionality required by the Canadian market for the Local Number Portability product. This option will be dependent upon the state of the LNP00200 SOC option in a manner such that the NPE00005 option may not be activated unless the LNP00200 option is active. Similarly, the LNP00200 option may not be deactivated unless the NPE00005 option has been deactivated.

There are only two valid, stable states which option NPE00005 may be in, namely ON and IDLE. The option will support the transition to and from both states.

In the ON state, functionality specific to Thousands Block Number Pooling may be executed, if applicable to the given call scenario.

In the IDLE state, functionality specific to Thousands Block Number Pooling is to be bypassed, regardless of whether the call scenario dictates that this functionality is to be encountered.

The IDLE2ON transition will perform the steps necessary to activate the functionality.

The ON2IDLE transition will perform the steps necessary to deactivate the functionality. Users will be warned of any impacts.

2.2.2 Range marking of NP-Reserved Numbers (avoiding Cause Code 26)

One of the most fundamental components of Number Pooling is the prevention of Cause Code 26 for calls which are LRN routed to a unassigned DN in a pooled block.

ISUP release cause 26 was defined for use in Number Portability and is to be used when a switch recognizes its own LRN in an initial address message (IAM) and the number identified by the Generic Address Parameter (GAP) is not served by the switch. Under the proposals for thousands block number pooling, a block of numbers is pre-ported to a switch for assignment to its subscribers. If the numbers within a pre-ported block which are not yet assigned to a subscriber are not marked in some way on the switch, the switch will react to calls to one of those numbers as a misrouted call to a ported number. The call would then be released with cause code 26 as per the requirements for number portability.

For both code holders and block holders alike, there is a need to uniquely identify these pre-ported numbers. Marking these numbers as “reserved” for

block holders allows the operating company to differentiate between numbers that have been pre-ported onto the switch but are as yet unallocated, and numbers that do not exist on the switch. This differentiation prevents the error of sending back a release Cause Code of 26 -'Misrouted call to a Ported Number' if a call is made to an unused pre-ported number.

This activity implements table NPRESERV, to allow the provisioning of a block of numbers as NP-Reserved. The table allows the provisioning of ranges of DNs, with the beginning and end point of the range represented by a seven digit entry. For example:

6136631 6136631 reserves all numbers from 6136631000 to 6136631999

6136637 6136639 reserves all numbers from 6136637000 to 6136639999

6136636 6136642 reserves all numbers from 6136636000 to 6136642999

Numbers within a range provisioned as reserved using the new table which were unassigned in the system (i.e. BLDN, UNDN, VACT) are treated as reserved numbers. Numbers within such a range which are associated with any other intercept, treatment, feature or line equipment are not considered to be reserved. In particular, DNs which are on PODN intercept are treated as ported out regardless of whether they were part of a reserved range.

Example: Switch A is the code holder, and hence represents 613 622 in the LERG. Switch B is a block holder, who has been assigned the thousands block of DNs of 613 622 1000 to 613 622 1999. In switch B, 613 622 would be opened up in table TOFCNAME as a non-native NPANXX and 6136221 would be provisioned in the new table as reserved.

The number is only interpreted as a reserved number if it is represented as BLDN in table DNINV and it is present in this new table. All other indications of a number's existence on the switch take precedence over this new table. Taking precedence over a number in this table are the existence of:

- a LEN for the number in table DNINV or some other virtual DN type in table DNROUTE, as this represents a number that has been allocated to a subscriber.
- a PODN intercept for the number in table DNROUTE, as this represents a number that has been allocated to a subscriber who has ported out of this switch. This mandates the use of the PODN intercept for ported out numbers, since if assigned the BLDN intercept instead, the number will be treated as a reserved number.

Traver is enhanced to reflect the introduction of table NPRESERV. An example is provided in "Figure 1 Traver displaying table NPRESERV" on page 36.

Figure 1 Traver displaying table NPRESERV

```
traver tr isupitic 9059631088 tcni 6136637322 b
TABLE TRKGRP
ISUPITIC IT 63 ITTD NCRT IC NIL MIDL 613 E800 NSCR 613 000 N Y $
TABLE OFCVAR
AIN_OFFICE_TRIGGRP OFCTRIG
LNP Info: Home LRN received.
LNP Info: Bypassing STDPRTCT and HNPACONT translations.
TABLE NPDIGMAP
TUPLE NOT FOUND
TABLE NPRESERV
6136637 $
LNP Info: Orig Called DN is reserved.
          Overriding LNPM treatment.
TABLE TMTCNTL
ITTRKGRP ( 109)
 . SUBTABLE TREAT
KEY NOT FOUND
DEFAULT OFFTREAT IS USED
TABLE TMTCNTL
OFFTREAT ( 114)
 . SUBTABLE TREAT
 . BLDNY S 120T0

+++ TRAVER: SUCCESSFUL CALL TRACE +++



TREATMENT ROUTES.  TREATMENT IS: BLDN
1 120T0

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

2.2.3 Code Holder option in table TOFCNAME

This feature introduces a new option to table TOFCNAME for the purposes of marking an NPANXX as a Code Holder. This option, termed CODEHLDR, is assigned to NPA-NXXs to indicate that it is LERG assigned even though 1000 blocks may be pooled out to other switches. To assign the CODEHLDR option to a tuple, the NPE00005 SOC option must be enabled.

With the introduction of the CODEHLDR option DN ownership will be determined according to the following table:

Table 5 DN Ownership

TOFCNAME Datafill	NPRESERV Datafill	DN Ownership	Native Status	
			NPE00005 ON	NPE00005 OFF
NPA-NXX in table TOFCNAME with no option	N/A	DN is owned by the switch.	Native	Native
NPA-NXX in table TOFCNAME with CODEHLDR option	DN is within a defined range in table NPRESERV.	DN is owned by the switch.	Native	Native
NPA-NXX in table TOFCNAME with CODEHLDR option	DN is not within a defined range in table NPRESERV.	DN is not owned by the switch.	Pooled-Out	Native
NPA-NXX in table TOFCNAME with NONNATIVE option	DN is within a defined range in table NPRESERV.	DN is owned by the switch.	Pooled-In	Non-Native
NPA-NXX in table TOFCNAME with NONNATIVE option	DN is not within a defined range in table NPRESERV.	DN is not owned by the switch.	Non-Native	Non-Native
NPA-NXX not in table TOFCNAME	N/A	DN is not owned by the switch.	N/A	N/A

2.2.4 LATAXLA translations enhancement for FLRN translations

This activity addresses a restriction initially stipulated in the Functional Description of activity AU3086. That restriction indicated that Equal Access translations done on a portable CalledParty DN should yield the same results as Equal Access translations done on its LRN. This restriction is intended to provide consistent rating for calls to the ported DN, and consistency in routing of calls to a portable DN both before and after the DN ports.

With the increased volume of portability introduced with Number Pooling, and the inclusion of FLRN translations requirements in the T1S1.6 Number

Portability standards, there is an increased need to provide the enforcement of the previously stated restriction.

This activity provides two levels of enhancement, directed at enforcement of the LATAXLA translations result of the FLRN.

The first level of enforcement is provided when the NPE00005 SOC is in the IDLE state. In this case, the operating company may choose to have an information log generated for each call attempt where the pre-query LATAXLA values differ from the post-query LATAXLA values. An example of this log, the LNP305 log, is provided in “2.6 Logs (LG)” on page 42.

The optionality of the LNP305 log is controlled via table LNPOPTS. The tuple LNP_305_LOG defaults to LOG_ON, but may be set to LOG_OFF at the discretion of operating company personnel.

Disabling the LNP305 log is permitted to allow for cases such as the recipient switch is unable to provide additional LRNs for proper routing of the LNP calls. In this case, the operating company for which the LNP305 logs are being produced may be aware of the mismatch in LATAXLA results, but may not be in a position to affect any of the potential translations changes necessary to avoid the mismatch.

The second level of enforcement is provided when SOC NPE00005 is in the ON state. In this case, the pre-query LATAXLA values are enforced upon the post query LATAXLA translations performed on the FLRN. No log is produced in this case to inform of potential mismatches, since the pre-query value is always used, regardless of any data in table LATAXLA which would indicate the contrary.

For both levels of enforcement, the Traver command line is enhanced to allow the operating company personnel to specify the pre-query LATAXLA values for the LNP response traver. An example is provided in “Figure 2 Traver command line example” on page 39. If no LATAXLA values are specified on the Traver command line, INTRA, INTRA, STD is assumed.

It is important to note that for calls which do not encounter the LATAXLA table in pre-query translations, but do encounter the LATAXLA table in post-query translations, the LNP comparison of results is still performed. In this case the pre-query translations LATAXLA values are assumed to be INTRALATA, INTRASTATE, and STD.

Additionally, for calls which encounter LATAXLA in the pre-query translations but do not encounter table LATAXLA in the post-query LATAXLA translations, no LNP comparison is done. This scenario should typically not occur, since the calltype of pre-query translations is enforced

upon post-query translations, and therefore encountering LATAXLA in the pre-query leg of the call would also occur in the post query leg.

Figure 2 Traver command line example

```
NPE00005 SOC ON:

>traver l 4164671001 n cdn na 6136630000 ainres r01 lnpar 4164638621 dd intra
inter non_ea b
Warning: Routing characteristics are present.
         Originator must be able to send in
         characteristics specified.
LNP Info: Call Type set to DD for FLRN translations
......
TABLE LATAXLA
TUPLE NOT FOUND
ASSUMED TO BE DEFAULT INTRALATA, INTRASTATE, STD
LNP Info: LNP Overrides LATAXLA result with Pre-LNP Query values.
LNP Info: LNP LATAXLA value is INTRALATA INTERSTATE NON_EA
```

```
NPE00005 SOC IDLE:

>traver l 4164671001 n cdn na 6136630000 ainres r01 lnpar 4164638621 dd intra
inter non_ea b
Warning: Routing characteristics are present.
         Originator must be able to send in
         characteristics specified.
LNP Info: Call Type set to DD for FLRN translations
......
TABLE LATAXLA
TUPLE NOT FOUND
ASSUMED TO BE DEFAULT INTRALATA, INTRASTATE, STD
LNP Info: FLRN LATAXLA result mismatches LNP Pre-Query values.
LNP Info: LNP305 log will be generated in Call Processing.
```

2.2.5 CLASS (ACB, AR, SLE, SMDI) interworking enhancements for LNP

LNP Interworking with CLASS based features Automatic Call Back (ACB), Automatic Redial (AR), Simplified Message Desk Interface (SMDI), and Selective List Editing (SLE) is enhanced to align with the T1S1.6 Number Portability requirements on CLASS interworking. These requirements indicated the following guidelines for interworking LNP with the aforementioned features:

- The invocation of one of these CLASS based features is not to result in a TCAP query if the requestee DN is resident on the same switch as the requestor.
- LNP should result in a TCAP query being initiated for the invocation of a CLASS feature where the requestee DN is not resident on the same switch as the requestee, and the requestor DN is indicated to be portable at the requestor switch.
- LNP should also result in a TCAP query being initiated for the invocation of a CLASS based feature where the requestee DN is resident on the same

switch as the requestor, and the requestee DN is assigned the 10 digit unconditional trigger (PORT option), and the requestee DN is indicated to be portable at the requestor switch.

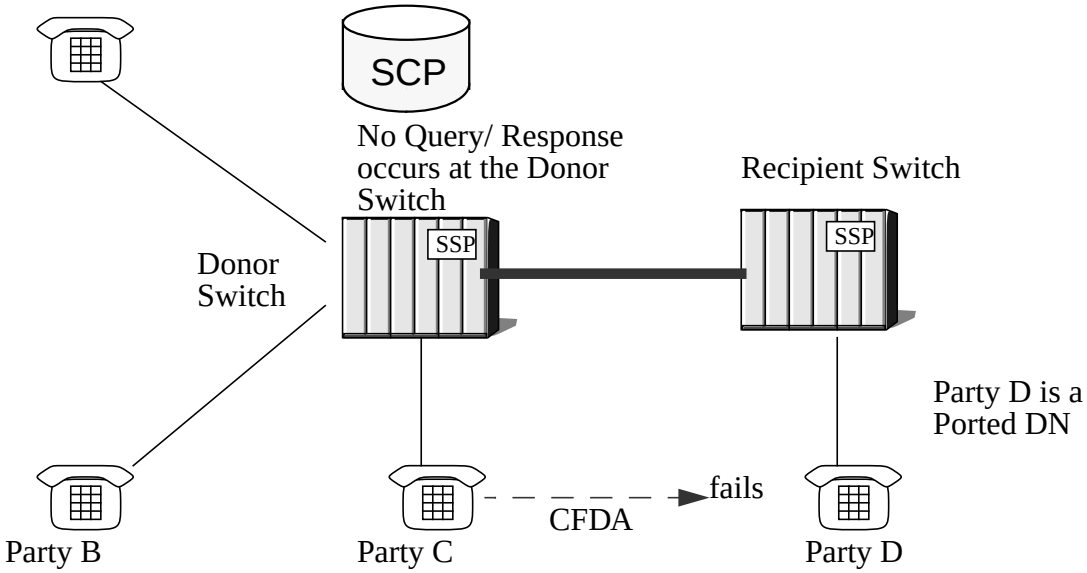
The LNP interworking with the aforementioned CLASS based features is enhanced in the NA013 release to align with the above guidelines, since the volume of CLASS based feature interactions with LNP is expected to dramatically increase with the introduction of Number Pooling.

2.2.6 Three-Way Call Interworking enhancement for LNP

This activity addressed a limitation of the AIN product with intraswitch Three Way Call invocations. Prior to this activity, security restrictions within AIN prevented an active Three Way call from being allowed to encounter an AIN based trigger as the result of a Call Forward, such as Call Forward Don't Answer (CFDA).

In this specific interaction, if an intraswitch Three-Way call is active with one party engaged in the call in the ringing state, and that ringing party encounters a call forward event (e.g. CFDA), the call forward is blocked if an AIN trigger is specified during the call forward translations. In this case, the existing connections are not broken, but the call forward is regressed back to the forwarding base station (i.e. the ringing station continues to ring and no call forward occurs). This is exemplified in "Figure 3 AIN restriction on Call Forward within an active 3WC" on page 40.

Figure 3 AIN restriction on Call Forward within an active 3WC



This activity removes the restriction of forwarding when the LNP trigger is the only AIN based trigger being encountered during the translation of the call

forward call leg when the NPE00005 SOC is in the ON state. This activity does not alter the interaction of any other AIN based trigger when encountered in the above call scenario, and has not effect on the above call scenario if the NPE00005 SOC is IDLE.

2.2.7 LNP Response Processing Realtime Enhancements

To provide some capacity recovery to offset the additional volume of LNP queries associated with Number Pooling, LNP Response processing is simplified by this activity. This simplification alters how LNP response processing deals with either Carrier Parameters and/or Trunk Group Parameters in the Information_Analyzed response to the LNP Query. Prior to this activity, LNP would revert to AIN response processing, and route using the CalledPartyID specified in the Information_Analyzed response, losing knowledge of the original CalledPartyID.

Since allowing the LNP call to revert to AIN processing in this manner would cause unexpected routing results, and since the Trunk Group Parameters and Carrier Parameters are not expected parameters in response to the LNP trigger, the level of realtime required to process an LNP response may be reduced by altering LNP behavior.

In this activity, the behavior of LNP is altered such that if an LNP response contains either Trunk Group or Carrier parameters, the Generic AIN Messaging Environment (GAME) will treat the response as a protocol error, and send the associated call to AINF treatment.

2.3 Hardware requirements

None.

2.4 Limitations and restrictions

- The NPE00005 SOC controls 1000 Block Number Pooling support in NA013 and subsequent releases only.
- The NPE00005 SOC option cannot be activated without LNP00200 first being activated.
- In table TOFCNAME, the new CODEHLDR option can not be present with the NONNATIVE option and cannot be assigned to a NPA-NXX if NE00005 is idle.

2.5 Interactions

The following features will use the 1000 Block Number Pooling:

- Activity **59012182**: Number Pooling Servord Interface.

- Activity **59012192**: Number Pooling Feature Interactions.
- Activity **59012468**: LNP/MBG Interworking.

2.6 Logs (LG)

This activity introduced the new information log, LNP 305. This log indicates a mismatch in the LATAXLA results of the pre-LNP query translations as compared to the post-LNP query translations. The LNP log appears as demonstrated in “Figure 4 LNP305 log example” on page 42.

Figure 4 LNP305 log example

```
COMD1CDN13AX  **  LNP305 JAN01 03:16:01 9000 TBL  LRN LATAXLA marking mismatch
        LRN            6136631088
        Ported DN      4164631111
        Orig LATA NAME LATA1
        LATAXLA markings for Ported DN do not match LRN
```

2.7 Data schema (DS)

2.7.1 New/modified tables

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
TOFCNAME	CHANGED	This activity introduces the new tuple option termed CODEHLDR.

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

Not Applicable.

2.9 Service orders (SO)

Not Applicable.

2.10 Alarms (AL)

2.10.1 New/modified directories

Not Applicable.

2.11 Command interface (CI)

2.11.1 New/modified commands

N/A

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

Not Applicable.

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

Not Applicable.

2.14 Software optionality control (SOC)

This activity will create one additional option in the NPE group of SOC. The new option will appear as shown below:

Table 6 LNP00005 SOC

```
>
SOC:
>select group npe
GROUP:NPE
OPTION    NAME RTU STATE   USAGE   LIMIT    UNITS  LAST_CHG
------    ---- --- -----   -----   -----    -----  --------

NPE00005  1000 Blk Nmbr Pooling   Y  IDLE   - - -   99/05/31
```

Table 2 NPE00005 SOC

SOC option name:	1000 Blk Nmbr Pooling
SOC option title:	1000 Blk Nmbr Pooling
SOC option control type:	State
New SOC option?	Yes
SOC option order code	NPE00005

Option defined in DRU:	CNA
Affected products:	NA100

2.15 Glossary

Term	Description
CODEHLDR	New table TOFCNAME option.
DN	Directory Number
LERG	Local Exchange Routing Guide
LRN	Local Routing Number
NPDB	LNP Database
SOC	SoftwareOptionalityControl
TOFCNAME	Terminating Office Name Table

2.16 References

2: Functional description (FN)

2.1 Feature name

DND/MSB ONP SURVIVAL

2.2 Description

2.2.1 Synopsis

This activity addresses an ongoing effort to eliminate the loss of critical data during a software upgrade. The critical data referred to in this activity is the activation status for feature DND (Do Not Disturb) and MSB (Make Set Busy).

Do Not Disturb (DND) feature is an existing feature which, when activated, restricts all the terminating calls on the subscriber station. Similarly, feature Make Set Busy (MSB) is also an existing feature which, when activated, restricts the incoming calls on the subscriber station.

Currently the activation status data for DND and MSB features does not survive One Night Process (ONP). All the stations where DND is active before the software upgrade, will have the feature de-activated automatically after the software upgrade. All the stations will have to be re-programmed by the TELCO to activate the feature again after the upgrade is done. For MSB, the subscriber has to re-activate the feature after the software upgrade is done. Loss of this critical information is a major concern for the TELCO as well as the subscriber. This activity will make the survival of critical data for feature DND and MSB possible during an ONP. Thus all lines which show DND or MSB active on the old side will have it active on the new side, without the need of doing anything manually. This feature will not, in any way, change the current functionality of feature DND or MSB.

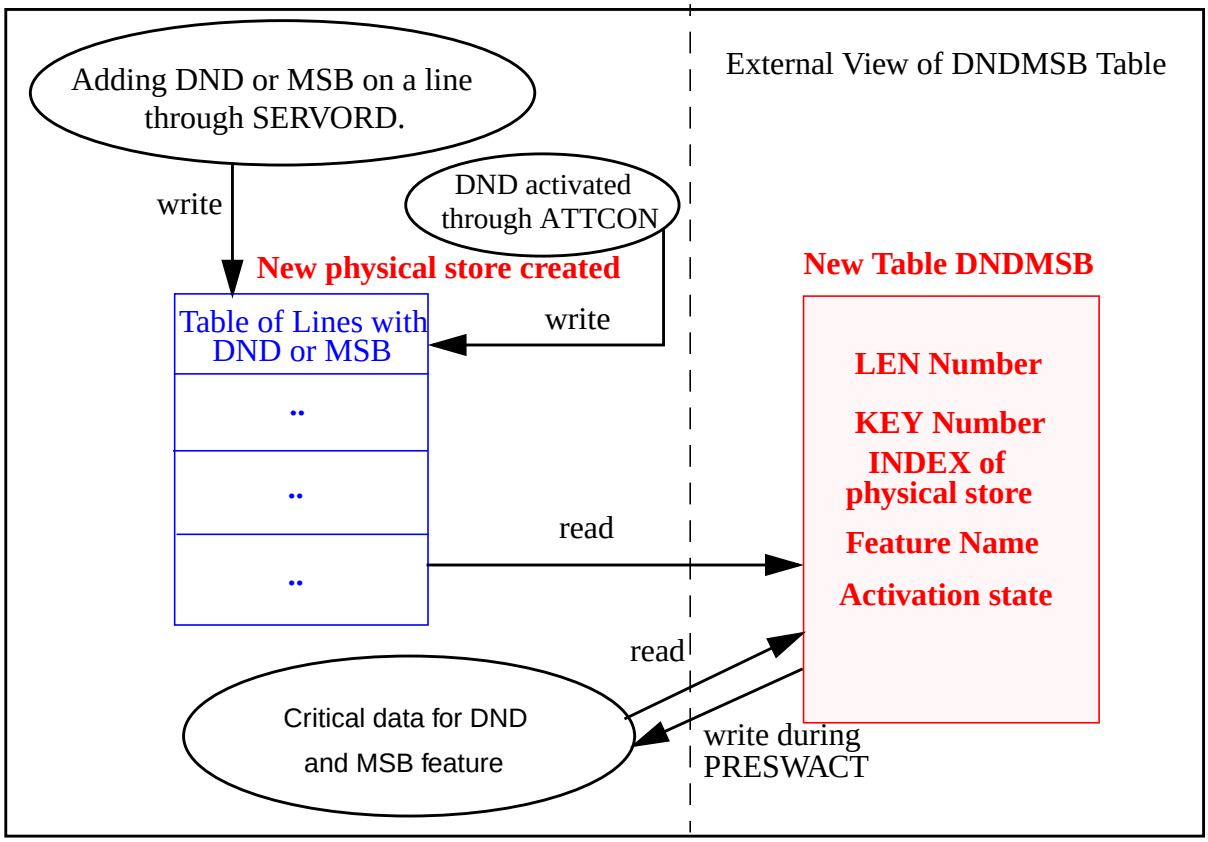
This activity is planned for stream NA013. The preservation of DND and MSB critical data will be realized during the software upgrade when both the dump side and restore side load are NA013 or higher.

2.2.2 Functional Overview

A new table DNDMSB will be created with standard New Table Control interface to access feature DND and MSB critical data. Table DNDMSB enables the feature DND and MSB critical data to be transferred during the PRESWACT phase of a software upgrade. The table will contain the list of all the lines which have DND or MSB activated on them. It will also contain the activation state in case of feature DND. At any given time, this table can be used for viewing all the lines in the switch which have DND or MSB active on them. Add, delete and change tuple commands will, however, not be allowed in this table. Therefore, this table will behave as a read only table for the TELCO personnel. This new table will not affect the existing functionality of feature DND or MSB.

2.2.3 Activity Description

Figure 1 Functional component model for new Table DNDMSB.



A new physical data store is created which will contain the list of all the lines which have DND or MSB feature assigned to them. This physical data store will also contain the list of stations which do not have feature DND assigned to them but DND is activated through the ATTCON. The new Table DNDMSB

will use this physical store to get the list of subscriber stations for which the critical data needs to be transferred to the restore side. This will greatly reduce the time taken to transfer the critical data of feature DND and MSB on the restore side for all the lines in the switch.

Table DNDMSB will have the following basic format:

```
Table: DNDMSB
 TOP
 >lis 2
          DNDMSB_KEY                          STATE
 ------------------------------------------------------------------------
 HOST 00 0 01 10    2     0000      DND     DNDGA
 HOST 00 1 00 09    5     0001      MSB     NONE
```

The Add, delete and change tuple commands will not be allowed in table DNDMSB. This is done to restrict activation/deactivation of feature DND/ MSB or changing the DND activation state on any line via this table.

The table DNDMSB will have the key which includes the LEN number, the KEY number, the FEAT name (DND, MSB or KMSB) and also the index to the item where the LEN no. and other information is stored in new physical store.

The DND or MSB subscriber interface will not be changed in any way and so will not impact DND or MSB subscribers in any way. The telco currently has the QMSB command for feature MSB and DND command for feature DND available to them. These commands will not be affected or changed in any way. SERVORD, OMs and LOGs will also not be affected by this design.

Table DNDMSB will look and interact like all other existing New Table Control tables and so should not provide any difficulties to the telco personnel. Still the manual manipulation of DND/MSB data in Table DNDMSB will not be allowed.

The critical data for DND and MSB resides in line data structure of each line. Table DNDMSB reads the critical data from here during the PRESWACT phase of software upgrade and copies this data in the line data structure on the new side. In this way, during PRESWACT the critical data which is transferred to the new side is as fresh as possible.

2.3 Hardware requirements

None.

2.4 Limitations and restrictions

- Any changes in the dynamic data for features DND and MSB during PRESWACT phase of ONP may not be reflected on the new side.
- The dynamic data for features DND and MSB needs to be transferred during the PRESWACT phase of the ONP. This will increase the time taken to complete the PRESWACT. The actual time taken will depend on the number of subscribers having features DND or MSB active on their sets.
- There will also be a little impact on the real time taken by the Attendant Console to activate or de-activate DND feature on a particular subscriber station. This impact will only be there when the line on which feature DND is activated does not have DND assigned to it. There will be no realtime impact for those lines which have feature DND assigned to them or when group activation is done for feature DND.
- A little real time impact will be there while activating/de-activating feature MSB on any line in case MSB is assigned through Feature Group option.
- If the number of subscriber lines where feature DND or MSB is assigned or activated is 32,767 and more lines are provisioned with any of these features, the critical data for those lines will not be restored on the new side. The data for these 32,767 lines will be safely transferred to the new side. This number will generally be very large compared to the number of lines with feature DND or MSB assigned on any switch, therefore it should not pose any real problem.

2.5 Interactions

None.

2.6 Logs (LG)

None.

2.7 Data schema (DS)

2.7.1 New/modified tables

Table DNDMSB is a new table control table that will provide an external view of the DND and MSB critical data. Please see the data schema (DS section) of activity A59012624 for a detailed description of the DNDMSB table.

Note: Table DNDMSB is transferred dynamically as part of a PRESWACT or LIMITED PRESWACT. It does not get transferred during normal table TABXFR.

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
DNDMSB	NEW	NEW

2.8 Office parameters (OP)

None.

2.9 Service orders (SO)

N/A

2.10 Alarms (AL)

N/A

2.11 Command interface (CI)

N/A

2.12 Operational measurements (OM)

N/A

2.13 AMA/Billing information (AM)

N/A

2.14 Software optionality control (SOC)

N/A

2.15 Glossary

Term	Description
DND	Do Not Disturb
MSB	Make Set Busy
OM	Operational Measurement
ONP	One Night Process

PRESWACT	Pre SWitch ACTivity
SERVORD	Service Order
SWACT	SWitch ACTivity
TABXFR	Table Transfer
Telco	Telephone Operating Company

2.16 References

REF #	Description of Reference
FSD for DND/MSB ONP Survival	FSD of this feature activity.

2: Functional description (FN)

2.1 Feature name

E164 utilities - Phase II (Actid 59012642)

2.2 Description

This feature provides additional E.164 support in MMP13 release as part of E.164 compliance. As Germany is the primary E.164 market, the functionalities supported are driven by Germany.

As part of this release, the following will be supported:

- Determination of the type of DN (National, Local)
- Flexible digit collection on BRI originations.

2.2.1 Dialling pattern

In the present DMS100 code, to determine whether the DN is local or national, either length based checks or real time intensive procedures are used.

If the DN length is less than or equal to 7, the DN is considered local to the switch. If the DN length is greater than or equal to 10, the DN is considered as national. In the E.164 scenario of variable length DNs, such length based checks are not valid.

Apart from these length based checks, there are certain procedures which are used to determine if the dialled DN is local or national. But these procedures are real time intensive. The procedures provided under dialling pattern will reduce the real time impact. The length based checks and the real time intensive procedures should be replaced by the procedures being provided under the dialling pattern section of this feature.

As such the utilities provided under the dialling pattern section of the feature will not be having a direct customer impact. But these utilities provide the E.164 compatibility and also reduces the real-time impact of existing procedures for determining the type of DN.

2.2.2 Flexible digit collection on BRI originations

Flexible digit analysis (DAS) provides control on the number of digits that are reported from the XPM to the CM, on a per message basis. DAS is enabled through provisioning of tables DGHEAD and DGCODE. An index into table DGHEAD can be provided from table CUSTHEAD. The IDIGCOL field in table CUSTHEAD specifies the name (DGNAME) assigned to the block of data in table DGHEAD.

At present, the functionality is supported on IBN originations. The feature provides the DAS support for BRI originations also.

Table DGCODE contains the digit analysis data applicable to certain types of calls. The type of digit analysis carried out is determined by the:

- digit analysis index name (DGNAME) for the originating line or trunk
- first one or two digits dialed.

If table DGCODE does not contain digit analysis data applicable to the call then the default values specified in table DGHEAD apply.

For DAS to be activated following datafill is required.

In table OFCOPT, FLEXIBLE_DIGIT_ANALYSIS should be set to Y.

The DGHEAD and DGCODE datafill for doing flexible digit analysis is shown below as an example.

For dialled digits 3337000, the datafill below will cause the digits to be reported to the CC in the manner shown here.

```
>table custhead
STEPMDCB STEPXLA5  AUTO  BVILINE

>table dghead
BVILINE 4 4 18 N  NONE LINE

>table dgcode
BVILINE 33 33 CONT BVILINE Y  NONE
BVILINE 37 37 CONT BVILINE Y  NONE
```

```
BVILINE 00 00 CONT BVILINE Y  NONE
```

```
Correspondingly the digits are reported to CC in the manner
shown below.
```

Digits Message 1: 33
Digits Message 2: 37
Digits Message 3: 00
Digits Message 4: 0

Flexible digit analysis is required for all inter-exchange signalling systems to collect digits before routing and overlap outpulsing starts. This is to avoid the scenario of network being impacted too much by single digit address messages between local, transit and international exchanges and to determine the route to the destination.

Example below shows the dial plan for Germany :-

Type of call	**Starting digits dialled**	**Minimum digits to be dialled before short timing is started and digts are reported (inclusive of access digits dialled)**
Carrier select/ Special services	0 + 1 + Any digit(s) (01 + D)	5
National Calls	0 + 5 digts (0 + N)	6
International calls (ODP & non - North America)	0 + 0 + 6 digits (00 + N)	8
International calls (fixed dial plan to North America)	0 + 0 + 1 + 10 digit number (001 + N)	13
International Operator	0010	4
Local Calls	X	3

where "N" = 2 to 9;
"X" = 1 to 9;
“D” = 0 to 9

The corresponding datafill for table DGHEAD/DGCODE could be :-

Table DGHEAD :

```
DGNAME INITTMO IDGTTMO NUMDGTS STOPDGT DTONE DGTYPE
-------------------------------------------------
GEROVLP  15      10      18        C   NONE   BOTH
OVLP1    15      10      18        C   NONE   BOTH
OVLP2    15      10      18        C   NONE   BOTH
```

Table DGCODE :

```
DGCLKEY                  DATA
-------------------------------------
GEROVLP  1  9   RAN   2  12  5  C
GEROVLP 02 09   RAN   4  13  5  C
GEROVLP 01 01   CONT  OVLP2  Y  NONE
GEROVLP 00 00   CONT  OVLP1  N  NONE
OVLP1   10 10   REP
OVLP1   12 19   COLL  9  C
OVLP1    2  9   RAN   5  14  5  C
OVLP2    0  9   CONT  OVLP2  Y  NONE
```

Considering a case where the Digit Analysis Scheme being followed is represented by the DGNAME “GEROVLP”, the digits are reported to CC in the manner described below :-

Wait a maximum of 15 seconds for the first digit to be dialled. If the first digit(s) dialled is not one of those datafilled in DGCODE for digit analysis scheme - GEROVLP, then just collect a total of 18 digits. The maximum time to wait between digits is 10 seconds. (The values are from table DGHEAD).

If the first digit dialled is any of the digits ‘1’ to ‘9’, then collect at least 2 more digits and at most 12 more digits. (Corresponds to Local Call) After 2 more digits have been collected (total of 3), change the maximum time to wait between digits from 10 seconds (as given in DGHEAD table) to 5 seconds.

If the first two digits dialled are any of ‘02’ to ‘09’, then collect at least 4 more digits and at most 13 more digits. (Corresponds to National Call)

If the first two digits dialled are ‘01’ then these 2 digits are reported to CC and the digit analysis continues with new scheme represented by OVLP2. According to the datafill from next digit onwards all the digits recieved are reported each time one by one. (Corresponds to the case of Carrier select and Special services).

If the first two digits dialled re ‘00’, use the instance OVLP1 see what to do next. Also these 2 digits are not reported.

If the next two digits recieved are ‘10’ they are reported immediatedly and no more digits are collected. (Corresponds to International Operator)

Or else if next two digits are between ‘12’ and ‘19’ then a total of 9 more digits are collected and reported. (Corresponds to a North-American call)

If the next digit happens to be any number between ‘2’ and ‘9’ then collect at least 5 more digits and atmost 14 digits. (Corresponds to non-North American, International Call).

Following are some advantages of using flexible digit analysis :

Flexible digit analysis improves digit collection on Centrex PCM30 line group controllers (PLGC). It provides the PCM30 digital trunk controller (PDTC) with more flexible analysis of digits for overlap sending in the user-to-network direction.

Also flexible digit analysis helps in reducing the post-dial delay involved.

2.3 Hardware requirements

There are no specific hardware requirements.

2.4 Limitations and restrictions

- The procedures provided under dialling pattern are having limitations in certain cases where the DN exists as both national and local on the same switch. Example of such an instance is (613)7234401, (72)34401 where in the number 7234401 is both local and national.

2.5 Interactions

Not Applicable

2.6 Logs (LG)

Not Applicable

2.7 Data schema (DS)

Not Applicable

2.8 Office parameters (OP)

Not Applicable

2.9 Service orders (SO)

Not Applicable

2.10 Alarms (AL)

Not Applicable

2.11 Command interface (CI)

Not Applicable

2.12 Operational measurements (OM)

Not Applicable

2.13 AMA/Billing information (AM)

Not Applicable

2.14 Software optionality control (SOC)

Not Applicable

2.15 Glossary

Term	Description
BRI	Basic Rate Interface
CC	Central Control
CM	Control Module
DAS	Digit Analysis

2.16 References

DMSe164.AA05 - DMS-100 Family Open Numbering Plan FSD

ITU E.164 recommendations

2: Functional description (FN)

2.1 Feature name

Who’s Calling (WC)

2.1.1 Synopsis and scope

The Who’s Calling feature recognizes “private” or “unavailable” numbers and responds with an application that requests, records, and delivers the caller’s name.

The caller’s name is recorded by an offboard platform (Service Node) connected to DMS via network. Typically, the SN is responsible for receiving the intercepted call, saving a name or message and presenting that name or message to the Who’s Calling subscriber. The subscriber is then given a number of different options to handle the intercepted call. The following are the dispositions that can be offered by the SN:

- accept the call
- refuse a sales call
- reject the call (or hang up)
- send the call to voice mail (if the subscriber also subscribes to voice mail)

The RES (1FR, 1MR) Line Class Codes (LCC) will be supported by Who’s calling.

2.2 Feature overview

2.2.1 Terminology

WC Subscriber	The end-user subscribing to WC service
Caller	The calling party who is calling a WC subscriber and whose number is private or unavailable
SN	Service Node. Offboard platform which, in the context of WC, records a name or message and presents it to the subscriber
Private Number	A call with its DN blocked for delivery
Unavailable Number	A call with its DN not available for delivery
Subscriber's Acknowledgement (ACK)	After the SN presents the recorded name to the WC subscriber, the input from the subscriber indicating that s/he's willing to continue with the screening of the incoming private/unavailable call
WC Timer T1	Timer value used to specify the maximum delay between the DMS begins to alert the SN and SN accepts the call by answering
WC Timer T2	Timer value used to specify the maximum delay of recording the caller's name for SN
WC Timer T3	Timer value used to specify the maximum delay between the DMS begins to alert the WC subscriber and the subscriber answers
WC Timer T4	Timer value used to specify the maximum delay for the SN to wait for the WC subscriber's acknowledgement
WC Timer T5	Timer value used to specify the maximum delay for the SN to wait for the WC subscriber to give a valid screening disposition

2.2.2 WC service overview

WC feature screens the incoming call and intercepts private/unavailable call to the SN. The SN takes the call and requests the caller to record his/her name or a short message, then SN presents the recorded message to WC subscriber. The subscriber is then given a number of different options to handle the intercepted call. The DMS monitors a WC subscriber's line and is responsible for intercepting such a call and sending it to the SN.

The SN, on the other hand, is responsible for receiving the initial call, saving a name or message and presenting that name or message to the WC subscriber.

The SN also needs to apply all the necessary announcements for prompting purposes.

The WC feature supports both direct functional PRI connection to the SN and tandem ISUP/SS7 connection towards the SN.

The WC feature:

- is offered as a new line option, or as a service through the Alternate Service Provider (ASP) line option to specify a service provider to provide the offboard platform functionality.
- uses table SPINFO to store its parameters on a per service provider basis.
- uses an office parameter to control enabling or disabling WC feature office-wide.
- increments OMs on service specific events to monitor the WC usage.
- generates logs in error and exception conditions.
- is enabled through Software Optionality Control (SOC).
- supports outgoing calls to ISUP and PRI.

2.2.3 WC network overview

The following figures provide the two most common network configurations to be used with WC.

The DMS offering the WC functionality is referred to as the WC serving office. The end-office connected to the SN is referred to as the SN host office or terminating office.

Figure 1 depicts the network configuration used when Primary Rate Interface (PRI) is used from the WC serving office to connect directly to the *SN*. In this case, the call between the *SN* and WC subscriber is intra-office call.

Figure 2 depicts a typical WC network configuration. The WC serving office is connected to the SN host office through Signaling System NO. 7 (SS7). The WC functionality resides only in the WC serving switch. The terminating switch is connected to the SN using PRI.

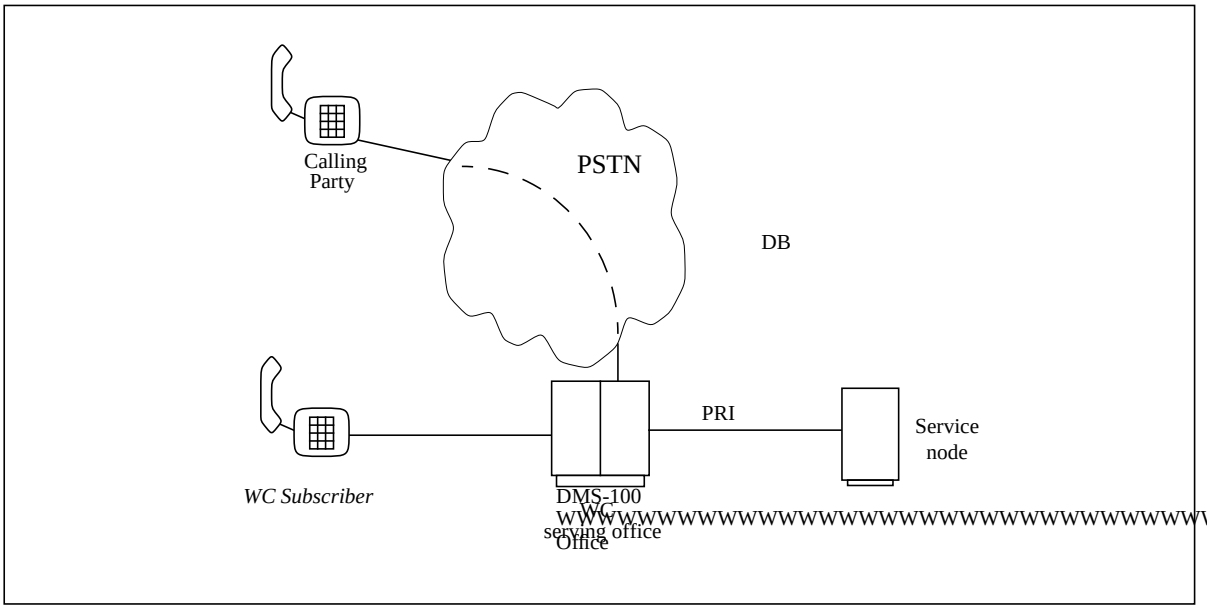


Figure 1 WC Network Overview - PRI connections to the *SN*

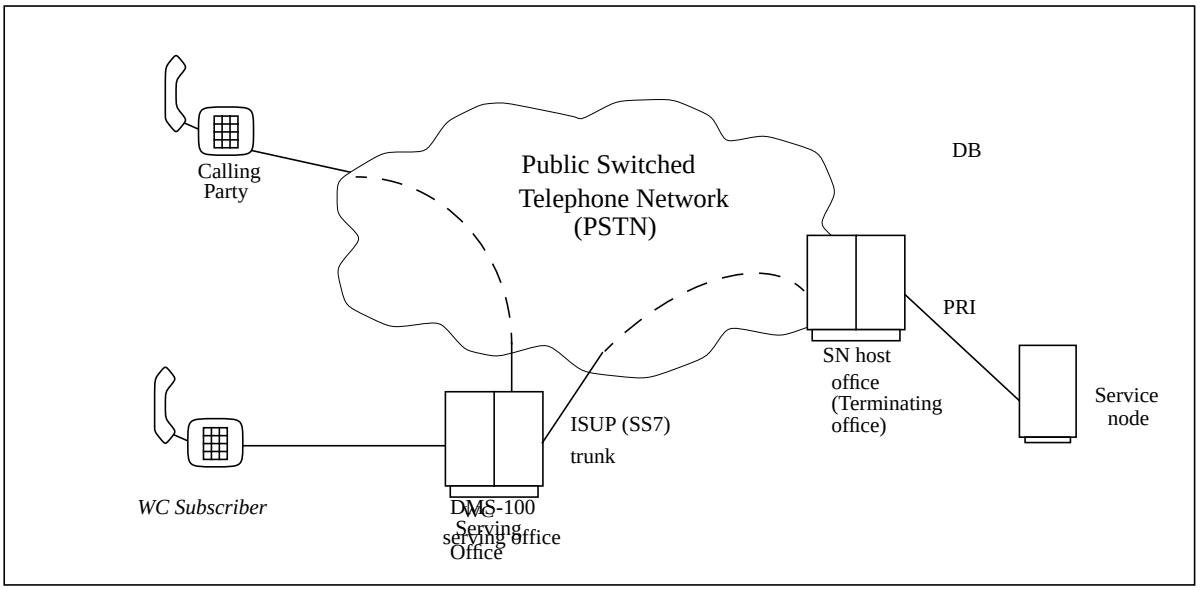


Figure 2 WC Network Overview - SS7 connection to *SN* host office

2.2.4 Agents support

The WC feature is supported on Residential Enhanced Services (RES) 1FR/ 1MR subscriber lines.

2.3 Feature description

This section provides a functional description of the WC feature which includes:

- feature operation diagram
- feature operation description
- feature control
- screening
- timing and tolerances
- termination conditions and error handling

2.3.1 Feature operation diagram

The feature flow diagrams provide a description of the overall logic of the feature. In the diagram, it is assumed that user B is calling user A.

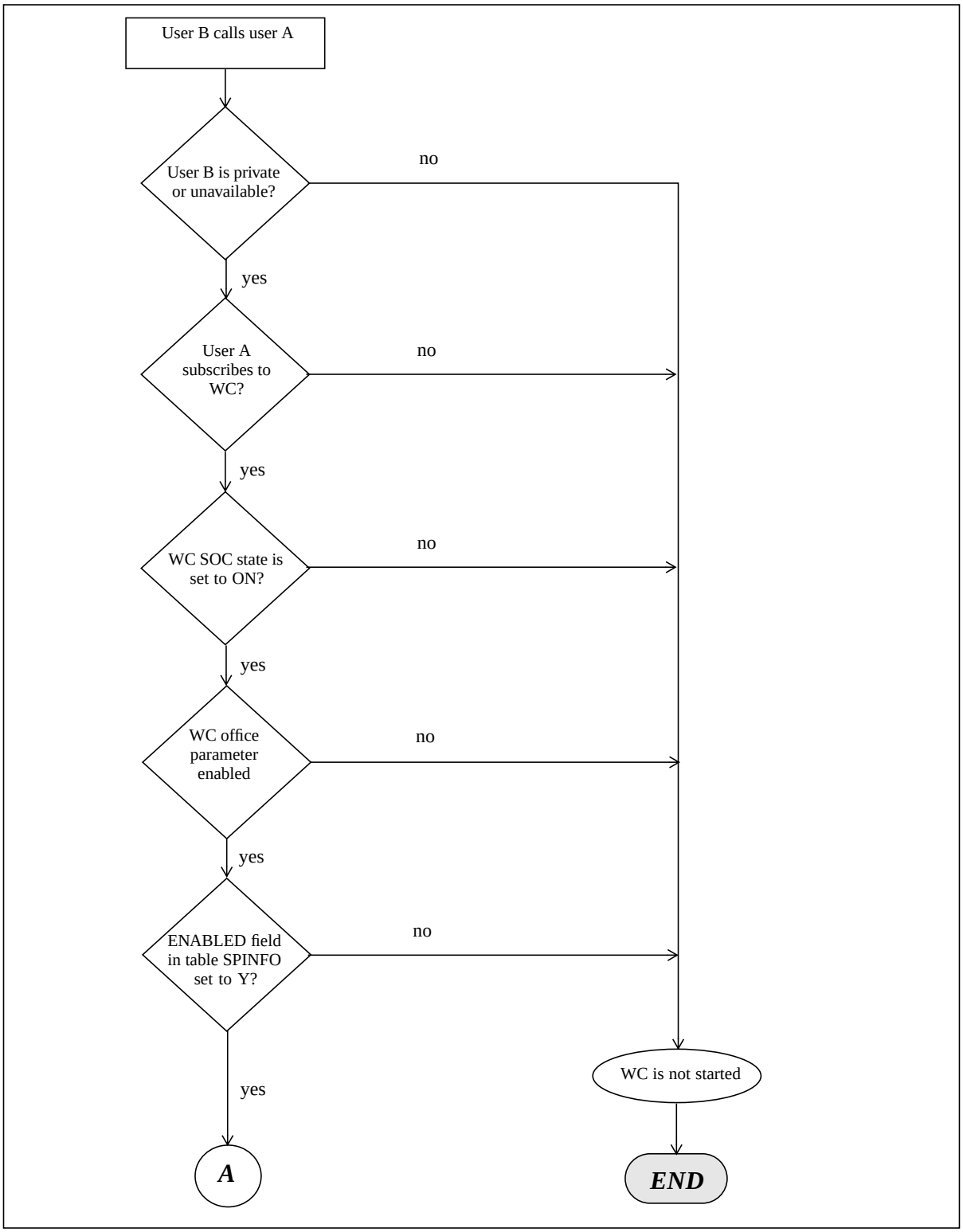


Figure 3 WC Feature Operation Diagram

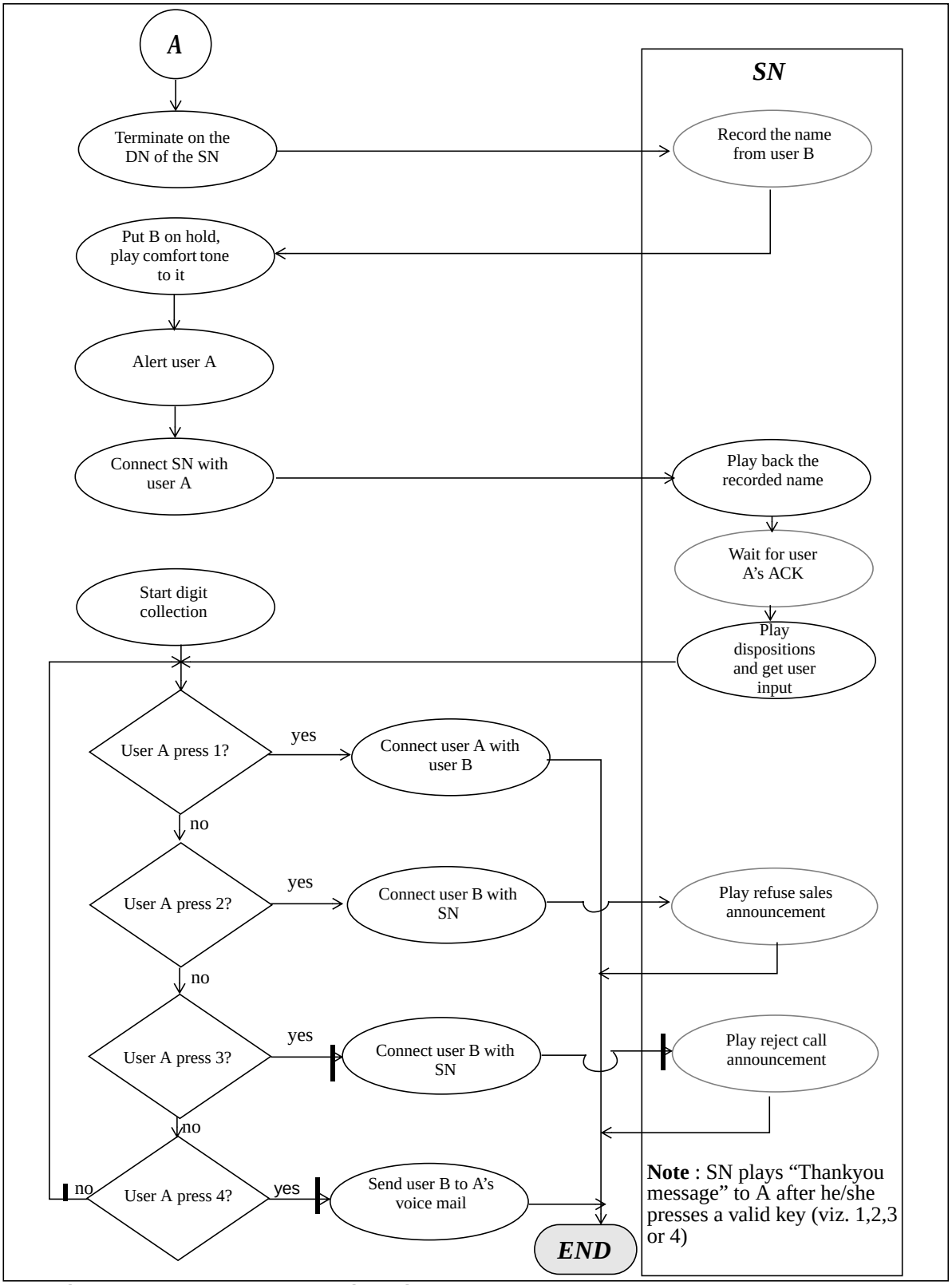


Figure 4 WC Feature Operation Diagram

2.3.2 Feature Operation Description

The WC feature is activated when a private/unavailable call attempts to terminate on a WC subscriber. The WC functionality will intercept the incoming call and send it to the SN. The SN will record the name of the caller and present it to the subscriber. The subscriber then will be given some options to handle this incoming call.

The following two scenarios depict the call flow for both network configurations described in section “WC network overview” on page 79.

Figure 5 provides a typical call flow of the WC feature when a PRI connection is used to the SN. In the diagram, when a call to SN being set up or being torn down, some important Q.931 messages between the DMS and SN are shown.

In this figure, some in band tone messages are also shown. For example, after an incoming call is intercepted and connected to SN, a recording start tone is generated by SN, this indicates the time for the DMS to start billing; after SN finishes recording, it generates a recording done tone, indicating the end of the recording. The DMS then puts the caller on hold and begins to alert the WC subscriber. Upon the subscriber answering the call, the DMS generates an ACK tone to the SN, this informs the SN to start its announcements and playback of the recorded name/short message.

Upon the WC subscriber accepting the call, WC releases the call leg to the SN and connects the caller with the subscriber, WC then terminates. If the subscriber chooses not to accept the call, they have the following options:

1. Reject / Refuse a Sales call by pressing 2.

2. Reject the call by pressing 3 or hanging up.

3. Send the call to Voice mail by pressing 4, if they subscribe to Voice mail.

Figure 6 provides a typical call flow of the WC feature when an SS7 connection is used to reach the office serving the SN. As in the previous scenario, similar in band tones are also used between the DMS and the SN.

Figure 5 Typical WC call flow - PRI connection to the SN

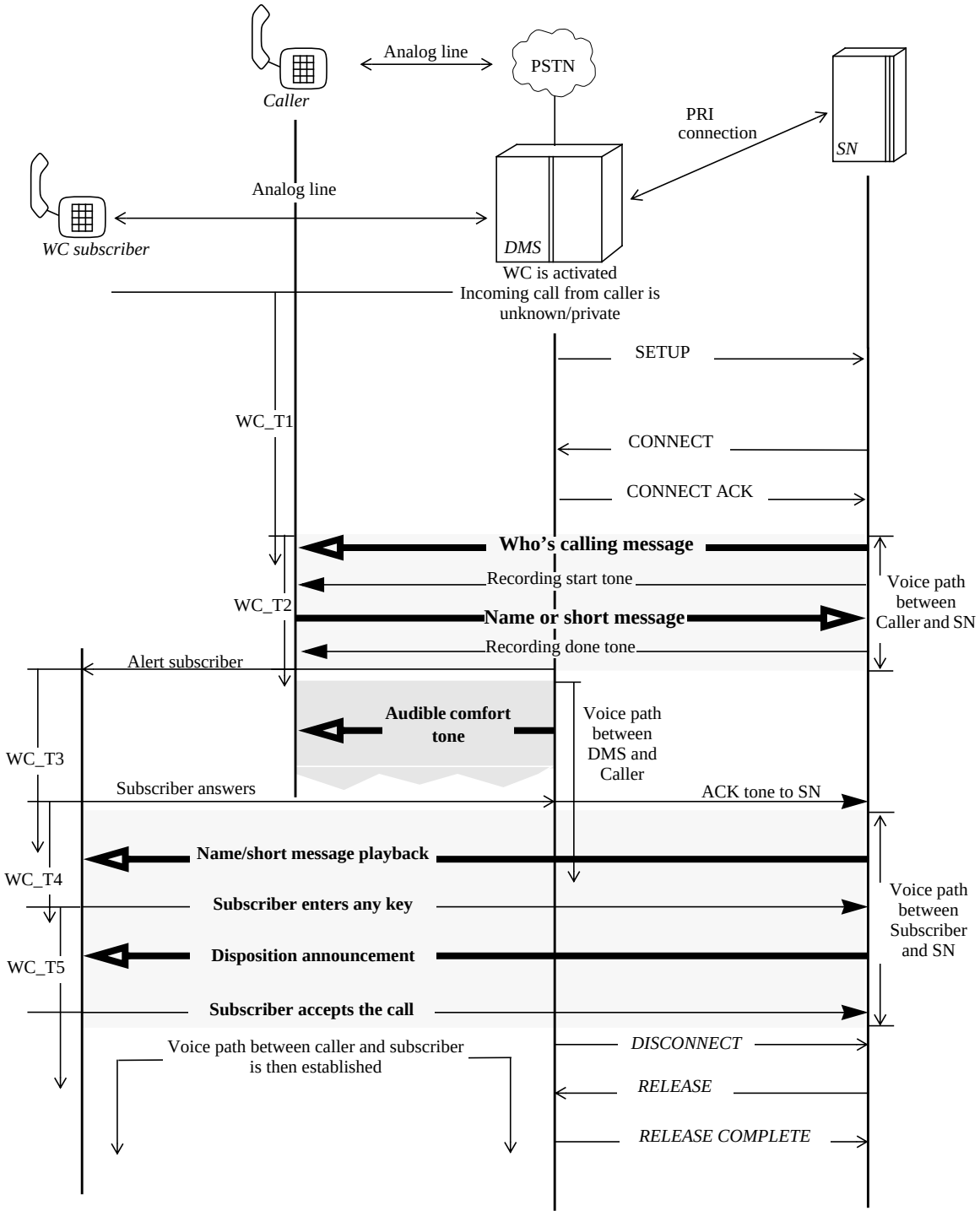
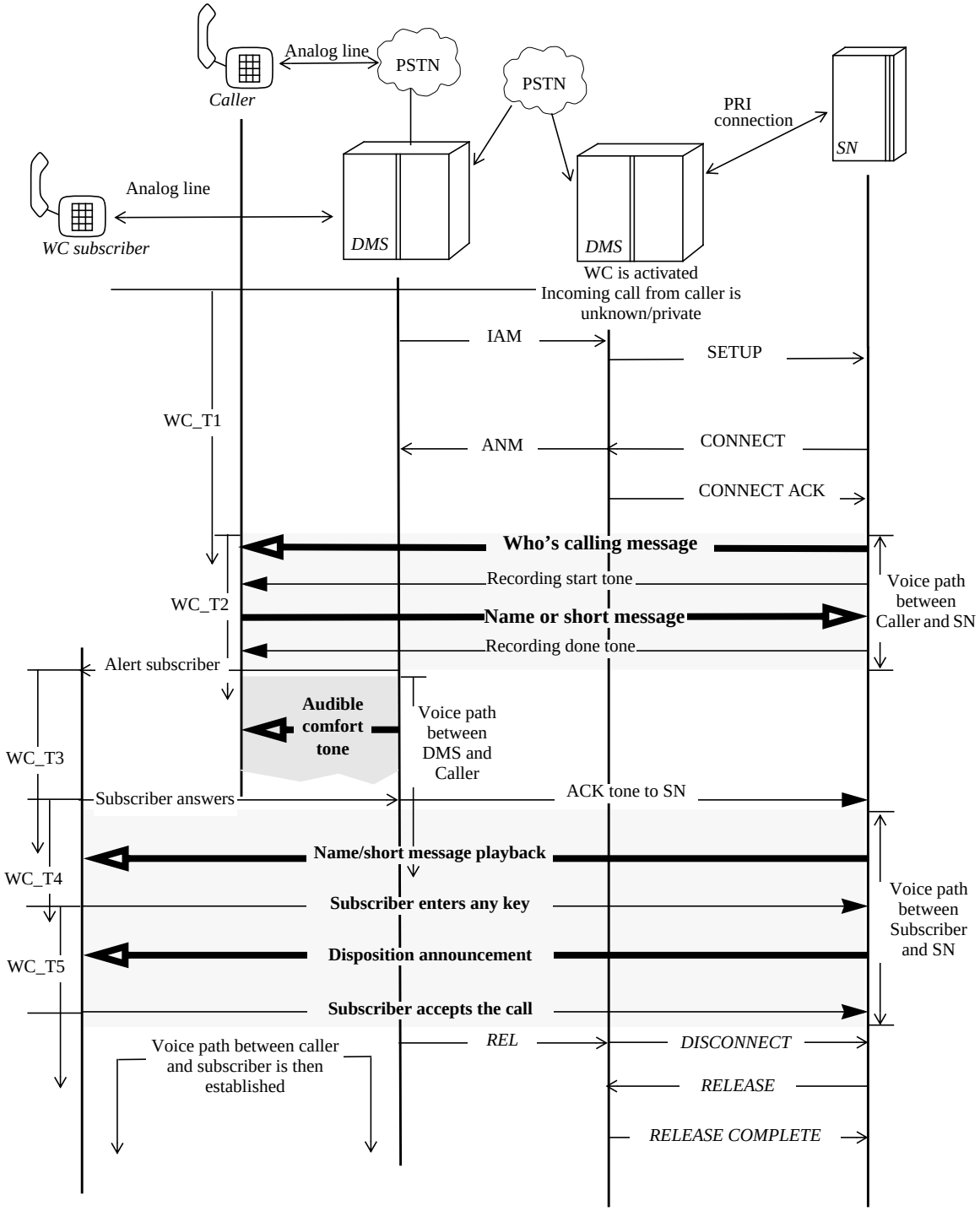


Figure 6 Typical WC call flow - SS7 connection to the SN



2.3.3 Feature control

There are Three different levels of WC feature control:

- Operating company control
- Nortel control
- Provisioning

Each of these areas are described in detail in the following sections.

2.3.3.1 Operating company control

Most information specific to WC is prescribed on a per service provider basis in table SPINFO. This table is modified to accommodate the WC feature.

A tuple in table SPINFO must be datafilled in order to control

- the availability of the WC feature (field ENABLED)
- the carrier used to route the call to the SN (field CARRIER)
- the billing (fields BILLING and BILLINGDN)
- the routing Service Node DN (fields SNDN1 and SNDN2)
- the timer values that limit the connection time to the SN (fields WCT1, WCT2 and WCT4).

Each tuple in table SPINFO represents a service provider. The operating company should define its own tuple in table SPINFO. To be used when WC is not assigned through the ASP line option, the tuple's PROVNAME field should be set to PRIMARY.

There's also an office parameter in table OFCVAR, which provides the capability to enable or disable WC feature for the entire office.

2.3.3.1.1 Availability Control

The field ENABLED allows the operating company to control the availability of the WC functionality on a per service provider basis. By setting this field to "Y", the WC service will be offered to all subscribers using the correspondent service provider. Consequently, a value of "N" will disable the WC functionality for any lines subscribed to this service provider.

2.3.3.1.2 Carrier Control

The field CARRIER is used by operating company to specify the carrier that will be used to route the call to the SN.

Whenever a carrier is specified in SPINFO, the applicable Carrier Identification Code (CIC) for the call to the SN is replaced with the one in SPINFO. If no carrier was applicable to the call to the SN, the carrier in SPINFO is used also.

When there is no carrier datafilled in SPINFO, the applicable CIC for the call to the SN is removed. The call then proceeds with no carrier and may or may not complete based on the translations datafill. In particular, LATAXLA datafill (privilege, corridor, non-equal access or standard calls) will impact the call completion depending if the call is intra-lata or inter-lata. Take note that the WC functionality will not explicitly block inter-lata calls when no carrier is specified in SPINFO.

2.3.3.1.3 Billing Control

The BILLING and BILLINGDN fields allow the operating company to select how the call to the SN will be billed. The BILLING field controls whether a billing record (local and toll) will be generated. A value of “Y” will generate billing records while a value of “N” will not generate any billing. The BILLINGDN field is used to specify the DN against which the toll charges are billed for the call to the SN (if the BILLING field is set to “Y”). WC does not generate any new billing records, if the BILLING field is set to “Y” only the applicable billing records will be generated.

2.3.3.1.4 Routing Control

The SNDN1 and SNDN2 fields allow the operating company to specify the DNs which will be used to reach the SN platform. If the WC subscriber doesn’t subscribe to voicemail, SNDN1 will be used to reach the SN; Otherwise SNDN2 will be used for those subscribers who have voicemail on their lines. The difference on the SN side is, if the former DN is used, the announcements provided to the WC subscriber do not have the announcement for voicemail.

2.3.3.1.5 Timing considerations and Timer Control

The field WCT1 is used by the operating company to specify the maximum delay before receiving the ANSWER message from the SN. The WC timer T1 is stopped upon reception of the ANSWER message from the SN. This value can also be used for WC timer T3. Please see Figure 6 for detailed information.

The field WCT2 is used by the operating company to specify the maximum delay for the SN to record the caller’s name. It’s the value used by WC timer T2. Please see Figure 6 for detailed information.

The field WCT4 is used by the operating company to specify the maximum delay for the SN to wait for the WC subscriber’s ACK. This value can also be used for WC Timer T5. Please see Figure 6 for detailed information.

2.3.3.2 Nortel Control

Nortel control over the operating company feature deployment is provided through Software Optionality Control (SOC).

The SOC system allows the operating company to turn the WC functionality ON and OFF. The initial state is IDLE (or OFF).

2.3.3.3 Provisioning

2.3.3.3.1 WC line option

The WC feature introduces one new line option, WC. The WC line option uses the WC specific information datafilled in table SPINFO under the PRIMARY tuple (For more information, please see “Operating company control” on page 87).

The WC option can be assigned to RES (1FR/1MR) end-users on a per-line basis through SERVORD.

The WC line option is stored in table IBNLINES.

2.3.3.3.2 Assigning WC through the ASP line option

The WC feature can also be assigned to an end-user through the ASP line option when the end-user wants to use an alternate service provider.

Although the ASP line option can be assigned to multiple Line Class Codes (LCCs), the WC service through ASP is offered to RES (1FR/1MR) lines only.

The ASP line option requires to datafill the fields: *Provider* and *Service*. When assigning WC, the *Service* field is always WC. The *Provider* field corresponds to the identifier of the service provider, as provisioned in table SPINFO (see “Operating company control” on page 87 for more details).

The ASP line option is stored in table IBNFEAT.

2.3.3.3.3 Invalid assignments

Some specific invalid option assignments through SERVORD will generate error messages and can prevent the action from being completed. For a list of the incompatible features, Please refer to Section “2.4 Feature interactions” on page 93.

Attempting to add the WC line option while the WC service is already assigned to the line through ASP will display an error message and the WC line option will not be assigned to the line. The same is true if the WC line

option is already assigned to a line and an attempt is made to assign the WC service through ASP.

2.3.4 Screening

The WC feature performs screening on the SN DNs during table control and runtime. It also performs runtime screening of the calling DN.

Table 1 shows the SN DN types that are screened out. A “Y” in the table means that the screening is performed on the DN and that the DN will be rejected. For the run time case rejection of the DN, a log may be generated.

Table 1 WC SN DNs screened out

DN types	Table Control	Run time
Operator assisted calls	N	Y
SN DNs containing ‘*’, ‘#’, a, b, c, d or e	Y	N
800 numbers[a]	N	Y
FGB (1-950-WXXX & 950-WXXX)[a]	N	Y
DNs less than 4 or more than 30 digits	Y	N
DNs that find no valid route[a]	N	Y

a. A WHC600 log will be generated

When WC feature performs the screening of the calling DN, it basically checks the Presentation Restricted Indicator of the incoming call, if the DN is blocked (private) or unavailable, the feature will have a chance to be activated on the line.

2.3.5 Timing and Tolerances

The WC feature uses five timers to limit the delays in call processing. More details of the timers are given in the following sections. Please refer to “Figure 6 Typical WC call flow - SS7 connection to the SN” on page 86.

2.3.5.1 WC Timer T1

The T1 timer is to specify the delay between the setup of the call to the SN and the reception of the ANSWER message from the SN. The purpose of this timer is to make sure the connection to the SN is not maintained for an excessive amount of time in a situation where the SN is not responding.

If the ANSWER message is not received from the SN before T1 expires, at this point, the WC feature generates an information log (WHC601) and pegs the WCT1 register in the WC OM group. A RELEASE message is sent to release the connection to the SN. The WC feature terminates.

2.3.5.2 WC Timer T2

The T2 timer is to specify the maximum duration for the SN to record the caller's name. This time-out represents the delay between the reception of the ANSWER message and the recording done tone from the SN. The purpose of this timer is to make sure that the incoming call will not be held for an excessive amount of time in a situation where the SN is not sending out the recording done tone.

If the recording done tone is not received from the SN before T2 expires, at this point, the WC feature generates an information log (WHC601) and pegs the WCT2 register in the WC OM group. Since this implies an abnormal situation of SN, the feature can not be carried on anymore, a RELEASE message is sent to release the connection to the SN. The WC feature then terminates.

2.3.5.3 WC Timer T3

The T3 timer is to specify the duration allowed for the WC feature to alert the subscriber. The purpose of this timer is to make sure the caller will be notified if the subscriber is unavailable to take the call.

If the subscriber does not answer the call before T3 expires, at this point, the WC feature pegs the WCT3 register in the WC OM group. Then WC feature notifies the SN to play the user unavailable announcement to the waiting calling party before the WC feature terminates.

2.3.5.4 WC Timer T4

The T4 timer is to specify the maximum duration for the SN to play back the recorded name and get the ACK from the subscriber. The purpose of this timer is try to provide a way for the WC feature to distinguish between a human being and an answering machine answering the call.

If there's no ACK from the subscriber before T4 expires, the WC feature takes it as an indication of an answering machine or a voicemail system picking up the call, so that it lets the call go through, at the same time, the WC feature pegs the WCT4 register in the WC OM group.

2.3.5.5 WC Timer T5

The T5 timer is to specify the duration allowed for the WC feature to collect the valid disposition from the subscriber.

If the subscriber doesn't provide a valid input before T5 expires, the WC feature takes it as an indication of refusal, so that it informs the SN to play the user unavailable announcement to the waiting calling party before the WC feature terminates.

2.3.6 Termination conditions and error handling

2.3.6.1 Feature termination

Table 2 describes the normal termination conditions of the WC feature:

Table 2 WC normal termination conditions

Event	Context	Result
Calling party hangs up	WC feature has started and either: - connecting to the SN - connected with the SN to recording the short name message - SN connecting with the subscriber	WC feature terminates, calls to SN cleared up if applicable.
WC timer T3 expires	WC feature has started and the DMS is alerting the subscriber in order to present the recorded name message.	WC feature connects the calling party with the SN for the subscriber unavailable message, then it terminates.
WC subscriber hangs up	WC feature has started and is waiting for the subscriber's acknowledgement to continue with the screening of the incoming call.	WC feature connects the calling party with the SN for the subscriber unavailable message, then it terminates.
	WC feature has started and is waiting for the subscriber's valid input to screen the call.	
WC timer T4 expires	WC feature has started and is waiting for the subscriber's acknowledgement to continue with the screening of the incoming call.	WC feature connects the calling party with the subscriber, then it terminates.
WC subscriber presses a valid key	WC feature has started and is waiting for the subscriber's valid input to screen the call.	According to the subscriber's input WC feature either: - connects the calling party with the subscriber - connects the calling party with the SN to play the refuse sales call message - connects the calling party with the SN to play reject the call message. - connects the calling party with the subscriber's voice mail
WC timer T5 expires	WC feature has started and is waiting for the subscriber's valid input to screen the call.	WC feature connects the calling party with the SN for the subscriber unavailable message, then it terminates.

2.3.6.2 Error handling

Table 3 depicts the error scenarios and which can occur while the WC feature is active and the resulting behavior

:

Table 3 Error scenarios while WC feature is active

Scenario	Result
WC SN routing DN is unreachable (the call to the SN is routed to a treatment or to an unsupported agent)	- WC generates an error log (WHC600). - WC pegs the WCDNERR register in the WC OM group. - Connects the Calling and Called party. - WC feature terminates.
WC SN doesn't answer the call. (WC timer T1 expires)	- WC generates an error log (WHC601). - WC pegs the WCT1 register in the WC OM group. - Connects the Calling and Called party - WC feature terminates.
The SN failed to notify the DMS that it has taken the recording name. (WC timer T2 expires)	- WC pegs the WCT2 register in the WC OM group. - Connects the Calling and Called party - WC feature terminates.

2.4 Feature interactions

WC feature doesn't support the following features:

- Hunt Group
- Multiple Appearance Directory Number (MADN)
- Simultaneous Ringing (SIMRING)
- Dual Line Call Management (DLCM)
- Secondary DN (SDN) and Enhanced Secondary DN (ESDN)
- Advanced Intelligent Network (AIN)[1]
- Selective Call Acceptance (SCA)
- Anonymous Call Rejection (ACRJ)

The compatible feature interactions are detailed in the following sections.

[1] Who's Calling feature subscribers can subscribe to any AIN originating triggers. However, Who's Calling feature does not interact with AIN terminating triggers. As such, the Who's Calling subscriber must not be subscribed to any AIN terminating triggers.

2.4.1 Automatic Recall (AR)

Automatic Recall allows a user to recall the last station that called and be queued against that station if it is busy.

A WC subscriber can't use AR feature to recall the private/unavailable calling station, even if he/she previously accepts the call, since the calling DN is unknown to the DMS. If the last station called is the SN instead, AR can not be activated either, since the calling DN of the SN should be non-dialable.

2.4.2 Call Waiting (CWT)

Call Waiting allows a busy user to receive an incoming call. If the WC subscriber is in a stable two-party call, the WC feature will intercept an unidentified incoming call from a calling party and send it to SN, before the Call Waiting feature can be activated.

When the SN needs to present the recorded name to a busy WC subscriber, if call waiting is also on the line, the called party will receive a normal call waiting tone. Once the called party flashes to accept the call waiting call, the SN will play the calling party's recorded message.

2.4.3 Talking Call Waiting (TCW)

The TCW feature enhances the CWT service by providing the subscriber with an audible notification of the caller's identity and an alerting tone on the first call waiting alerting cycle.

When the WC Subscriber is in a stable two party call he /she will not get TCW functionality, instead TCW will be reverted to CWT. The rest of interaction is same as stated in 2.4.2 Call Waiting.

2.4.4 Spontaneous Call Waiting Identification (SCWID) / Deluxe Spontaneous Call Waiting Identification (DSCWID)

The SCWID feature allows subscribers to receive *calling party* information on their phone display during call waiting. SCWID uses its own protocol between the peripheral and the Customer Premise Equipment (CPE) to send the tone and the *calling party* information to the subscriber.

Along with *calling party* information, DSCWID also provides subscribers with a set of dispositions to handle incoming calls.

All references to SCWID in this section shall include DSCWID as well. Also, a non-Analog Display Services Interface (ADSI) compliant CPE or a set not capable of off-hook delivery of Caller Identification Data (CID) will be referred to as a CPE that is not SCWID capable.

Upon receiving a new call, the SCWID subscriber is alerted by a regular call waiting tone, referred to as the Subscriber Alerting Signal (SAS). It is followed by an ADSI tone, referred to as the CPE Alerting Signal (CAS), used to notify the CPE of pending caller information. The switch then waits for an ACK tone from the CPE, indicating a SCWID capable set. The ACK will specify if the set is SCWID capable or not. Upon receiving the ACK, the switch sends the caller's information to the CPE.

There's no interaction between the tones used by DSCWID and the tones used by WC feature.

SCWID/DSCWID information displayed upon ringing the called party's line. The content of the information displayed is up to the discretion of the SN.

2.4.5 Call Forward Busy (CFB) / Call Forward Don't Answer (CFDA)

The WC feature will intercept an unidentified incoming call from a calling party and send it to SN, before the Call Forwarding feature can be activated. After WC service is active on the line, Call Forwarding feature can be activated on the call from the SN to the WC subscriber.

In the case of CFB, it will only be activated on the call from the SN to the WC subscriber.

For CFDA, the WC feature needs to make sure the timer for CFDA expires before the WC timer T3 expires so that the call will be picked up by the voice mail system or the forwarded DN.

2.4.6 Caller ID / Calling Name Delivery (CNAMD)

The visual calling party's information will be displayed upon ringing of the called party's line. The content of the visual calling party's information is up to the discretion of the SN.

2.4.7 Call Waiting Conference (CWTC)

Call Waiting Conference can be activated by the called party upon accepting the call from the SN.

2.5 Hardware requirements

This feature doesn't require any new DMS hardware. For the non-DMS hardware, the offboard platform (SN) is required.

2.6 Engineering software information

2.6.1 NUM_RC_EXT_BLKS

This office parameter (in table OFCENG) specifies the number of routing characteristic (RC) extension blocks available. This parameter is shared among applications (e.g. AIN) using routing characteristics to translate and route calls.

WC will use routing characteristics, if they are datafilled in the end office, to translate and route calls to the SN. The operating company must ensure that a sufficient number of NUM_RC_EXT_BLKS extension blocks are provisioned for this use. If routing characteristics are not datafilled in the end office, NUM_RC_EXT_BLKS does not have to be changed for WC.

To account for WC when routing characteristics are datafilled, the recommended increase for the value of this parameter is calculated using the following call rate equation:

$$X = \frac{A \times B \times C \times D}{100}$$

where:

A: Number of terminating call/hour in the office (calls/hour).

B: Proportion of blocked/unavailable call terminating in the office (%).

C: Proportion of line subscribing to the WC feature (%).

D: Average holding time of the WC-SN connection (seconds).

X: Result in hundred call seconds (CCS)

With the number of CCS's, the capacity of the links to the SN can be obtained from a standard trunk capacity table (Erlang B) and the number of RC extension blocks can be derived from the previous equations.

Example:

A = 50,000 terminating calls/hour in the office

B = 1% of the call is blocked/unavailable in the office

C = 15% subscribing to the WC feature

D = 25s average holding time of the WC-SN connection

$$X = \frac{50000 \times 0.01 \times 0.15 \times 25}{100}$$

The resulting CCS value X = 18.75 CCS, which corresponds to approximately 5 resources needed to establish the connections to the SN with a blocking probability of 0.1%. This means that in addition to its current value which might include resources provisioned for the existing features (if deployed in the end office), NUM_RC_EXT_BLKS should be incremented by 5 to account for the WC calls to the SN.

This parameter can be set as auto-provisioning (instead of manual), in which case the previous formula does not apply. When set as auto-provisioning, the NUM_RC_EXT_BLKS office parameter will not appear in table OFCENG. Therefore, in this case, the value cannot be modified manually.

If this parameter is underprovisioned, calls using routing characteristics will fail to route to the SN. A WHC600 log report will be generated to report the fact that the SN is unreachable. For more information, see the LG section of this DDOC.

2.7 Logs (LG)

The WC feature introduces two new information logs to report error conditions:

- WHC600 will be reported in the following situations:
  - — The call could not route to the SN
  - — The call to the SN encountered an unsupported feature or agent.
- WHC601 will be reported in the following situations:
  - — The T1 or T2 timer expired

For more information on the new WC logs, refer to the LG section of this DDOC.

2.8 Data Schema (DS)

The WC feature modifies table SPINFO. Table SPINFO is used to store all WC specific information on a per provider basis.

Table SPINFO was modified to accept WC as a valid entry for the SERVNAME and SERVSEL fields and was extended to support the following fields:

- BILLING: boolean to control billing on the calls placed to the SN.
- SNDN1: DN to route to the SN when the WC subscriber doesn't have voice mail on the line.
- SNDN2: DN to route to the SN when the WC subscriber has voice mail on the line.
- WCT1: timer value to control the maximum delay before receiving the ANSWER message from the SN.
- WCT2: timer value to specify the maximum duration for the SN to record the caller's name.
- WCT4: timer value to specify the duration for the SN to play back the recorded name and get the ACK from the subscriber.

The following existing fields were not modified:

- PROVNAME: text string to assign a name to the service provider.
- ENABLED: boolean to control the availability of the service offered by the service provider.
- CARRIER: string range to specify a carrier to route the call.
- BILLINGDN: DN against which toll charges are billed.

Table 4 Typical WC SPINFO tuple

PROVNAME	SERVNAME	SERVSEL	ENABLED	CARRIER	BILLINGDN	BILLING	SNDN1
PRIMARY	WC	WC	Y	NILC	NILDN	N	91234567

SNDN2	WCT1	WCT2	WCT4
91234568	5	40	40

2.9 Office Parameter (OP)

WC introduces a new office parameter, WHOS_CALLING_ENABLED. The table OFCVAR is modified to accept the new tuple.

The WHOS_CALLING_ENABLED tuple contains one field. This parameter controls availability of the WC office wide. The default value is "N".

For more information on the office parameters changes (memory impact, provisioning guidelines, etc.), refer to the OP section of this DDOC.

2.10 Service Order (SO)

The WC feature introduces one new line option, WC, and modifies the ASP line option. The Service Order system (SERVORD) is enhanced to support the new WC line option for the NEW, ADO and DEO commands.

SERVORD is enhanced to support the modifications to the ASP line option for the NEW, ADO and CHF commands. Also, the ASP customer group option is blocked for the WC functionality.

SERVORD must be used to add or remove the WC feature from a subscriber's line.

For more information on the service order changes, refer to the SO section of this DDOC.

2.11 Alarms (AL)

No changes.

2.12 Command Interface (CI)

The WC feature supports the query commands of the human-interface of the Maintenance and Administration Position (MAP) terminal (CI commands).

The Query Line Equipment Number (QLEN), Query Directory Number (QDN), Query Directory Number Working (QDNWRK), Query Line Equipment Number Working (QLENWRK) and Query Customer Information (QCUST) CI commands will display the WC line option when applicable on the line.

2.13 Operational Measurements (OM)

The WC feature introduces a new operational measurements group, WC OMs (WC_OMs). The WC OM group includes the following registers:

WCATT This register is pegged when the WC feature is activated by a private/unknown call terminating on a WC subscriber.

WCCON This register is pegged when an intercepted call is connected to the SN to have the name recorded.

WCREC This register is pegged when a name/short message is recorded by SN, thus DMS receives the recording done tone.

WCPRST This register is pegged when subscriber answers the call from DMS, which gives SN a chance to present the recorded name to him/her.

WCOFR	This register is pegged when a WC subscriber agrees to screen the incoming call by pressing any key, thus SN has a chance to offer all the options to the subscriber.
WCSCRN	This register is pegged when a WC subscriber screens a call by pressing a valid key.
WCDNERR	This register is pegged when the call to the SN DN cannot be completed (invalid DN, treatment, unsupported agent).
WCABDN	This register is pegged when the calling party hangs up after the WC feature is started but before he/she gets the disposition from the WC subscriber viz. before WC Subscriber presses a valid key (1,2,3 or 4).
WCT1	This register is pegged when the WCT1 timer expires.
WCT2	This register is pegged when the WCT2 timer expires.
WCT3	This register is pegged when the WCT3 timer expires.
WCT4	This register is pegged when the WCT4 timer expires.
WCT5	This register is pegged when the WCT5 timer expires.

For more information, please refer to the OM section of the DDOC.

2.14 AMA/Billing information (AM)

No new billing is introduced by the WC feature. However, it is possible to control the billing generated when completing a call to the SN.

Three fields in table SPINFO can be used to control this specific billing. These fields are:

- BILLING: by setting the value of this field to “N”, no billing is generated for the call to the SN. A value of “Y” will generate the usual billing. If the call to the SN is routed over a carrier, the appropriate billing will always be generated. If the billing field is set to “N”:
  - — no message rate billing is generated by the WC feature.
  - — if the calling party uses a 1MR line, the 1MR register will not be pegged on the call completing to the SN.
- BILLINGDN: this field has no effect if the BILLING field is set to “N”. This field is used to specify a DN against which the charges are billed for the call to the SN. If this field is not datafilled (with a value of “$”), charges are billed to the WC subscriber. If this field is not datafilled and the BILLING field is set to “Y”, the 1MR register will be pegged on the call to the SN.
- CARRIER: the carrier field is used to specify a carrier (either intra-lata toll or inter-lata, according to the routing DN) to route the call to the SN. This

is the carrier that will appear on the billing report for the outgoing call to the SN.

2.15 Software Optionality Control (SOC)

Part of the activation of the WC feature is controlled by SOC. The default SOC state of the feature is IDLE.

In the IDLE state, the WC functionality is unavailable to any subscriber.

In the ON state, the WC functionality is available to the WC subscribers.

The WC line option can be assigned to a line (with or without ASP) independently of the SOC state.

Table 1: SOC

SOC option name:	RES00094
SOC option title:	RES Who’s calling
SOC option control type:	state
New SOC option?	Yes
SOC option order code	RES00094
Option defined in DRU:	DMSCCM13
Affected products:	none

2.16 Glossary

1FR	One-party Flat Rate line
1MR	One-party Message Rate line
ACM	Address Complete Message
ADO	Add Option
ADSI	Advanced Display Services Interface
AIN	Advanced Intelligent Network
ANM	Answer Message
ASP	Alternate Service Provider
BRI	Basic Rate Interface
CAS	CPE Alerting Signal
CCS	Hundred Call Seconds
CCW	Cancel Call Waiting
CHF	Change Feature
CI	Command Interpreter
CIC	Carrier Identification Code
CLID	Calling Line Identifier
CNAB	Calling Name Delivery Blocking
CNAMD	Calling Name Deliver
CNDB	Calling Number Delivery Blocking
CNNB	Calling Name and Number Blocking
CPE	Customer Premises Equipment
CPN	Calling Party Number
CWT	Call Waiting
DEO	Delete Option
DMS	Digital Multiplex Switch
DN	Directory Number

DRCW	Distinctive Ringing Call Waiting
DSCWID	Deluxe Spontaneous Call Waiting Identification
GN	Generic Name
IAM	Initial Address Message
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
LDS	Long Distance Signal
LNP	Local Number Portability
OM	Operational Measurements
PAM	Pass Along Message
PIP	Party Information Parameter
PRI	Primary Rate Interface
PSTN	Public Switched Telephone Network
QDN	Query Directory Number
QLEN	Query Line Equipment Number
RES	Residential Enhanced Services
SAS	Subscriber Alerting Signal
SCP	Service Control Point
SCWID	Spontaneous Call Waiting Identification
SDN	Secondary Directory Number
SN	Service Node
SOC	Software Optionality Control
SS7	Signaling System No. 7
TCW	Talking Call Waiting
TID	Terminal Identifier
VFG	Virtual Facility Group
WC	Who’s Calling

XPM Extended Peripheral Module

2.17 References

#	**Document**
1	WC Feature Specification Document (FSD)
2	NTP 297-1001-450 Provisioning
3	AN0616 Functional Description, “SCWID CC TR Compliancy”
4	AG0980 Functional Description, “Network Name Display”
5	NTP 297-5161-021 AIN
6	NTP 297-5161-022 AIN

2: Functional description (FN)

2.1 Feature name

FAN ALARM ENHANCEMENTS

2.2 Description

2.2.1 Feature synopsis

This feature focuses on solving the problem of intermittent fan alarms that has been existing in many offices in the field which deploy 3X90 Cooling Units.

Intermittent fan alarms appear as a consequence of the unpredictable changes in the air flow which are not caused by any faulty conditions of the fan itself. The fan fail alarms that are raised in such circumstances, wrongly indicate existence of faulty fan equipment and thus it is desirable to avoid or minimize their appearance.

This feature, as a software solution to this problem, implements a delay in the reporting of fan fail alarms. Since fan failed conditions are reported under FSPAIS alarms (aisle alarms) this delay will apply to all aisle alarms. Any FSPAIS alarm will be reported only if the alarm conditions remain present and unchanged for pre-defined amount of time. However, this new functionality will be optional and DELAY_FSPAIS_ALARMS office parameter will be used to turn on or off delayed reporting of FSPAIS alarms if desired by the telco.

2.2.2 Problem description

DMS switches are equipped with Cooling Units whose purpose is to provide sufficient air flow to cool any cabinet containing semi-conductor devices. The 3X90 Cooling Unit consists of the two sub-assemblies, the fan cage and the fan unit. The fan unit contains five fans which are mounted on an inclined plate

across the width and depth of the cabinet. This construction gives an even distribution of cooling air, and allows for a single fan failure without a critical reduction in air flow. The part that triggers the fan alarm is a flat metal plate connected to a micro-button mechanical switch. The force of the air flow from the fan keeps it lifted which corresponds to non alarm conditions. In the case of fan failure the metal plate drops down which activates a mechanical switch that causes the alarm to be raised.

Since the fans tend to move air flow all around, sometimes the air pressure above a particular plate is heavier than the air forcing it up, the plate drops and creates an intermittent alarm condition even though nothing is wrong with the fan itself. When the air flow returns to normal, the alarm condition disappears. This behaviour of the fan unit causes fan fail alarm to be raised any time when there is a slight change in air flow which makes the relay collapse for a split second, causing the appropriate visual and audible indicators of the fan fail alarm conditions to be activated. By design the only way to determine the exact location of a failed fan is a visual. This means that a Telco technician has to check the appropriate frame lights in this reported equipment aisle to determine the location of a faulty fan. When a fan fail alarm is raised because of the change in air flow, it seems that the alarm conditions “self-heal” by the time a technician arrives. However, it is very inconvenient for the Telco to consume resources to investigate alarms that are non-issues.

Originally, fan fail alarm should be raised only in the conditions when there is a real fan failure or malfunctioning. Bouncing fan alarms, generated under slight change in air flow and without any failed fans, are considered as faulty alarm conditions, something that is undesirable and should be avoided if possible.

2.2.3 Alarm detection

The alarm system hardware is monitored and controlled by software. The software responds to alarm or control inputs by operating or releasing the appropriate Signal Distribution (SD) points in the alarm system hardware. These SD points initiate or terminate the corresponding audible and visual alarm, or control function.

Alarm and control inputs detected by the alarm system hardware are interfaced with alarm system software through scan points. In general, these scan points detect inputs generated by hardwired alarm contacts in the DMS hardware, by the operation of manual control switches, or by the alarm circuits of miscellaneous equipment associated with the DMS office. The software that monitors these scan points forms the External (EXT) Alarms subsystem of the DMS maintenance system.

The fan failed alarm conditions are reported on the EXT subsystem as FSP alarms. The scan point that changes the state in case of a fan failure is the FSPAIS scan point. Changing the state of the FSPAIS scan point to a state other than its normal state will cause the appropriate SD points to be activated. Activation of SD points will generate a major audible alarm and a corresponding display on the MAP terminal. Also, in the case of the fan failure the appropriate frame lamp, which indicates faulty equipment fan, will light.

The FSPAIS scan point, besides detecting malfunctioning in cooling equipment, also monitors the entire equipment aisle it is connected to. It monitors the office battery and alarm supply fuses, fan unit and shelf power converter. In the event of a failure in any of these elements, the appropriate FSPAIS scan point changes its state, and the appropriate SD points get activated. This will lead to the generation of a major audible alarm, a display on the MAP terminal is updated and the appropriate Frame Fail, Fan Fail, or Converter Fail lamp lights.

2.2.4 Functional overview

To prevent the appearance of bouncing fan alarms, the fan fail alarm condition would be ‘masked’ for a certain period of time and reported only if the alarm condition remains present and unchanged for the pre-determined amount of time.

After investigation, it was determined that over 90% of these intermittent alarms disappear within a period of 10 seconds. Therefore, the time delay to report fan fail conditions would be set to 10 seconds. It is likely that the majority of fan fail alarm conditions that are not caused by faulty fan equipment, but as a consequence of temporary changes in air flow, will disappear within 10 seconds and thus activation of an alarm would be avoided. The threshold value would be hardcoded, i.e. it will not be possible for the telco to change it.

This delay in reporting will not only affect fan alarms but also all aisle alarms since one FSPAIS scan point is used to monitor an entire equipment aisle. However, this delay will be optional and telco would be able to turn it on/off if desired.

For each particular FSPAIS scan point, the number of intermittent fan alarm occurrences per hour will be monitored when this feature is active. If that number exceeds 100 (this number may be subject to the change during Detail Design) then the reporting of the alarms monitored by this scan point will no longer be delayed during that hour. This monitoring is needed in order to prevent the CM Maintenance system overloading caused by the fans that are bouncing very often and thus need to be serviced.

2.2.5 Optionality

The customer will have complete control over this feature and choice to use it or not. It will be controlled through a new office parameter DELAY_FSPAIS_ALARMS. This office parameter will have two possible values, YES and NO. When the parameter is set to YES all FSPAIS alarms will be reported with a delay of 10 seconds. When parameter is set to NO, all FSPAIS alarms will be reported immediately, i.e without any delay. The default value for parameter will be NO.

2.3 Hardware requirements

None

2.4 Limitations and restrictions

The time delay in reporting of FSPAIS alarms, when this feature is active, will be constant and equal to 10 seconds. It will not be possible to change this value by the telco.

2.5 Interactions

This features has no impact on other features. If the office parameter DELAY_FSPAIS_ALARMS is set to NO than the feature is inactive and has no impact on the telco. When DELAY_FSPAIS_ALARMS office parameter is set to YES than the feature is activated and FSPAIS alarms will be reported with delay of 10 seconds. The alarms that will be reported with this delay when the feature is active are the alarms generated by one of the following fault conditions:

- shelf power converter failure

- blown fuse in the office battery or alarm battery supply in each aisle

- cooling fan failure

2.6 Logs (LG)

All existing logs will remain the same and no new logs will be introduced.

2.6.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

2.7.1 New/modified tables

Not Applicable

Table 2 New or modified tables

Table name	Table number	NEW/MOD/ DELETED	Table Control (NEW/OLD/ UNCHANGED)

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

DELAY_FSPAIS_ALARMS is a new office parameter. Possible values for the parameter are YES and NO. Default value is NO.

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED
OFCENG	DELAY_FSPAIS_ALARMS	NEW

When DELAY_FSPAIS_ALARMS is set to YES, reporting of all FSPAIS alarms will be delayed for predefined amount of time (10 seconds). When the parameter is set to NO, there will be no delay in reporting of FSPAIS alarms.

2.9 Service orders (SO)

Not Applicable

2.10 Alarms (AL)

2.10.1 Alarm name: FSPAIS(X)

Frame supervisory panel aisle X

(X) = A to Z and AA to RR (excluding I, O, II, and OO)

The FSPAIS(X) scan points are datafilled in the ALMSC table.

All aisle alarms monitored by FSPAIS scan points will be reported with pre-defined delay if this feature is active. However, the conditions that cause activation of FSPAIS scan points remain the same.

2.10.2 New/modified directories

Not Applicable

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

2.11.1 New/modified commands

None

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

None

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

Not Applicable

2.14 Software optionality control (SOC)

Not Applicable

2.15 Glossary

Term	Description
FSPAIS	Frame Supervisory Panel Aisle
FSP	Frame Supervisory Panel
EXT	External Alarms

2.16 References

297-1001-122 Alarm System Description

2: Functional description (FN)

2.1 Feature name

Feature Processing Environment (FPE) Real-time Recovery.

2.2 Description

This activity will recover real-time by converting most of the AGENT aspect procedures into GENUS aspect procedures. Preliminary work was done under feature 59006881. This feature also modifies the Generic Message Processor (GMP) to address feature requirements.

2.3 Hardware requirements

None.

2.4 Limitations and restrictions

None.

2.5 Interactions

None.

2.6 Logs (LG)

2.6.1 New/modified logs

None.

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

2.7.1 New/modified tables

None.

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

None.

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

None.

2.10 Alarms (AL)

None.

2.10.1 New/modified directories

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

2.11.1 New/modified commands

None.

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

None.

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

None.

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

None.

Table 8 SOC

SOC option name:	
SOC option title:	

SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.15 Glossary

Term	Description
New term	definition

2.16 References

2: Functional description (FN)

2.1 Feature name :

A59013009 : HUNTSERV Rearchitecture.

2.2 Description

This rearchitecture feature is for solving a number of fundamental shortcomings of the HUNTSERV software, specifically problems associated with TABLE CONTROL of tables HUNTGRP and HUNTMEM. Since, this activity is basically an enhancement in the way the software performs existing operations, there is no change in functionality. This feature also takes care of the design issues in HUNTSERV archid, which many times lead to data corruptions. Hence the design introduces some new and modified error messages to be seen mostly during tabedits and tabaudits on tables HUNTGRP and HUNTMEM. The following sub-sections will explain the significance of each of the new error message introduced.

2.2.1 Tabedit Warnings

ADD, DEL and CHA in Tabedits on tables HUNTGRP and HUNTMEM used give the same warning twice, one on Tabedit pre prompt and the other during actual tabedit.

```
WARNING: All additions, deletions, and changes to table
         HUNTGRP should be entered using SERVORD.
```

The feature makes the warning message to be seen only once i.e only during tabedit preprompt as shown below.

```
TABLE: HUNTGRP
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
HTGRP:
>5
SNPA:
>919
DN:
>2464132
GRPTYP:
>dlh
CIR:
>n
TFO:
>y
TRMBOPT:
>n
TRMBILL:
>rcvd
LOR:
>n
LOD:
>n
CFGDA:
>n
OFR:
>n
OFS:
>n
E911PSAP:
>n
SIZE:
>5
OPTION:
>$
WARNING: All additions, deletions, and changes to table
         HUNTGRP should be entered using SERVORD.
TUPLE TO BE ADDED:
5 919 2464132 DLH N Y N RCVD N N N N N N 5 $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

2.2.2 TABEDIT:Conditional Deletions between tables HUNTGRP and HUNTMEM

This is to align the Tabedit behaviour with that of Servord. Deleting the lone member (also the pilot) of a hunt group, deletes the HUNTGRP tuple of the group also. The possibility of the failure of deletion of HUNTGRP tuple while deleting the lone member in the group, displays error message which is newly introduced. This means that the attempt of deletion of HUNTMEM tuple also fails. The new error message is

‘CAN NOT DELETE THE HUNT GROUP’.

The proper reason (error message) for the failure of deletion of HUNTGRP tuple will precede this message.

Conversely, if we delete a hunt group with only one member (pilot himself) i.e. delete the corresponding HUNTGRP tuple, then the member will also be deleted from table HUNTMEM. Now the user won’t encounter the error message

‘STILL MEMBERS IN GROUP’ for a group with only one member. A similar error message will be encountered for the attempt to delete a HUNTGRP tuple with the group having two or more members.

‘STILL n MORE MEMBERS IN THE GROUP’ where n is 2 or more.

If the attempt to delete the lone member in the group, fails then we get a suitable error message with the reason. Also the newly introduced error message as below, will succeed.

‘CAN NOT DELETE THE LONE MEMBER IN THE GROUP’.

2.2.3 TABEDIT: E911PSAP Option

When the user adds the pilot or a member to a huntgroup with E911PSAP option of type LDTPSAP via tabedit of table HUNTMEM, if the card code of the line is not one of PSAPWA, PSAPWN and PSAPNN, then the attempt will be rejected with the modified error message as below.

‘If the hunt group has the LDTPSAP option, card code

of the pilot or a member must be PSAPWA/PSAPWN/PSAPNN’.

2.2.4 TABAUDIT Enhancements

The tabaudit on HUNTGRP and HUNTMEM will be made to catch more data inconsistencies. Hence there will be new error messages seen during Tabaudits.

2.2.4.1 Auditing CFGDA Data

When a huntgroup has CFGDA option, the data is expected to be consistent. But, if in any case the CFGDA data is changed somehow to make the data inconsistent, it should be caught in Tabaudit. This will avoid tabxfr failures during ONPs.

The new error message introduced is

```
'CFGDA TIME OUT VALUE IS OUT OF RANGE'.
```

This error message will be seen during Tabaudit of table HUNTGRP, if the CFGDA time-out value is out of the range {12 to 325}.

2.2.4.2 Auditing E911PSAP data

If the huntgroup has E911PSAP of type LDTPSAP, then the card codes of the members of the hunt group should be consistent with the E911PSAP data of the hunt group. This will be audited during the tabaudit of table HUNTMEM. The user can see the new messages as explained.

If the group has E911PSAP of type LDTPSAP, then the members should have card codes as one of PSAPWA, PSAPWN and PSAPNN. Again if the ANISPILL field in HUNTGRP tuple is 'Y' then the members must have PSAPWA as their card code. If the ANISPILL field is 'N' then the members should have PSAPWN or PSAPNN as their card codes. These card codes can be changed in table LNINV which can then turn the E911PSAP data inconsistent with the card codes of members.

If the pilot or a member of the hunt group with E911PSAP option of LDTPSAP type, does not have any of the above said card codes during Tabaudit, the user will see the error message:

```
'If the hunt group has the LDTPSAP option card code

of the pilot or a member must be PSAPWA/PSAPWN/PSAPNN'.
```

If the ANISPILL field is ‘Y’ and the card code of the pilot or a member is not PSAPWA, then the HUNTMEM tuple is failed in the tabaudit and the following error message is seen.

```
‘IF ANISPILL = Y, CARD CODE MUST BE PSAPWA’.
```

If the ANISPILL field is ‘N’ then the card code of the pilot or a member is not one of PSAPWN or PSAPNN then the HUNTMEM tuple is failed in the tabaudit and the following error message is seen.

```
‘IF ANISPILL = N, CARD CODE MUST BE PSAPWN OR PSAPNN’.
```

If the member has a card code different from that of the pilot then the tabaudit will catch this with the error message.

```
‘Member card code does not match pilot card code’.
```

2.3 Hardware requirements

None

2.4 Limitations and restrictions

None

2.5 Interactions

2.6 Logs (LG)

2.6.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

2.7.1 New/modified tables

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

2.10 Alarms (AL)

2.10.1 New/modified directories

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

2.11.1 New/modified commands

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

Not Applicable.

Table 8 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.15 Glossary

Term	Description
E911	Enhanced 911 Emergency Service
PSAP	Public Safety Answering Point
LDT	Line Appearance on a Digital Trunk
PSAPWA	PSAP Wink Active
PSAPWN	PSAP Wink Inactive
ONP	One Night Process
CFGDA	Call Forward Group Don’t Answer

2.16 References

The feature being an internal activity there is no requirement document (FSD). Please refer to SR.50110090 which was raised to investigate the need for the Re-Architecture of HUNTSERV Archid. Also refer to the table 1 of HLD of the feature to know more about the requirements.

2: Functional description (FN)

2.1 Feature name

Hunt Groups LOD Expansion.

2.2 Description

The initial design of the LOD feature for Hunt Groups limited the number of digits allowed in the overflow DN to 11. The same restriction applies to KSH overflow DN's. With today's dialling patterns, this 11 digit restriction causes various problems when programming LOD and KSH overflow DN's. For example, most Centrex long distance dialling plans are 9+1+10 digits, thereby prohibiting LOD or KSH overflow to a long distance or toll free number. Also, for POTS long distance dialling, PIC codes could not be added to the overflow DN.

This feature includes all of the elements required to expand the LOD and KSH overflow DN's from 11 to 30 digits. Expansion to 30 digits allows for programming of LOD and KSH overflow DN's to any diallable number in the DMS-100 including international numbers.

The provisioning elements consist of Servord commands NEW, EST, ADD, ADO, CHF, query commands, table schema changes to tables HUNTGRP and KSETFEAT, as well as table control read, write, and verify procedures. The call processing elements consist of changes to termination procedures which will be transparent to the end user.

This feature will be included under Order Code MDC00067.

2.2.1 Functional Overview

The design approach applied is to expand the current 11 digit restrictions on provisioning of LOD DN's and KSH overflow DN's by modifying the behavior of existing commands which are used to provision these DN's. After the modifications, it will be possible to provision LOD and KSH overflow DN's up to 30 digits in length.

The functional areas affected are listed below:

1. Provisioning and Query of LOD DN's

2. Provisioning and Query of KSH overflow DN's

3. Data management

The changes in the behavior of each of these are described in the subsequent sections.

2.2.1.1 Provisioning and Query of LOD DN's

To enable provisioning and query of 30 digit LOD DN's, Servord commands EST, ADD, ADO, CHF are affected as well as query commands QLEN and QDN. The operation of these commands is affected as follows:

The EST command is used to create a new hunt group. Hunt groups of type DNH, MLH, and DLH support the LOD option. When the ESTablish command is executed, the user receives a prompt for OPTIONS at which point any hunt group option can be entered. If the LOD option is entered, the next prompt will be LODDN. The LODDN will no longer be restricted to 11 digits. Any number up to 30 digits in length will be accepted for this field.

The ADD command is used to add one or more members to an existing hunt group. It also has the capability to add options to the hunt group whenever a new member is added. The user receives a prompt for OPTIONS. If LOD is entered, the next prompt will be LODDN. The LODDN will no longer be restricted to 11 digits. Any number up to 30 digits in length will be accepted for this field.

The ADO command can be used to add the LOD option to an existing hunt group of type DNH, MLH, or DLH. The user receives a prompt for OPTIONS. If LOD is entered, the next prompt will be LODDN. The LODDN will no longer be restricted to 11 digits. Any number up to 30 digits in length will be accepted for this field.

The CHF command can be used to change an LOD DN which has already been provisioned on a hunt group. The user receives a prompt for OPTIONS. If LOD is entered, the next prompt will be LODDN. The LODDN will no longer

be restricted to 11 digits. Any number up to 30 digits in length will be accepted for this field.

The following figure shows an example of using the EST command in prompt mode to establish a new DNH hunt group which overflows to a 30 digit number.

Figure 1 Servord EST example with 30 digit LODDN

```
>est
SONUMBER:    NOW  99  7 12 PM
>
GROUPTYPE:
>dnh
PILOT_DN:
>9508000
LCC:
>1fr
LATANAME:
>lata1
LTG:   0
>
PILOT_LEN:
>0 0 4 2
DN_LEN:
>9508001
LEN:
>0 0 4 3
DN_LEN:
>$
OPTION:
>lod
LODDN:
>123456789012345678919199508888
OPTION:
>$
GROUPSIZE:
>2
COMMAND AS ENTERED:
EST NOW 99 7 12 PM DNH 9508000 1FR LATA1 0 HOST 00 0 04 02 ( 9508001 HOST
00 0 04 03 ) $ ( LOD 123456789012345678919199508888 ) $ 2
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

The QLEN and QDN commands are used to query members of hunt groups. A display area for GROUP OPTIONS is contained within the output. If the hunt member belongs to a group which has the LOD option assigned, the LOD DN will be displayed in this area. Since 30 digits can now be programmed, up to 30 digits can be displayed in this field. The following figure shows QDN and QLEN examples of hunt group members with 30 digit LOD DN's.

Figure 2 QDN and QLEN examples with 30 digit LODDN's

```
>qdn 9508000
--------------------------------------------------------------------------------
DN:    9508000
TYPE: PILOT OF DNH HUNT GROUP
SNPA: 909   SIG: DP    LNATTIDX: 42
HUNT GROUP:  15       HUNT MEMBER:  0
LINE EQUIPMENT NUMBER:    HOST  00 0 04 02
LINE CLASS CODE:     1FR
LINE TREATMENT GROUP:    0
CARDCODE:  6X17AA    GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER    :   40
PM TERMINAL NUMBER :   131
OPTIONS: NONE
GROUP OPTIONS:
LOD 123456789012345678919199508888 $ RCVD
MEMBER INFO:
  1      9099508001

--------------------------------------------------------------------------------
>qlen 0 0 4 2
--------------------------------------------------------------------------------
LEN:    HOST  00 0 04 02
TYPE: PILOT OF DNH HUNT GROUP
SNPA: 909
HUNT GROUP:  15       HUNT MEMBER:  0
DIRECTORY NUMBER:    9508000
LINE CLASS CODE:     1FR
SIGNALLING TYPE:  DIAL PULSE
LINE TREATMENT GROUP:    0
LINE ATTRIBUTE INDEX:    42
CARDCODE:  6X17AA    GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER    :   40
PM TERMINAL NUMBER :   131
OPTIONS: NONE
GROUP OPTIONS:
LOD 123456789012345678919199508888 $ RCVD
MEMBER INFO:
  1      9099508001
--------------------------------------------------------------------------------
```

2.2.1.2 Provisioning and Query of KSH overflow DN's

To enable provisioning and query of 30 digit KSH overflow DN's, Servord commands NEW, ADO, CHF are affected as well as query commands QLEN and QDN. The operation of these commands is affected as follows:

The NEW command is used to create a new business set (key set). If more than one DN key is assigned to this set, the KSH option can be provisioned when prompted for OPTION (KSH must be assigned to option key 1). The system then prompts for OVTYPE. The user enters "D" if the overflow to DN option is chosen. The system then prompts for OVDN. The OVDN will no longer be restricted to 11 digits. Any number up to 30 digits in length will be accepted for this field.

The ADO command can be used to add the KSH option to an existing business set. The set must already have at least two DN keys for KSH to be valid. The user enters KSH when prompted for OPTION. The system responds with a prompt for OVTYPE. If the user enters "D", the system then prompts for OVDN. The OVDN will no longer be restricted to 11 digits. Any number up to 30 digits in length will be accepted for this field.

The CHF command can be used to change the overflow DN after KSH has already been provisioned on a set. If the user enters KSH when prompted for OPTION, the system then prompts for OVTYPE. If the user enters "D", the system prompts for OVDN. The OVDN will no longer be restricted to 11 digits. Any number up to 30 digits in length will be accepted for this field.

The following figure shows an example of using the ADO command in prompt mode to add the KSH option to a business set which already has two DN keys. The KSH overflow DN is a 30 digit number.

Figure 3 Servord ADO example for KSH with 30 digit overflow DN

```
>ado
SONUMBER:    NOW  99  7 12 PM
>
DN_OR_LEN:
>6215520
OPTKEY:
>1
OPTION:
>ksh
OVTYPE:
>d
OVDN:
>123456789012345678919196215555
KEYLIST:
>$
OPTKEY:
>$
COMMAND AS ENTERED:
ADO NOW 99 7 12 PM 6215520 ( 1 KSH D 123456789012345678919196215555 $ ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

The QLEN and QDN commands are used to query business sets. If the business set has the KSH option, it will be displayed in the OPTIONS area of the QLEN or QDN output. If the overflow type is DN, a “D” is displayed followed by the overflow DN which has been provisioned. Since 30 digits can now be programmed, up to 30 digits can be displayed in this field. The following figure shows QDN and QLEN examples of a key set with the KSH option and a 30 digit overflow DN.

Figure 4 QDN and QLEN examples with 30 digit KSH overflow DN's

```
>qdn 6215520
------------------------------------------------------------------------------
DN:    6215520
TYPE: SINGLE PARTY LINE
SNPA: 613   SIG:  N/A    LNATTIDX: N/A
LINE EQUIPMENT NUMBER:    HOST  00 0 00 04
LINE CLASS CODE:  M5212 SET
KEY:  1
CUSTGRP:        IBNTST  SUBGRP: 0  NCOS: 0  RING: Y
CARDCODE:  6X21AC    GND: N  PADGRP: STDLN  BNV: NL MNO: Y
PM NODE NUMBER    :   40
PM TERMINAL NUMBER :   5
OPTIONS:
KSH D 123456789012345678919196215555 $
OFFICE OPTIONS:
AIN LNPOFFICE

------------------------------------------------------------------------------
>qlen 0 0 0 4
------------------------------------------------------------------------------
LEN:    HOST  00 0 00 04
TYPE: SINGLE PARTY LINE
SNPA: 613
DIRECTORY NUMBER:    6215520
LINE CLASS CODE:  M5212 SET
CUSTGRP:        IBNTST  SUBGRP: 0  NCOS: 0  RING: Y
CARDCODE:  6X21AC    GND: N  PADGRP: STDLN  BNV: NL MNO: Y
PM NODE NUMBER    :   40
PM TERMINAL NUMBER :   5
OPTIONS:
KSH D 123456789012345678919196215555 $
OFFICE OPTIONS:
AIN LNPOFFICE

  KEY      DN
  ---      --
   1       DN        6136215520
   2       DN        6136215521

  KEY     FEATURE
  ---     -------
   1       KSH D     123456789012345678919196215555 $
------------------------------------------------------------------------------
```

2.2.1.3 Data Management

LOD DN’s and KSH overflow DN’s should be provisioned, changed, and deleted via Servord only. The provisioning changes related to Servord are described in sections 2.2.1.1 and 2.2.1.2. However, since LOD and KSH overflow data can be viewed through table editor, a description of the changes is included here. Refer to the DS section of the design document for further details.

KSH overflow DN’s are stored in table KSETFEAT. The key fields for this table are LEN, KEY, and FEATURE. When a KSH tuple is positioned on through table editor, the overflow type and overflow DN or route are also displayed. If the overflow type is “D”, the KSH overflow DN can now be up to 30 digits in length. The following figure shows an example of a KSH tuple in table KSETFEAT which has a 30 digit overflow DN.

Figure 5 Table KSETFEAT example

```
FEATKEY     FEATURE
                                                KVAR
-------------------------------------------------------------------------------------
HOST  00 0 00 04  1     KSH         KSH   D   123456789012345678919196215555
                                              $
```

LOD DN’s are stored in table HUNTGRP. The key field for this table is the hunt group number. If the hunt group has the LOD option, the LOD selector will be “Y”, and an LODDN will follow. The LOD DN can now be up to 30 digits in length. The following figure shows an example of a tuple in table HUNTGRP which has the LOD option and a 30 digit LOD DN.

Figure 6 Table HUNTGRP example

```
HTGRP SNPA          DN
            GRPTYP
                                          GRPDATA
-------------------------------------------------------------------------------------
  15      909         9508000
              DNH  N    N    N       RCVD            N
Y   123456789012345678919196215555555                              N
                                          N
                                    N
                                          N
                          2                $
```

2.3 Hardware requirements

A maximum of 1MB of memory will be required to support the increase in the size of the LOD and KSH overflow DN's.

2.4 Limitations and restrictions

This feature expands the size of LOD and KSH overflow DN's to 30 digits. It does not affect the function of these features or create any new limitations.

2.5 Interactions

Not Applicable.

2.6 Logs (LG)

Not Applicable.

2.7 Data schema (DS)

2.7.1 New/modified tables

Minor changes will be seen in tables KSETFEAT and HUNTGRP. In table KSETFEAT, for KSH feature tuples, the OVDN field will now have the capability to store DN's from 1 to 30 digits. In table HUNTGRP, the LODDN field will now have the capability to store DN's from 1 to 30 digits.

Refer to the DS section for further details.

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
KSETFEAT	Changed	Unchanged
HUNTGRP	Changed	Unchanged

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

Not Applicable.

2.9 Service orders (SO)

The Servord commands affected are NEW, EST, ADD, ADO, and CHF. Query commands QLEN and QDN are also affected.

2.10 Alarms (AL)

Not Applicable.

2.11 Command interface (CI)

Not Applicable.

2.12 Operational measurements (OM)

Not Applicable.

2.13 AMA/Billing information (AM)

This activity has no impact on billing.

When the overflow leg of an LOD call is billable, a separate billing record is generated. This billing record is identical to the record that would be produced if the hunt group pilot dialled the LOD number directly. The same is true for KSH overflow calls. This feature activity does not alter that interaction, nor does it change current billing record formats.

2.14 Software optionality control (SOC)

Not Applicable.

2.15 Glossary

Term	Description
DLH	Distributed Line Hunt
DNH	Directory Number Hunt

KSH	Keyset Short Hunt
LOD	Line Overflow to DN
MLH	Multi Line Hunt
PIC	Primary Interlata Carrier
QDN	Query Directory Number
QLEN	Query Line Equipment Number

2.16 References

REF	Description

2: Functional description (FN)

2.1 Feature name

TAURUS DESKTOP ENHANCEMENTS (PHASE 2)

2.2 Description

Numerous new capabilities or enhancements are introduced by this activity.

- Icon Based Display Indication
- Digit Suppression For Redial List
- Autodisplay Enhancements

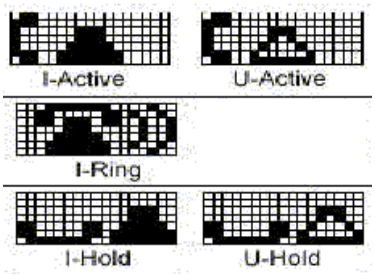
2.2.1 Icon Based Display Indication

Icon-Based Display Indication displays various functional icons on the KBA(Key Based Addon), DBA(Display Based Addon), and Meridian Digital Terminals, 3900 Series. The icons for the KBAs, DBAs, M3902 sets, and M3903 sets are fixed icons. The icons for the M3904 and M3905 are based on a 9x17 pixel bit-mapped cell. The functions displayed are I-Ringing, I-Active, U-Active, I-Hold, and U-Hold. The icons appear on the LCD displays located next to the DN or feature keys. The scenarios for these icons are as follows:

- I-Ringing: The icon for DN Ringing supports all calls for Meridian Digital Terminals, 3900 Series with displays. This icon is displayed when the terminating DN appears on the aforementioned terminals and is being called.
- I-Active: The I-Active icon is valid for all regularly answered calls from Meridian Digital Terminals, 3900 Series with displays.
- U-Active: The U-Active icon is valid for Meridian Digital Terminals, 3900 Series with displays that are within a MADN SCA group. This icon appears on all of the other MADN Meridian Digital Terminals, 3900 Series that haven’t answered the call to the MADN DN after the call has been established.

- I-Hold: I-Hold is also valid for all regularly answered calls from Meridian Digital Terminals, 3900 Series with displays. This icon appears when the set that has answered the call places the call on hold.
- U-Hold: The icon for U-Hold is valid for Meridian Digital Terminals, 3900 Series with displays that are within a MADN SCA group. This icon appears on all of the other MADN Meridian Digital Terminals, 3900 Series that do not have control of the call when the set that has answered the call places the call on hold.

Table 1 Icons



2.2.2 Digit Suppression for Redial List

The Meridian Digital Terminals, 3900 Series M3903, M3904, and M3905 can store the most recently dialed numbers in a redial list. This feature works in conjuction with the NAME feature. Digit Suppression for Redial List suppresses any key presses that are made on the 12-key key-pad from being displayed. The information that is supplied by the NAME feature to the calling terminal about the called terminal is then stored in the redial list.

2.2.2.1 Line Option PWSUP

The PWSUP line option, once assigned to a blank key, suppresses key presses of the 12-key key-pad from being displayed. PWSUP can only be used when the set it is in either dialtone, digit collection, or call active state. The first time PWSUP is pressed after dialtone is received, key presses from the 12-key key-pad are not echoed to the display. Subsequent presses of the PWSUP key toggle digit echo on and off. This option can only be assigned to sets M3903, M3904, and M3905.

2.2.3 DN Auto Display of CLID Enhanced

This feature allows the existing Auto Display option to be extended to cover all keys on a multi-line terminal that can be datafilled as a DN. This capability also includes keys on addon modules. This feature is not limited to just Meridian Digital Terminals, 3900 Series but also to certain previous generation MSL IVD terminals and Meridian Business Sets. In order to extend the Auto Display option, the highest key allowed changes from key 9 to key 76. Auto Display functionality does not change with this feature. The

following table shows the terminals which are affected by the enhanced Auto Display option:

Table 2 MSL IVD Terminals affected by DN Autodisplay of CLID Enhanced

LCC	Current Autodisplay Keys	Enhanced Autodisplay Keys	Enhanced Autodisplay Addon Keys
M2317	1-12	N/A	N/A
M3000	1-12	N/A	N/A
M2018	1-18	N/A	N/A
M2112	1-12	N/A	N/A
M2016	1 - 9	1 - 16	17 - 38 or 17 - 60
M2216	1 - 9	1 - 16	17 - 38 or 17 - 60
M2616	1 - 9	1 - 16	17 - 38 or 17 - 60
M2616 CT	1 - 9	1 - 16	N/A
M3904	1 - 9	1 - 12	33 - 54,33 - 76, or 33 - 56
M3905	1 - 8	1 - 8	33 - 54, 33 - 76, or 33 - 56
M5316	1-9	1-14	15-36, 15-58
M5216	1-9	1-13	15-36, 15-58
M5009	1-9	N/A	12-29, 30-47, 48-65
M5209	1-9	N/A	12-29, 30-47, 48-65
M5112	1-9	1-11	12-29, 30-47, 48-65
M5212	1-9	1-11	12-29, 30-47, 48-65
M5312	1-9	1-11	12-29, 30-47, 48-65

Note 1: Terminals M2016, M2216, and M2616 may have one or two M0022 addon modules. Each addon module has 22 keys.

Note 2: Terminals M3904 and M3905 may have one or two KBAs or one DBA. A KBA has 22 keys. A DBA has 24 keys.

Note 3: Terminals M5216 and M5316 may have one or two M522 module. An M522 has 22 keys.

Note4: Terminals M5009, M5209, M5112, M5212, and M5312 may have one, two, or three M518 modules. They may also have an M536 module. These terminals may also have one M518 module and one M536 module. An M518 module has 18 keys and an M536 module has 36 keys.

Terminals that have nine or less keys and cannot have addons are not affected by this feature.

For more information regarding Auto Display, please see feature AG1549, Auto Display for Meridian Business Sets.

2.3 Hardware requirements

This feature does not introduce new hardware. This feature uses Meridian Digital Terminals, 3900 Series introduced in release MSL11. Refer to feature AG1549

2.4 Limitations and restrictions

2.4.1 Icon Based Display Indication

The U icons (U-Hold, U-Active) are supported only for MADN SCA arrangements.

2.4.2 Digit Suppression for Redial List

The PWSUP feature only stops digits from being echoed on the terminal's display. PWSUP works in conjunction with the NAME feature. The information that is saved in the the redial list is the information that is sent by the NAME feature about the called terminal back to the dialling terminal.

2.4.3 DN Auto Display of CLID Enhanced

Besides the nine key maximum, this feature supports all restrictions or limitations that exist for Auto Display. Up to 24 DN keys on a set may have AUTODISP assigned.

2.5 Interactions

None.

2.6 Logs (LG)

This feature does not introduce new logs.

2.6.1 New/modified logs

Table 2 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

This feature does not affect data schema.

2.7.1 New/modified tables

Table 3 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

2.8 Office parameters (OP)

This feature does not introduce new office parameters.

2.8.1 New/modified office parameters

Table 4 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

For more information refer to SO Section of DDOC.

2.9.1 Suppression

A new set option, PWSUP (Password Suppression), is defined by this feature. It can be assigned to any blank key of an M3903, M3904, and M3905 set.

2.9.2 DN Auto Display of CLID Enhanced

The impact of this feature on SERVORD is that it allows the user to enter a number higher than nine as the OPTKEY for the Auto Display option.

2.10 Alarms (AL)

This feature does not introduce new alarms.

2.10.1 New/modified directories

Table 5 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

This feature does not introduce new interface commands.

2.11.1 New/modified commands

Table 6 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.12 Operational measurements (OM)

This feature does not introduce new operational measurements.

2.12.1 New/modified OM groups

Table 7 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.13 AMA/Billing information (AM)

This feature does not introduce new AMA/Billing information.

2.13.1 New/changed AMA/billing information

Table 8 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

This feature does not introduce new software optionality control.

Table 9 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.15 Glossary

Term	Description

CPND	Calling Party Number Delivery
CLID	Calling Line Identification
DBA	Display Based Addon
DN	Directory Number
KBA	Key Based Addon
LCD	Liquid Crystal Display
MADN	Multiple Appearance DN
PWSUP	Digit Suppression
SCA	Single Call Arrangement

2.16 References

2: Functional description (FN)

2.1 Feature name

ISUP Generic Name.

2.2 Description

2.2.1 Feature synopsis

The Integrated Services Digital Network User Part (ISUP) Generic Name feature will enhance the existing functionality of Custom Local Area Signalling Services (CLASS) Calling Name Delivery (CNAMD). CLASS CNAMD provides the delivery of the calling party's name to the Customer Premises Equipment (CPE) of the residential subscriber.

This feature will remove the interaction problem of DMS with other vendor switches as far as CNAMD is considered. Currently DMS uses a proprietary Party Info Parameter (PIP) of the ISUP Initial Address Message (IAM) for CNAMD. At the originating side, it sends the calling party name in PIP and at the terminating end, it tries to retrieve it from PIP. Whereas other vendors use Generic Name (GN) parameter of ISUP IAM for CNAMD, thus causing the interaction problem.

This feature will add the capability for DMS to send and receive the calling party's name in the GN parameter of the ISUP IAM across a CCS7 network. However this capability will be made optional by making use of a bool option *CNAMINGN* in table *TRKOPTS* on a per trunk group basis.

This ability will allow the DMS to pass and retrieve the name of the calling party in the Canadian or US market with any of the other vendor switches (i.e. Lucent #5ESS or GTE GTD5).

This feature also modifies the existing Debugging tools: Calltrak and C7TU, in order to reflect the calling party name in the GN parameter structure.

2.2.2 Background Information

ISUP is the protocol which provides the signalling functions required by CCITT No.7 signalling to support basic bearer services and supplementary services for voice and non-voice applications in an Integrated Services Digital Network (ISDN). ISUP is suited for application in dedicated telephone and circuit-switched data networks and in analogue and mixed analogue/digital networks.

Currently the DMS delivers network name of the calling party in two different ways or via a combination of the two.

1. By sending a Transaction Capabilities Application Part (TCAP) query from the terminating switch. This TCAP query uses the calling number to get the name of the calling party and is used in the US market. The terminating office builds and sends a TCAP name query through a service transfer point (STP) to the TCAP name database located at a service control point (SCP). The Name is then sent to the called office by the SCP. This method is used in the US market.

2. By allowing the operating company personnel to datafill names locally on the DMS switch and then send it across a CCS7 network to the called office using ISUP messages. This is further divided into two depending on the ISUP message used to carry the calling name across the network, which can be selected by making appropriate changes in table NETNAMES.

   a. SETUP method: In this method the calling party name is sent to the called office in a non-standard field Party Info Parameter (PIP) of an ISUP IAM.

   b. QUERY method: In this method the ISUP IAM carries the information about the availability of the calling party name. Then depending on whether the called party has a CNAMD option active on it, the calling party name is requested for in the ISUP Address Complete Message (ACM) from the terminating office to the originating office. The originating office will then retrieve the name and put it in the PIP in an Information Message (INF) message embedded in a Pass Along Message (PAM) and send it to the terminating office.

The second method has been used by the DMS for years. This method was not, however; adopted by the other venders. As per Bellcore standards they use the GN parameter to carry the name of the calling party. Thus cause the DMS interworking problems. Currently DMS includes GN parameter in ISUP IAM in one of the following conditions.

   i. SUPPRESS option is datafill in table NETNAMES for the originating lines' network.

   ii. if the originator of the call activated a feature that affects the availability of the name for display purposes. These features are

known as blocking features and various blocking features available are Calling Name Blocking (CNAB), Calling Name and Number Blocking (CNNB), and Calling Name and Number Delivery (CNND).

2.2.3 Feature Description

This feature will enhance CLASS CNAMD and make it compliant as per Bellcore standards to avoid any problems in interworking with other vendor switches in a network. It will make DMS compliant by making it capable of receiving and sending calling name in the GN parameter of an ISUP IAM message. However this compliance will be made optional by providing optionality on trunk group basis.

2.2.3.1 Table Control Component

Table TRKOPTS Generic Framework will be used to provide the optionality for the feature. A new option CNAMINGN will be added to table TRKOPTS to provide the optionality on trunk group basis. *This option can be assigned only to ISUP outgoing and two-way trunks.*

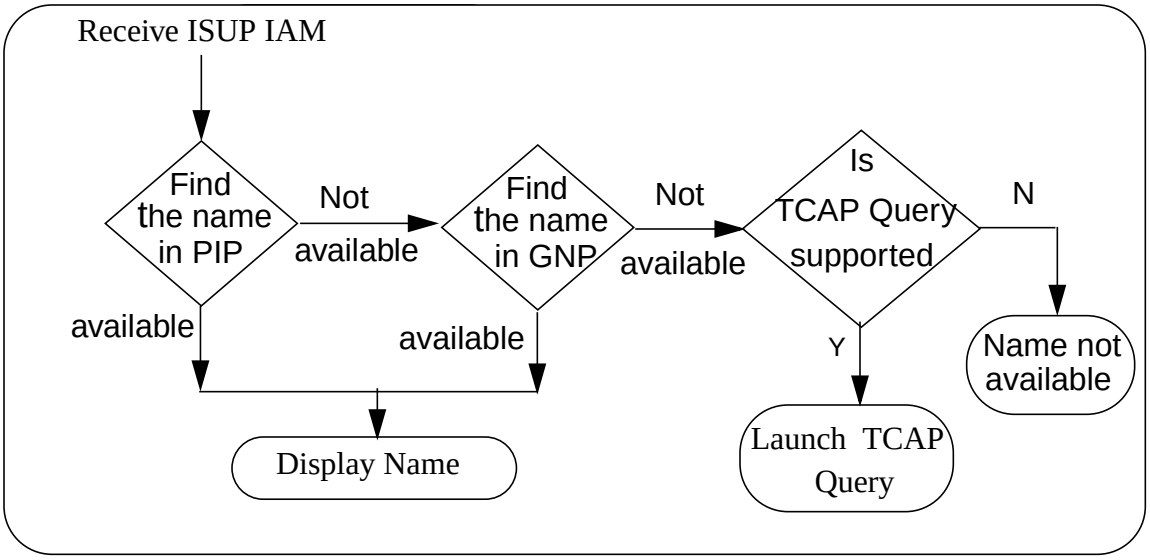
Figure 1 Datafill for table TRKOPTS

```
CI:
>TABLE TRKOPTS
TABLE: TRKOPTS
>ADD ISUP2W CNAMINGN CNAMINGN
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
TUPLE TO BE ADDED:
     ISUP2W CNAMINGN CNAMINGN
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
>
```

2.2.3.2 Receive name in GN parameter

This activity will enable DMS to receive the calling name from ISUP IAM in the following sequence. First it will try and get the name from PIP. If PIP is not available, then it will try and get the name from GN parameter. Please refer to “Figure 2 Receiving name in GN parameter” on page 36.

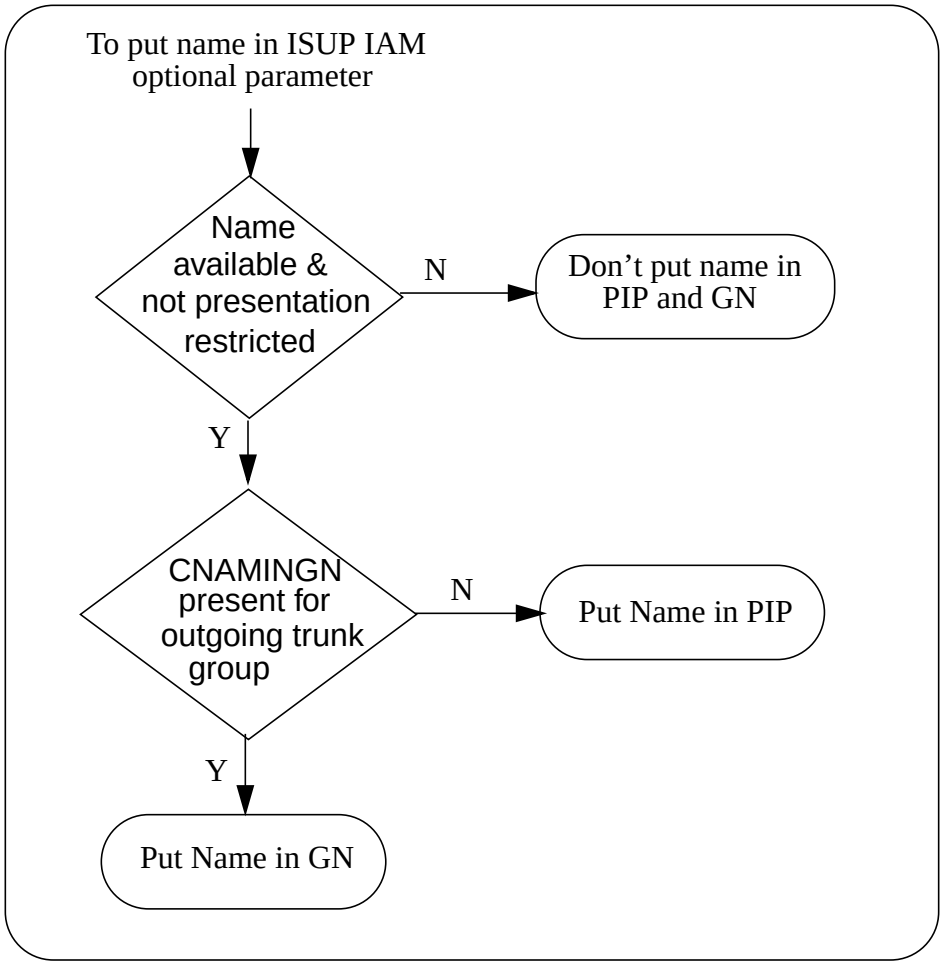
Figure 2 Receiving name in GN parameter



2.2.3.3 Send name in GN parameter

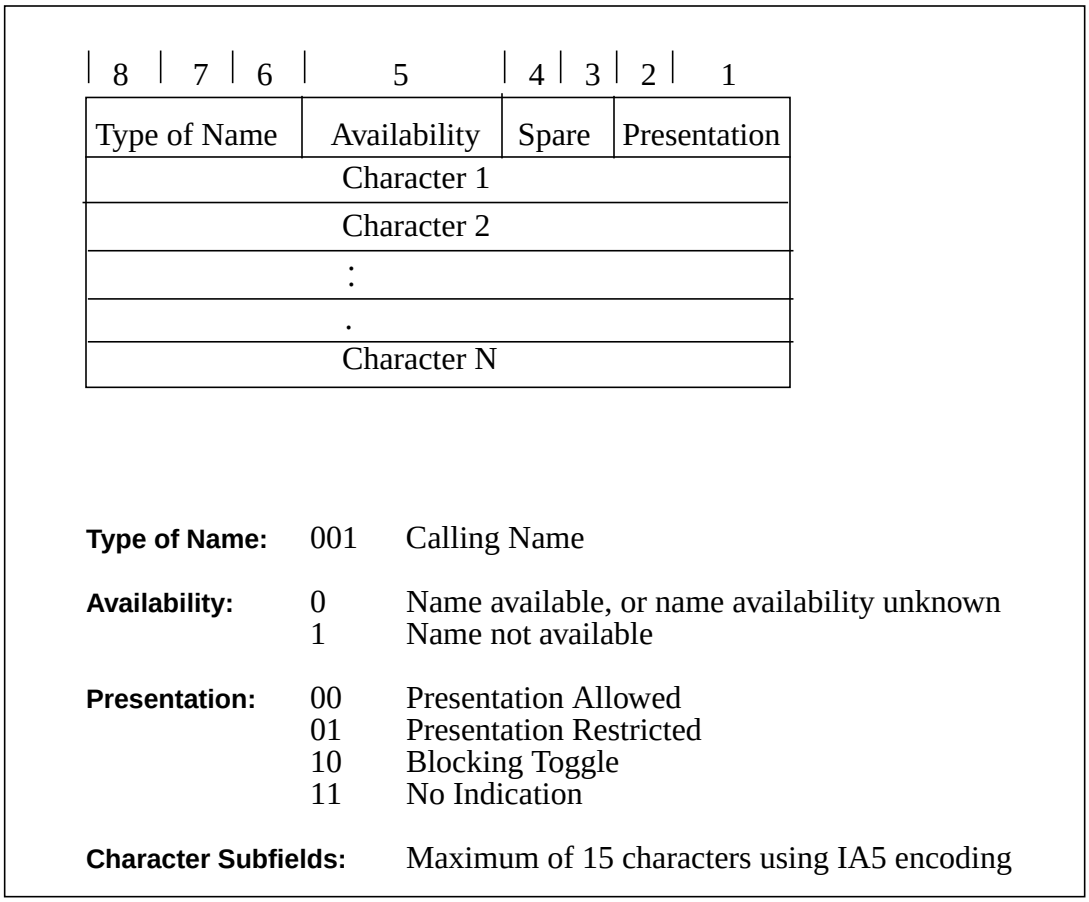
This activity will modify the ISUP IAM to include GN parameter even in case where no blocking feature is invoked by the originator or the name display is not suppressed at the network level. The ISUP IAM will also be modified to carry the calling name characters in the GN parameter whenever applicable. However, to do this, *CNAMGIN* should be present for the outgoing trunk group in table *TRKOPTS*. Please refer to Section "2.2.3.1 Table Control Component" on page 35. If the CNAMINGN option is not present for the outgoing trunk group, GN parameter will not be included in the IAM when no blocking feature is invoked by the originator or the name display is not suppressed at the network level. Also whenever CNAMINGN option is present on the outgoing trunk group, name will be put in GN **and not in PIP** and viceversa. Please refer to "Figure 3 Sending name in ISUP IAM" on page 37.

Figure 3 Sending name in ISUP IAM



For this feature the existing characters field of GN parameter will be used to carry the name info. Please refer to “Figure 4 GN parameter” on page 38. GN parameter is an optional parameter in ISUP IAM message. Presently the character fields of GN parameter are not being populated with the calling name. This feature will send the calling name using these characters of GN parameter.

Figure 4 GN parameter



2.2.3.4 Support tools (Calltrak and C7TU)

Various tools like Calltrak and C7TU be able to display the name in the GN parameter field of ISUP IAM.

2.3 Hardware requirements

None.

2.4 Limitations and restrictions

- This feature will allow the DMS to send or receive calling names using GN parameter of an ISUP IAM ***only for the SETUP method*** of Calling Name Delivery (CNAMD).
- The calling party name will be carried in the GN parameter of ISUP IAM only for the trunks which have option ***CNAMINGN*** present in table ***TRKOPTS*** for that particular trunk group.

- End-to-end CCS connectivity is required on interswitch calls to transmit the calling DN to the terminating switch for CNAM. If the appropriate information cannot be transmitted due to a lack of CCS connectivity, the date, time, and an “out-of-area / unavailable” indication shall be transmitted to the CNAM customer.
- Names associated with calling parties who invoke the name privacy capability are not transmitted to the CPE a “private” indication shall be sent.
- Additional limitations and restrictions of TR-TSY-000030 and TR-NWT-001188 shall be followed.

2.5 Interactions

All the existing feature interactions will remain the same and the CNAMD feature will continue to function in the same manner as before.

2.6 Logs (LG)

2.6.1 New/modified logs

None.

2.7 Data schema (DS)

2.7.1 New/modified table

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
TRKOPTS	CHANGED	NEW

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

None.

2.9 Service orders (SO)

None.

2.10 Alarms (AL)

2.10.1 New/modified directories

None.

2.11 Command interface (CI)

2.11.1 New/modified commands

None.

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

None.

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

None.

2.14 Software optionality control (SOC)

Not applicable.

Table 2 SOC

SOC option name:	RES00096
SOC option title:	RES00096
SOC option control type:	Trak
New SOC option?	Yes
SOC option order code	RES00096
Option defined in DRU:	CCM
Affected products:	None

2.15 Glossary

Term	Description
CLASS	Custom Local Area Signalling Services
CNAMD	Calling Name Delivery
ISUP	ISDN User Part
ISDN	Integrated Services Digital Network
IAM	Initial Address Message
PIP	Party Info Parameter
GN	Generic Name
TCAP	Transaction Capabilities Application Part
RES	RESidential services
STP	Service Transfer Point
SCP	Service Control Point
ACM	Address Complete Message
INF	Information Message
PAM	Pass Along Message

2.16 References

REF #	Description of Reference
1	AG1726 - CLASS: Calling Name Delivery
2	AN0232 - CLASS: TCAP for Calling Name Delivery
3	AN0323 - CLASS: Calling Name TR Compliancy - Residential
4	AG0980 - Network Name Display
5	TR-NWT-001188 - CLASS Feature: Calling Name Delivery Generic Requirements
6	AQ1572 - Table TRKOPTS Generic Framework
7	HPCEQ - GETS HPC Egress Queuing

1: Functional description (FN)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This mandatory section is one of the earliest documents received by other organizations that pertains to the specific software functionality. This section helps Customer Information Development (CID) writers determine the customer documentation requirements for the functionality. This section provides Nortel system engineering, customer engineering, customer service, customer information development, and others with advance information about forthcoming software functionalities. Other functionality design teams may reference this section when they are documenting their functionalities.

Instructions: FN should be reviewed by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.The following sections go to the customer: FN, DS, OP, LG, AL,CI, OM, SO, and AM. Do not refer to any other sections. Preliminary estimates for system recovery and real time are to be entered in the real time (RT) template in the same timeframe as the FN.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

FEATURE CANCELLED JUNE 7, 1999

1.1 Feature name

REDIRECTION ON SDMI (Simplified Message Desk Interface) USING ADD (Agent Data Decoupling)

Use the title given in the DDOC ID section expanding out all acronyms.

1.2 Description

Give a high-level description of this feature's purpose and main function(s). This description should provide the reader with an understanding of the structure and operation of the software from a customer perspective.

Specify system behavior under all conditions, including errors and exceptions. Include diagrams or flow charts to support the text. Give a detailed step-and-response procedure describing how a person (subscriber) activates or deactivates this functionality.

Use appropriate techniques to describe the feature operation such as examples, block diagrams, state diagrams, or any other functional diagrams.

1.3 Hardware requirements

Describe any new customer hardware dependencies introduced in this feature. Provide functional hardware block diagrams where applicable. Identify various hardware configurations and/or settings available to customer. For example, different trunk types or transmission level settings. Include PEC (Product Engineering Code) numbers tthat will be used to market the product.

Note: Do not include packaging information. Do not refer to sections that are not seen by the customer, such as the EI section.

1.4 Limitations and restrictions

Include only those that are visible to the user. Describe the incompatibilities, limitations and restrictions imposed by this feature that may affect the customer. For example, call waiting is not compatible with call forwarding busy. Put non-visible limitations and restrictions in the DD section.

1.5 Interactions

Describe the interactions between this feature and existing features as seen by the customer. Describe the impact of these changes, where applicable. For example, describe the effect a conference call has on call waiting, call forwarding, and so forth.

DDOC section summaries

The following sections are executive summaries of the DDOC to identify to the customer if they need to read the other sections.

Complete summary section for all of the effected DDOC sections, otherwise indicate if not applicable.

Summarize the effects of the feature (for example, list the DS, LOGs, OPs, OMs, and commands that are being introduced, changed, or deleted) on the

components of DMS listed below. The FN is a summary format presented to the customer. The details of the changes to the components must be described in the appropriate DDOC section. Do not use customer names.

1.6 Logs (LG)

List ALL log reports effected by this feature.

1.6.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

1.7 Data schema (DS)

1.7.1 New/modified tables

Table names must not exceed 8 characters; no special characters; alphanumeric only. For example, do not use'$', '_', '®'.
Example: Table Control: OLD -- table size is fixed; NEW -- table size is dynamically allocated.

Note: If you are making changes to tables that will effect the RES Environment (e.g. adding a new line option), please see PLS DIS document LTRESCHK. Refer to the PLS home page (http://47.80.12.39:31462/pls). DS section entries should be specifically numbered 0 to 32 000, which is the default entry, and any customer restrictions should be highlighted.

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

1.8 Office parameters (OP)

1.8.1 New/modified office parameters

If the office parameter has been relocated, specify the old table name. Make office parameter names as simple as possible.

PARM table names should be in the format “OFC... “ (for example, OFCENG, OFCstd, OFCVAR, etc.).

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

1.9 Service orders (SO)

Summarize Service Order impacts of this feature. Also, identify other limiting conditions that may apply to the line class code (LCC) or option.

IDENTIFY any NEW LCC introduced by this feature:

IDENTIFY any NEW OPTIONS introduced by this feature:

LIST options NOT compatible with new options introduced:

FOR EACH OPTION, list other options that must be assigned.

1.10 Alarms (AL)

List any alarms created or changed by this feature.

1.10.1 New/modified directories

List all the directories affected by this feature.

Directory names cannot exceed 15 characters. Commands that can be entered directly from the CI environment belong to one of the two base directories which are automatically attached to the user's symbol table at logon: PROGDIR or SYSDIR.

TARGET: Indicate if SUPERNODE, BRISC, BOTH or OTHER. If OTHER, specify.

Indicate if directory is RESident or NONRESident in the load.

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

1.11 Command interface (CI)

1.11.1 New/modified commands

List all the commands effected by this feature. Command names must not exceed 12 characters.

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

1.12 Operational measurements (OM)

1.12.1 New/modified OM groups

List all OM GROUPS effected by this feature. Group Name acronym must not exceed 8 characters. Provide a brief explanation of why the OM group has been created, changed or deleted

Indicate how many registers there are in this group.

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

1.13 AMA/Billing information (AM)

1.13.1 New/changed AMA/billing information

List all billing formats effected by this feature.

BILLING FORMAT: Specify format, for example: BELLCORE, SMDR, Metering.
NEW/CHANGED: Indicate whether billing format is new or changed.
APPLICATION: Specify switch type(s) effected, for example: MDC, Toll.
STANDARDS: Specifications -- LSSGR, CCITT, NTI,

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

Table 7 New or modified AMA/billing information (Continued)

Billing format	NEW/CHANGED	Application	Standards

1.14 Software optionality control (SOC)

There are many ways of making a feature optional. Only complete this section if the optionality of your feature is controlled using the Software Optionality Controller (SOC). Otherwise delete this section.

A description of SOC with guidelines to its use is available in PLS FMDOC as module SOCGUIDE. If the feature places software under SOC control, you must ensure that:

1. all products using the software support the type of SOC control. For example, not all products support usage SOC.
2. existing functionality is activated over ONPs, regardless of the state of the SOC option.

Table 8 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

1.15 Glossary

To define any non-standard terms or acronyms to make this FN more easily understood, replace example text in the table template below. Standard terms are documented in the *DMS-100 Family Glossary Reference Manual* (NTP 297-1001-825) available on-line at http://47.214.163.96/users/laing/WebStuff/glossary.html.

Term	Description
New term	definition

1.16 References

List sources in the public domain only, NTP documents and related DDOCs. Do not list any NORTEL proprietary documentation.

2: Functional description (FN)

2.1 Feature name

59013169 - Dynamically Controlled Routing Interworking with AIN

2.2 Feature synopsis

This activity (59013169) enables Advanced Intelligent Network (AIN) interworking with Dynamically Controlled Routing (DCR) product and makes the DCR feature supported for AIN. This activity has the following functional components.

- DCR Handicap removal
- DCR route selector Support for AIN response routing / translations
- AFR trigger / Netbusy EDP-R Interworking with DCR
- Traver Support for DCR AIN interworking

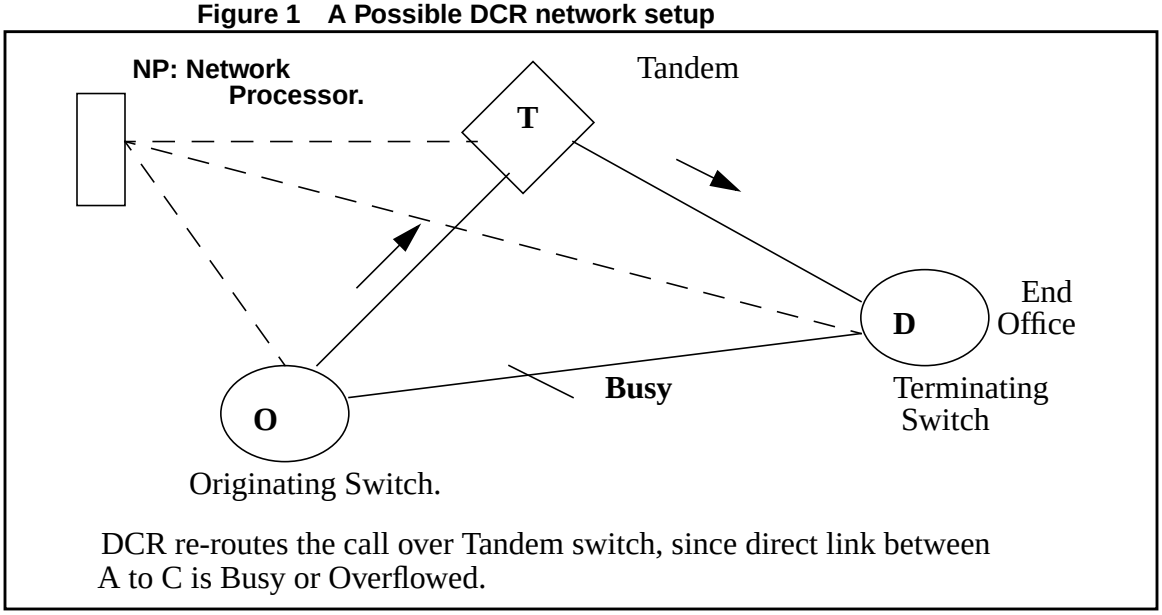
This feature is currently supported for Canadian loads only. **[REQ760561]**

2.3 Feature Description

2.3.1 Background information

The Dynamically Controlled Routing (DCR) feature provides the ability to dynamically route overflow traffic that is separated by one or two links from an originating switch. Each switch of the DCR Network provides traffic congestion data to a centralized processor called ‘Network Processor (NP)’ describing switch’s resource usage. This data is used by the NP to calculate alternate routing recommendations for calls that overflow their direct route and then provide the switches with these recommendations. Please refer to “Figure 1 A Possible DCR network setup” on page 60.

Figure 1 A Possible DCR network setup



According to the DCR call routing algorithm, calls which are received on a DCR incoming trunk are only allowed to terminate through direct routes. DCR blocks tandeming of calls which are received on a DCR incoming trunk at the tandem office or the destination office by applying an attribute to the call which is called a ‘handicap’.

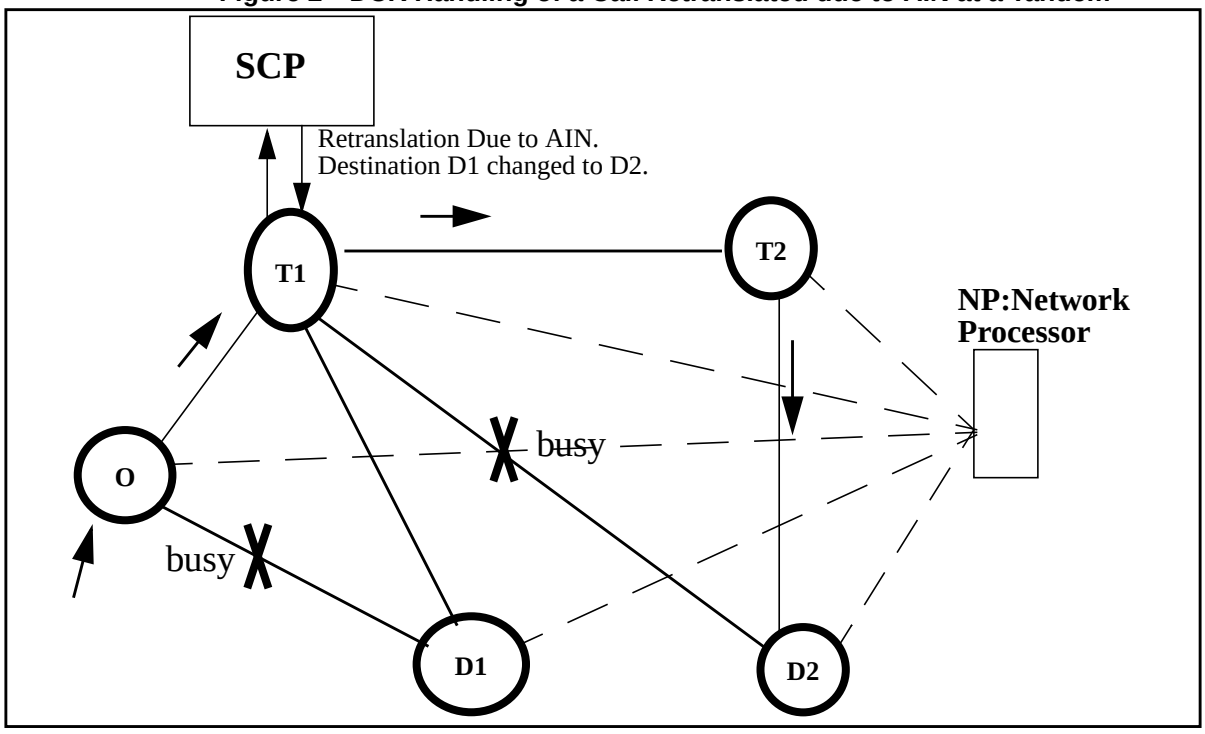
2.3.2 DCR Handicap removal

2.3.2.1 DCR Handicap removal for calls redirected / retranslated by AIN [REQ760553, REQ760557]

The DCR handicap is removed for the calls redirected or retranslated by AIN due to AnalyzeRoute / ForwardCall / CollectInfo responses. This enables the calls incoming on a DCR trunk to use the DCR recommended tandem routes to route towards the final destination.

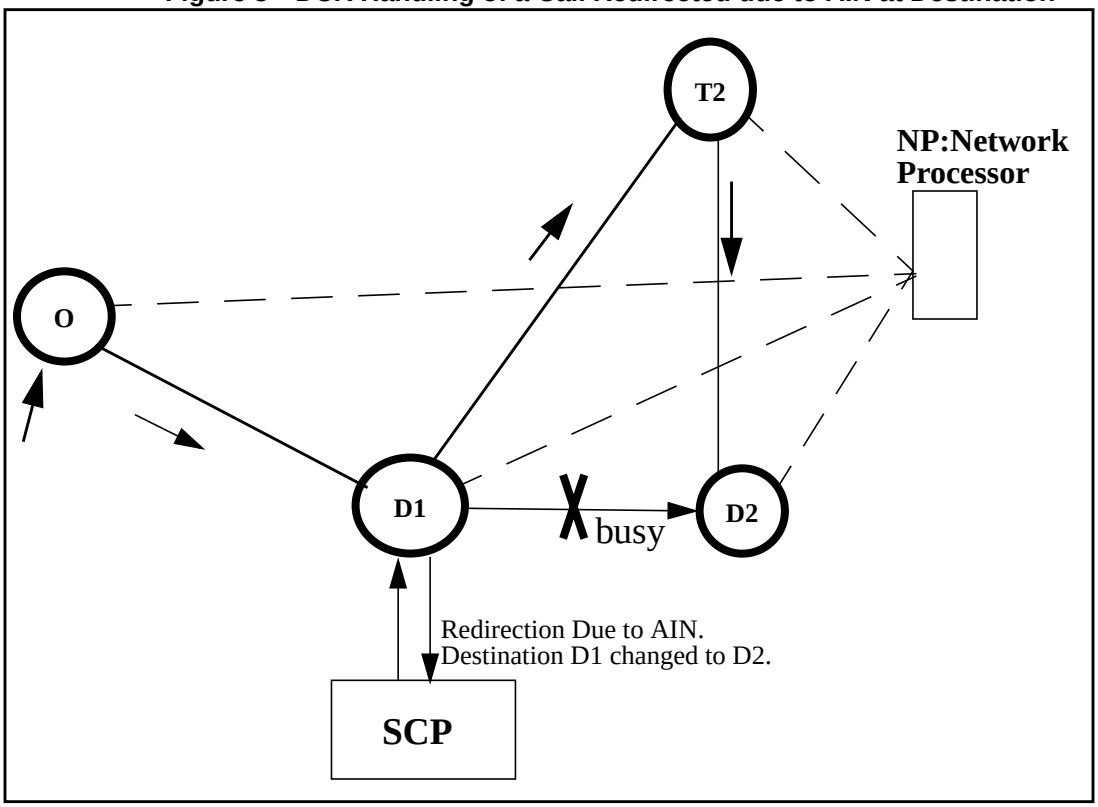
When the SSP receives Continue, OfferCall, AuthorizeTermination or Disconnect message in response to any valid TDP-R / EDP-R query, the SSP will not remove the DCR handicap on the call incoming on a DCR trunk.

Figure 2 DCR Handling of a Call Retranslated due to AIN at a Tandem



"Figure 2 DCR Handling of a Call Retranslated due to AIN at a Tandem" on page 61, presents an example of a call that originates from node O and that is initially destined to node D1. Given that link O-D1 is not available for this call, it uses the recommended tandem route for O-D1, which goes through node T1. At node T1, the call would normally be routed to node D1 through the direct link, or simply blocked or sent to the exception routes if the link is not available. However in this example, the call gets retranslated due to AIN towards destination D2. Normally tandeming at this point would not be allowed by the DCR routing algorithm. However because of AIN retranslation the DCR handicap is removed. This call is treated by DCR as a new first offered call that can use the DCR recommended tandem routes. Given that the direct link from node T1 to node D2 is not available, it uses the recommended tandem route for T1-D2, which goes through node T2 in order to head towards its new destination.

Figure 3 DCR Handling of a Call Redirected due to AIN at Destination



"Figure 3 DCR Handling of a Call Redirected due to AIN at Destination" on page 62, presents a similar example for the redirection case. The call originates from node O and is initially destined to node D1, so the DCR routing algorithm suggests using the direct route. At node D1, the call has reached the destination switch, thus DCR routing is not invoked. An attempt is made to reach the destination DN, however the call is redirected by AIN to D2. Normally tandeming at this point would not be allowed by the DCR routing algorithm. However because of AIN redirection the DCR handicap is removed. This call is treated by DCR as a new first offered call that can use the DCR recommended tandem routes. Since the direct link to D2 is not available, the call uses the recommended tandem route for D1-D2, which goes through node T2.

2.3.2.2 DCR Handicap removal for STR-IP Conversation Message [REQ760554]

The DCR handicap is removed for the call incoming on a DCR trunk, when the SSP receives a Send_To_Resource to an external resource (IP). This enables the use of DCR recommended tandem routes while routing to the IP.

Note1: When the SSP receives a SendToResource to an external resource, the DCR handicap is removed. However when the SSP receives SendToResource to an Internal resource the DCR handicap is not removed.

Note2: In case of Continue / AuthorizeTermination / OfferCall response, with an intermediate SendToResource to an external resource the DCR handicap is removed during STR processing to route the call to an external resource (IP). However normally in case of Continue / AuthorizeTermination / OfferCall response without an intermediate SendToResource to an external resource the DCR handicap is not removed.

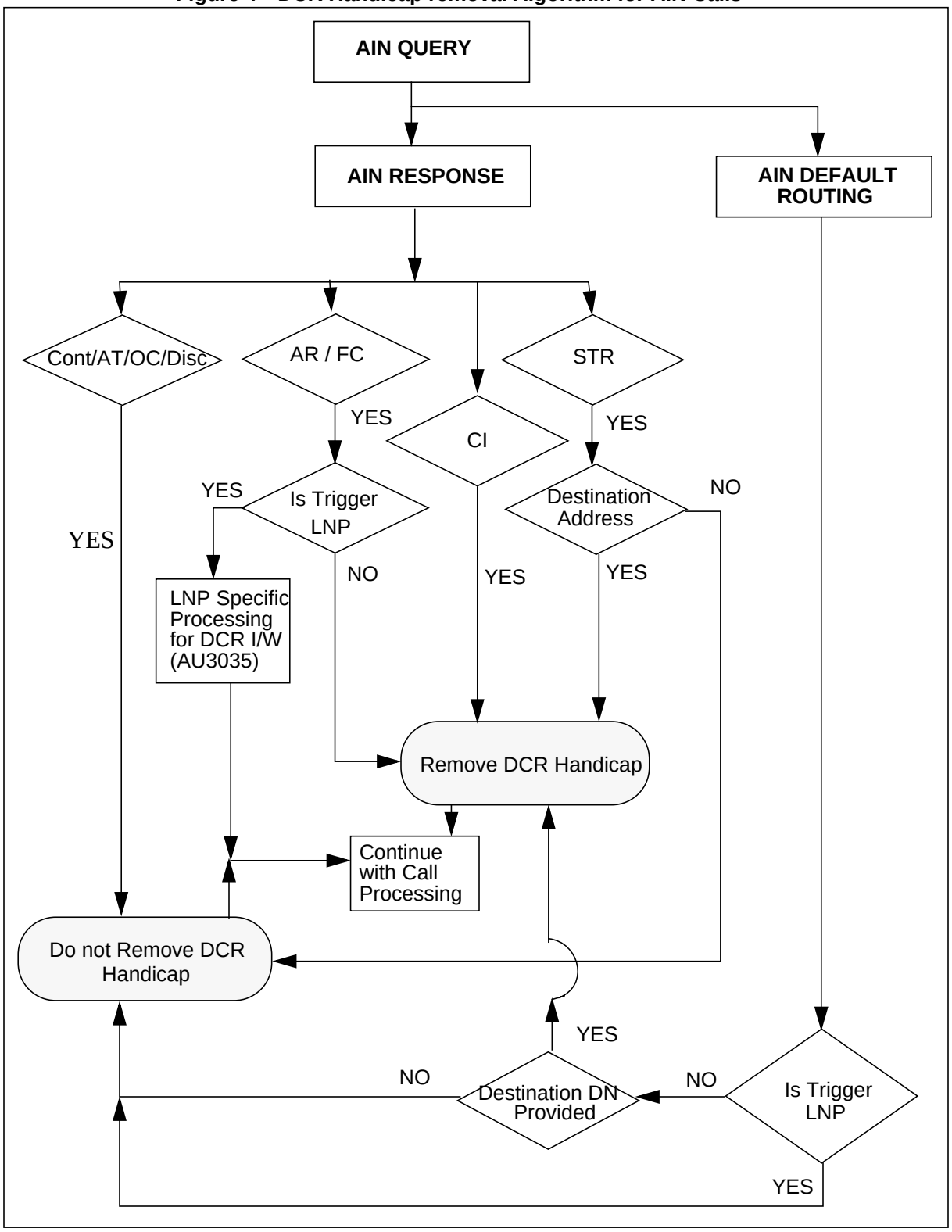
2.3.2.3 DCR Handicap Removal for AIN Default routing [REQ760556]

The DCR handicap is removed on the call incoming on a DCR trunk, when AIN default routing is used and if default routing provides the destination DN. This enables the calls incoming on a DCR trunk to use the DCR recommended tandem routes to route towards the final destination.

2.3.2.4 Overview of DCR Handicap Removal for AIN calls

Please refer to “Figure 4 DCR Handicap removal Algorithm for AIN Calls” on page 64. for an overview of DCR Handicap Removal for AIN calls.

Figure 4 DCR Handicap removal Algorithm for AIN Calls



2.3.3 DCR route selector Support for AIN response translations / routing [REQ760550]

DCR selectors, DCRT and NODE are supported for AIN response translations and AIN response routing (Routing using PrimaryTrunkGroup / AlternateTrunkGroup / SecondAlternateTrunkGroup parameters). DCRT and NODE selectors point to table DESTNODE for routing. The DESTNODE tuple can have “S” selector, “T” selector indexing to other tables or “NIL” indicating no routes. When “T” selector indexes to other tables, the indexed tuple’s route list is verified for AIN NON-Supported selectors. Please refer to “Figure 5 Verification of Routing selectors in table DESTNODE” on page 67.

Table 1 Selectors supported in tables OFRT, OFR2, OFR3, OFR4 for AIN Response Routing

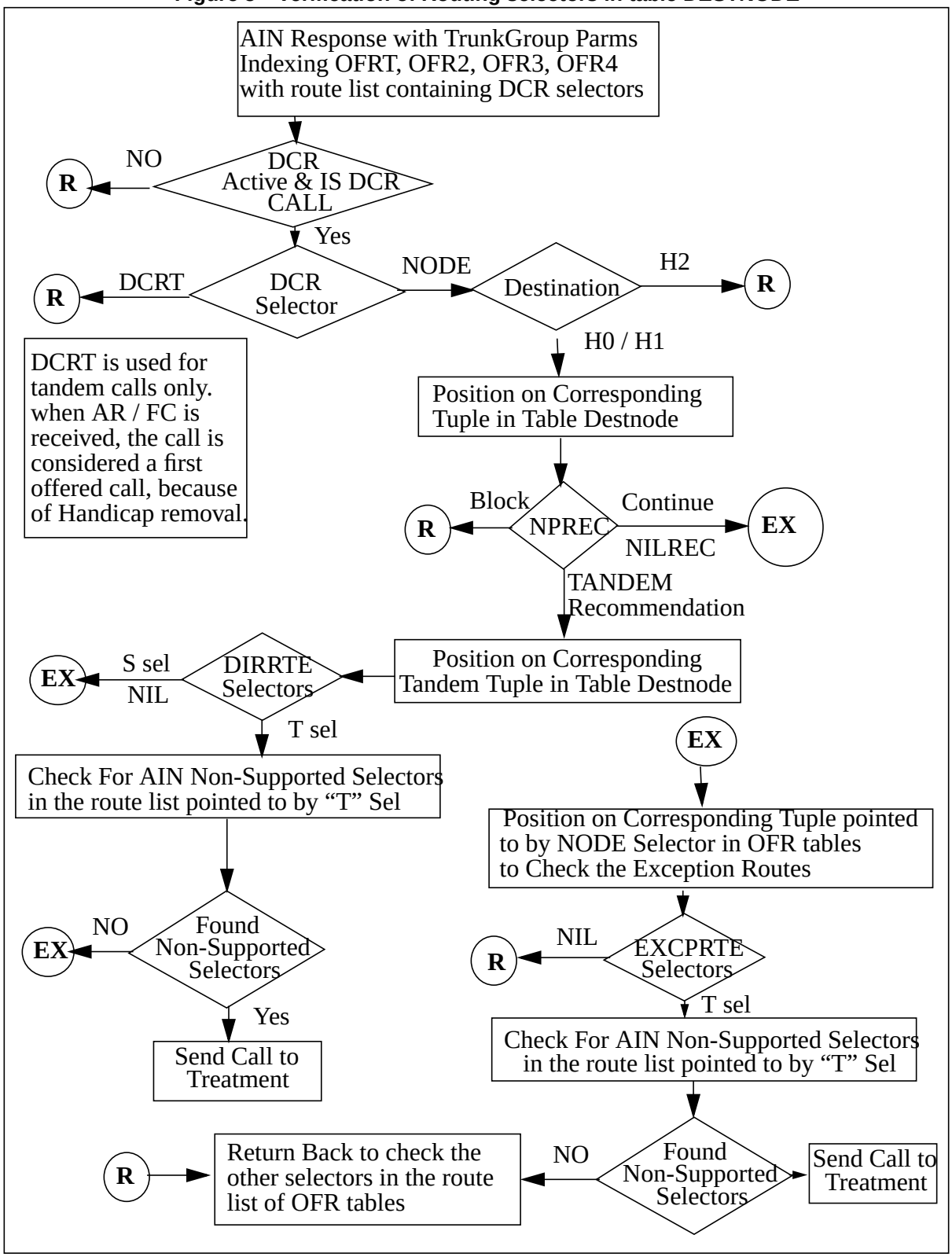
Routing selector’s name	Routing selector
Integrated Service Access	ISA
Two stage outpulsing	TS
Standard Digit Manipulation	S
No Position for ANI failure or ONI.	NPOS
Normal outpulsing	N
AFR trigger	AFR
Table	T
Same Table	ST
Directory number	DN
DCR selectors	DCRT
	NODE

Table 2 Selectors supported in tables IBNRTE, IBNRT2, IBNRT2, IBNRT4 for AIN Response Routing[a]

Routing selector's name	Routing selector
Integrated Service Access	ISA
Standard Digit Manipulation	S
Normal outpulsing	N
Virtual Facility Group	VFG
Outwats	OW
AFR trigger	AFR
Table	T
Directory number	DN

a. DCR selectors, DCRT and NODE are currently not supported in IBN routing tables.

Figure 5 Verification of Routing selectors in table DESTNODE



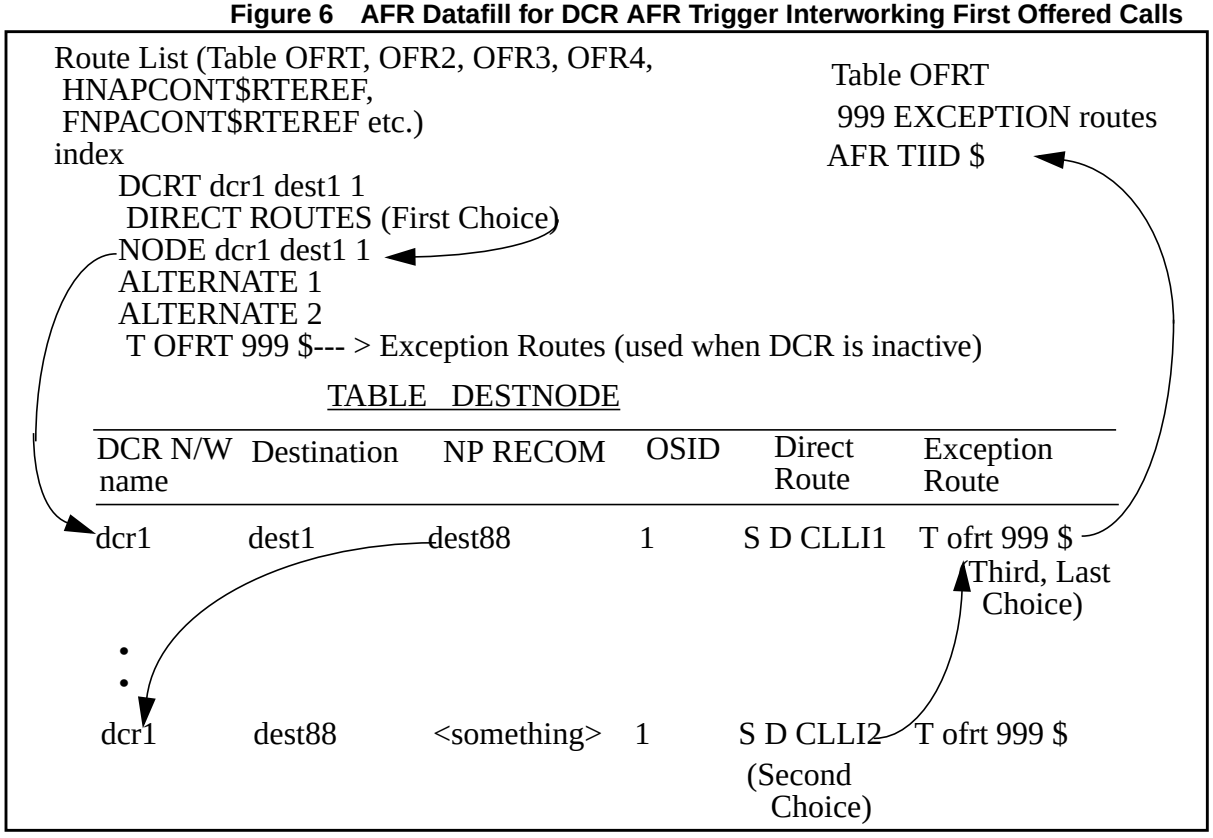
2.3.4 AFR trigger / Netbusy EDP-R Interworking with DCR [REQ760551, REQ760552]

Netbusy EDP-R is encountered when the DCR blocks the call and if NETBUSY NEL is armed.

AFR trigger is recommended to be datafilled only at the end of the DCR exception routes. AFR trigger will be encountered when all the DCR routes are busy (Direct, recommended tandem routes if applicable, and exception routes). However it is possible to specify AFR at any location in the route list. Once the SSP has encountered AFR in the route list, AFR trigger processing is started. The route list entries following AFR are ignored.

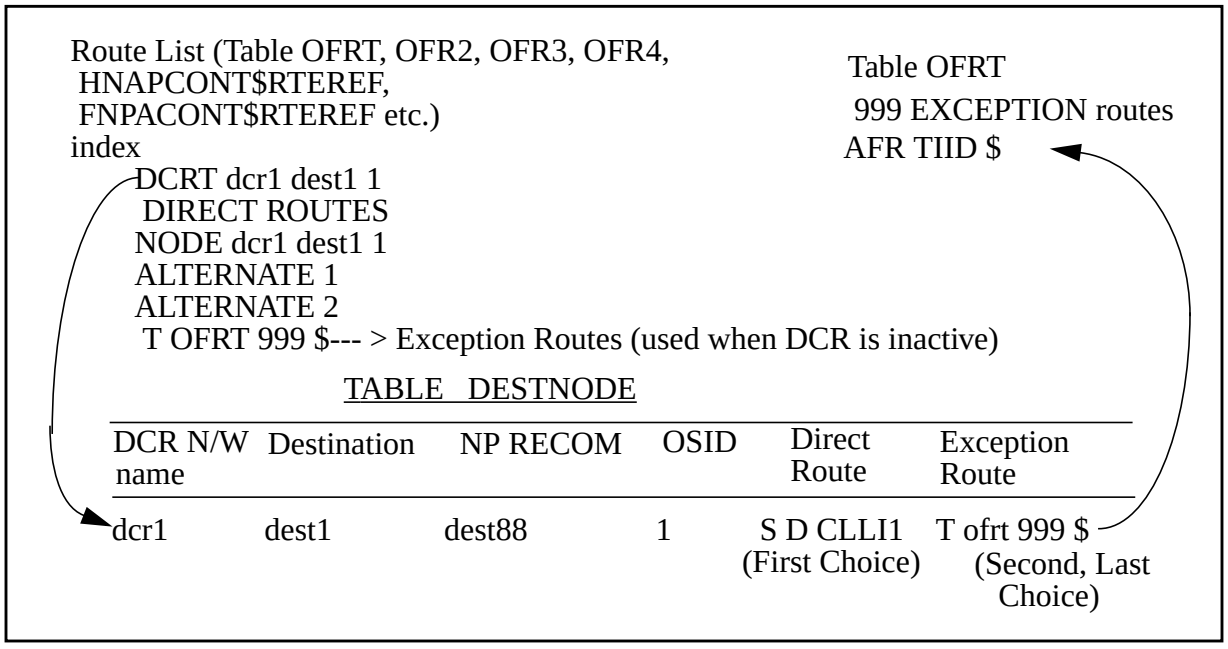
For first offered calls i.e new DCR calls. the DCRT route element in table OFRT / OFR2 / OFR3 / OFR4 / HNAPCONT$RTEREF / FNPACONT$RTEREF does not perform routing. The direct routes are tried first. If the direct routes are unavailable, then the NODE route element attempts the NP recommendation for the destination node (as found in the DESTNODE table). The DCR recommended routes in table DESTNODE are tried. If the recommended tandem routes are unavailable, then the exception routes to the final destination are attempted. Hence if AFR is datafilled at the end of the exception route list, the AFR trigger will be encountered only after all the DCR routes are busy. Please refer to “Figure 6 AFR Datafill for DCR AFR Trigger Interworking First Offered Calls” on page 69. The remainder of the route list in the above routing tables are not used when DCR is active.

Figure 6 AFR Datafill for DCR AFR Trigger Interworking First Offered Calls



For DCR tandem calls (calls incoming on a DCR trunk), DCRT route element in table OFRT / OFR2 / OFR3 / OFR4 / HNAPCONT$RTEREF / FNPACONT$RTEREF is used for routing to the DCR destination. The direct link to the destination is attempted (according to information in the DESTNODE table). If unsuccessful, the exception routes are used only when SLER (Second Leg Exception Routing) is ON. Please refer to “Figure 7 AFR Datafill for DCR AFR Trigger Interworking for TANDEM calls with SLER ON” on page 70. When SLER is OFF exception routes are not used for routing. Hence the AFR trigger even if datafilled in exception route is not encountered. Please refer to “Figure 8 AFR Datafill for DCR AFR Trigger Interworking for TANDEM calls with SLER OFF” on page 71.The rest of the route list is in the above routing tables are not used for tandem calls when DCR is active.

Figure 7 AFR Datafill for DCR AFR Trigger Interworking for TANDEM calls with SLER ON

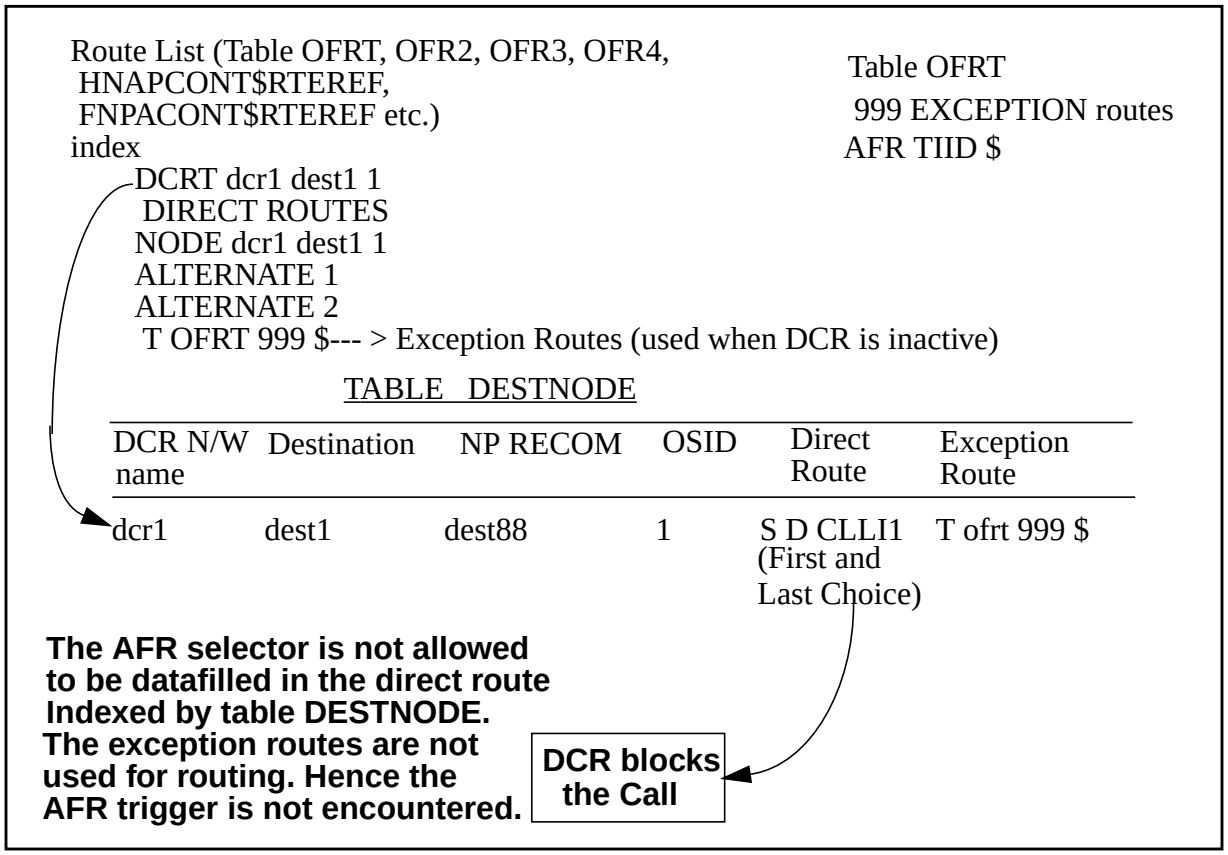


Note1: when DCR is inactive, the DCRT and the NODE route elements do not perform routing. The DCRT route element is skipped. The direct routes after the DCRT route element is tried first. If the direct routes are unavailable, the route elements after the NODE route element in the route list are tried until an available route is found. If no route in the route list is available, the call is blocked.

Note2: For a DCR tandem call, if SLER is ON, the exception routes are tried once the direct routes are exhausted. When SLER is OFF the call is blocked by DCR once the direct routes are exhausted.

SLER is a subcommand available under CI command "DCRUTIL". SLER (Second Leg Exception Routing) is turned ON/OFF on a office wide basis using this CI subcommand.

Figure 8 AFR Datafill for DCR AFR Trigger Interworking for TANDEM calls with SLER OFF



2.3.5 Traver Support for DCR AIN interworking

2.3.5.1 Traver Support For AIN Response Translations[REQ760558]

The DCR handicap is removed when AnalyzeRoute / ForwardCall / CollectInfo / SendToResource message is received in response to a Trigger / EDP-R. However because of DCR handicap removal the calls incoming on a DCR trunk will be considered as First Offered Calls i.e new DCR call. The current (Pre-NA013) AIN response translation traver output for the call incoming on a DCR trunk will display direct routes and exception routes (Only if SLER is ON) and the call is considered as a DCR tandem call. If SLER is OFF only direct routes are displayed. Due to the new functionality introduced by this activity, the AIN response translations traver output will list the DCR direct routes, recommended tandem routes (if applicable) and exception routes (irrespective of SLER being ON or OFF), when the DCR handicap is removed and the call will be considered as a new DCR call.

2.3.5.2 Traver Support For DCR AFR Trigger Interworking [REQ750574]

The traver is enhanced by this feature to support DCR interworking with AIN AFR trigger. When the DCR call traverses through the DCR routes and if an AFR pattern is encountered, the traver displays encountering of AFR trigger in both trace and notrace portion.

2.3.6 Misc [REQ760560, REQ760563]

All applicable AIN triggers and events will be encountered before, during and after DCR involvement in the call.

The DCR interworking with AIN is supported for all trunk group types supported by AIN.

2.4 Hardware requirements

None

2.5 Limitations and restrictions

For DCR tandem calls (calls incoming on a DCR trunk) the exception routes are used only when SLER (Second Leg Exception Routing) is ON. When SLER is OFF, the exception routes are not used for routing. Hence the AFR trigger even if datafilled in exception route list is not encountered.

2.6 Interactions

This feature enables the interaction between AIN and DCR.

2.7 Logs (LG)

This feature does not introduce any new logs or change the functionality of the existing logs.

2.8 Data schema (DS) [REQ760551]

This feature does not create new tables or change any of the existing tables.

However for DCR interworking with AIN AFR trigger, it is recommended that AFR trigger be datafilled at the end of the DCR exception routes.

Please refer to DS section of this DDOC for more details.

2.9 Office parameters (OP)

N/A

2.10 Service orders (SO)

N/A

2.11 Alarms (AL)

N/A

2.12 Command interface (CI) [REQ760558, REQ760574]

The DCR handicap is removed when AnalyzeRoute / ForwardCall / CollectInfo / SendToResource message is received in response to a Trigger / EDP-R. However because of DCR handicap removal the calls incoming on a DCR trunk will be considered as First Offered Calls i.e new DCR call. The current (Pre-NA013) AIN response translation traver output for the call incoming on a DCR trunk will display direct routes and exception routes (Only if SLER is ON) and the call is considered as a DCR tandem call. If SLER is OFF only direct routes are displayed. Due to the new functionality introduced by this activity, the AIN response translations traver output will list the DCR direct routes, recommended tandem routes (if applicable) and exception routes (irrespective of SLER being ON or OFF), when the DCR handicap is removed and the call will be considered as a new DCR call.

When the DCR call traverses through the DCR routes and if an AFR pattern is encountered, the traver displays encountering of AFR trigger in both trace and notrace portion.

Please refer to CI section of this DDOC for more details.

2.13 Operational measurements (OM)

This feature does not introduce any new OMs nor does it change the functionality of the existing ones.

The DCR handicap is removed for the calls redirected or retranslated by AIN. However because of DCR handicap removal the calls incoming on a DCR trunk will be considered as First Offered Calls. The operational measurements for DCR will handle these calls as if the call was a new DCR call rather then a call which was incoming on a DCR trunk.

When the DCR handicap is removed for calls incoming on a DCR trunk the call will be considered as First Offered Call. Due to this the OM pegs for register FRSTOFRD of OM group DCRDEST, register FRSTLOVF of OM group DCRLINK may increase and register DCRTAND of OM group DCRICTRK, register SCNDLOVF of OM group DCRLINK may decrease.

Note: Only the OMs which have direct impact on their counts due to this feature have been mentioned.

2.14 AMA/Billing information (AM)

This feature does not change any of the existing AMA/Billing functionality.

2.15 Software optionality control (SOC) [REQ800127]

Table 1 SOC

SOC option name:	AIN SE R7 Intrwk DCR
SOC option title:	DCR interworking with AIN
SOC option control type:	tracked_state
New SOC option?	YES
SOC option order code	AIN00060
Option defined in DRU:	DMSCNA13
Affected products:	LEC00013, LET00013,LLT00013

2.16 Glossary

Term	Description
ACR	Alternate Carrier Routing
AFR	Automatic Flexible Routing
AR	Analyze Route
AUTHTERM	Authorize Termination
AT	Authorize Termination
CI	Collect Info
CONT	Continue
DCR	Dynamically Controlled Routing
DISC	Disconnect
EACR	Enhanced Alternate Carrier Routing
EDP-R	Event Detection Point - Request
FC	Forward Call
IP	Intelligent Peripheral
LNP	Location Number Portability
NP	Network Processor
OC	Offer Call
SLER	Second Leg Exception Routing
STR	Send To Resource
SCP	Service Control Point
SSP	Service Switching Point

2.17 References

DMSDCRPS:DMS DCR Product Specification.

2: Functional description (FN)

2.1 Feature name

Originating Call Model-Multiple Extended TCAP Transactions

(OCM-METT)

2.2 Description

This activity provides SSP support for Multiple Extended TCAP Transactions (METT) in the originating call half, which means multiple extended transactions associated with the same originating call half can remain open at the same time. OCM-METT support is built on the Next Event List (NEL) architecture and Topology Mapping Environment (TOME) framework. This activity does not support METT on the terminating call half.

OCM-METT is also widely known as Nested Transactions. However, the term ‘nested’ does not describe correctly the AIN event behavior to be supported by this activity. Hence the terminology used to refer this activity is OCM-METT, as used in GR-1298, Issue 4, Revision 1, section 4.1.3.

2.2.1 Scope of OCM-METT

The Scope of OCM-METT is broadly linked to the Originating Call Model events:

- Network_Busy
- O_Answer
- O_Called_Party_Busy
- O_No_Answer

Please refer to chapter 8 “Originating Call Model Events” from the Product Specification Version AF02, for the complete details of the OCM-Event arming, detecting and processing.

The following states the scope of the OCM-METT:

The OCM-METT is allowed for those responses which can have a valid RRBCME message in the conversation package. Please refer to Chapter 17 Table 113 “Valid RRBCME and message pairings” from the Product Specification Version AF02, for a list of the response messages that are allowed to arm OCM NEL.

Hence OCM-METT is allowed only for triggers where the response message can arm OCM NEL, Table 336 “Datafilling for responses”, from the Product Specification Version AF02, identifies the TDPs at which the response messages mentioned above can be received.

2.2.2 Event Classification

2.2.2.1 Backward Direction EDP precedence

An event is considered an “event in the backward direction” when notification of the occurrence of the event propagates from the terminating party to the originating party. When events occurring in the backward direction are detected, the events are offered to the transaction in order from the newest to oldest. If the transaction has armed the event as an EDP-N, the event is reported. The following events are considered “events in the backward direction:”

- Network_Busy(EDP-R)
- O_Called_Party_Busy(EDP-R)
- O_Answer(EDP-N)

2.2.2.2 O_No_Answer EDP Precedence

The O_No_Answer (EDP-R) is a timer based event, and is not an event that propagates forward or backward in call processing. For O_No_Answer, the shortest timer in the BCM that is active will determine the transaction that will receive the report. When there are multiple O_No_Answer events armed with equal timer values the detection and processing of these events are indeterminate.

2.2.3 Behavior of OCM-METT

Before NA013(this activity) only one OCM-NEL can be open in a call half. If a response message is received with RRBCME requesting arming of another NEL while the first NEL is already armed, the new NEL will be closed right away and a CLOSE message is sent to the SCP. In NA013, the second NEL in OCM will be armed. The NELs armed as part of the OCM-METT are also detected or processed as given in Chapter 8 of the Product specification version AF02.

The OCM-METT is not changing the behavior of arming multiple events in one RRBCME message.

The number of NELs that can be armed by OCM METT is limited by MAX_SERIAL_TRIGGER_COUNT, which is datafilled in the table OFCENG. The default value is 6, the MAX_SERIAL_TRIGGER_COUNT can be set to 8 which is the maximum value allowed per call leg. Please refer to Chapter 8, Section 8.8 “Serial triggering” of the Product Specification Version AF02, when the serial trigger count is incremented.

During the processing of the OCM-METT, the SSP or SCP may choose to disarm all the NELs, A CLOSE message is sent for various reasons as given in Chapter 17, Section 17.6 “Close message and processing”. The various

reasons of closing the armed NEL, the close cause can be any of them given in close cause parameter given in Table 117 section 17.8.4

The general behavior of OCM-METT can be broken down broadly into the behavior of the individual events themselves, which are given below:

2.2.3.1 O_No_Answer(EDP-R)

The O_No_Answer event can only be detected when the call is offered to a terminating agent on a switch, or when the call is routed through the network using a supported trunk. When an event is detected, the serial trigger count increments.

The SSP detects the O_No_Answer event when the T-ONoAnswer event timer expires. The value of the timer is derived in the following order:

a. The value of the Request_Report_BCM_Event parameter ONoAnswerTimer, when present.

b. The value of parameter AIN_O_NO_ANSWER_EVENT_TIMER in table OFCENG, when provisioned, or the default value of the AIN_O_NO_ANSWER _EVENT which is 18secs.

If the Called Party answers at any point of the time during the O_No_Answer Event processing, SSP closes all the extended transactions from newer to the older and sends a CLOSE message for each extended transaction with appropriate CloseCause to the SCP..

2.2.3.1.1 Multiple O_No_Answer events with different T-ONoAnswer timer values

When multiple O_No_Answer events are armed as part of OCM-METT, the event detection is purely based on the value of the T-ONoAnswer event timer values of the individual events. The events are processed one at a time upon their timer expiry.

Thus OCM-METT processes all the O_No_Answer events one by one till there are no more O_No_Answer events to be detected or processed.

2.2.3.1.2 Multiple O_No_Answer events with equal T-ONoAnswer timer values

When two or more O_No_Answer events have equal T-ONoAnswer event timer values, the OCM-METT processes that O_No_Answer event which was armed as part of an older transaction. The other expired events are not processed until the processing of the older event is completed. The SSP will allow all other timers to continue and process each of those events in turn. This

is also applicable to events whose T-ONoAnswer event timers have expired during the processing of any other events.

2.2.3.1.3 Multiple O_No_Answer events with equal T-ONoAnswer timer values with Analyze_Route message in response to an Older O_No_Answer Event Request

When the SSP receives a Analyze_Route message in response to a older transaction O_No_Answer event request, the call is routed to the Party as indicated in the CalledPartyID present in the Analyze_Route response message. When the call is cut through the connection to the Called Party the SSP cancels active O_No_Answer timers and closes all the extended transactions which were newer than the processed extended transaction.

2.2.3.1.4 Multiple O_No_Answer events with equal T-ONoAnswer timer values with Continue message in response to a Older O_No_Answer Event Request

When the SSP receives a Continue message in response to a older transaction O_No_Answer event request, the OCM-METT processes those expired O_No_Answer event which were armed in the newer transaction. If there were no expired O_No_Answer events then the call is continued.

2.2.3.1.5 Multiple O_No_Answer events with equal T-ONoAnswer timer values with Send_To_Resource message in response to O_No_Answer Event Request

When the SSP receives a Send_To_Resource message in response to a older transaction O_No_Answer event request message, the SSP closes the extended transaction and processes the Send_To_Resource message. While the Send_To_Resource message is being processed if any T-ONoAnswer event timer expires it is not processed till the Send_To_Resource message processing is completed.

2.2.3.1.6 Multiple O_No_Answer events interaction with OCM Triggers, TCM Trigger, TCM Events and Switch Based features.

The behavior is same when O_No_Answer events are armed in multiple call halves as part of the OCM-METT, and also when the Originator is subscribing O_No_Answer Trigger, or the Terminator is subscribing to T_No_Answer Trigger.

When there are multiple O_No_Answer events armed as part of OCM-METT, the call scenario can be complicated when the Analyze_Route response messages for all the event requests contain different CalledPartyIDs. The call will be offered to the Called Parties as indicated in the Analyze_Route messages in response to a newer O_No_Answer event requests and the call can

be taken down and offered to a different Called Party as indicated in the Analyze_Route response message received in response to a newer O_No_Answer event request. When the SSP receives Analyze_Route in response to a newer transaction O_No_Answer event request and routes the call, if at any time before this call attempt is answered, an older transaction than the one associated with this routing attempt redirects the call by sending another SCP routing message in response to an EDP-R message, the SSP shall give priority to the routing attempt associated with the older transaction. The routing attempt associated with the newer transaction shall be torn down.

In case the terminator is subscribed to T_No_Answer Trigger and if T_No_Answer event is armed in the Terminating Call Model Half, then a precedence exists between T_No_Answer Trigger and T_No_Answer event, i.e., T_No_Answer Trigger is not detected till the processing is completed for the T_No_Answer event. There is no precedence between O_No_Answer Trigger, O_No_Answer Event, T_No_Answer Trigger or T_No_Answer Event.

2.2.3.1.7 Error condition in response to O_No_Answer event request.

If an error is encountered while the SSP is awaiting the SCPs response to a O_No_Answer EDP-R in a newer open extended transaction, the SSP will allow all other T-ONoAnswer timers to continue and process each of those events accordingly.

2.2.3.2 O_Called_Party_Busy(EDP-R)

The O_Called_Party_Busy event can only be detected when the call is offered to a terminating agent on a switch, or when the call is sent thought the network using a supported trunk. When O_Called_Party_Busy event is detected , the serial trigger count is incremented.

2.2.3.2.1 Multiple O_Called_Party_Busy events

When multiple O_Called_Party_Busy events are armed as part of the OCM-METT the event is first detected by that O_Called_Party_Busy event armed by the Newest Transaction. Since the O_Called_Party_Busy is considered even in the backward direction, the notification of the occurrence of the Busy event propagates from the terminating party to the originating party, traversing backwards from newer to older armed O_Called_Party_Busy events, notifying newer to the older transaction arming O_Called_Party_Busy events.

2.2.3.2.2 Multiple O_Called_Party_Busy events with Analyze_Route message in response to a O_Called_Party_Busy Event Request

When the SSP receives a Analyze_Route message in response to a newer transaction O_Called_Party_Busy event request, the call is routed to the Party as indicated in the CalledPartyID present in the Analyze_Route response message. Depending on the state of the Called Party the following behavior can be expected:

1. Called Party Busy:

If the Called Party is Busy the busy treatment is not given to the Calling Party, but the event is next detected by the next oldest transaction arming the O_Called_Party_Busy Event.

2. Called Party Idle:

If the Called Party is Idle the Called Party starts ringing. If the Called Party Answers then all the extended transactions(older than the one being processed) will be closed. SSP will send a CLOSE message to the SCP with appropriate CloseCause parameter.

2.2.3.2.3 Multiple O_Called_Party events with Continue message in response to a O_Called_Party_Busy Event Request

When the SSP receives a Continue message in response to a new transaction O_Called_Party_Busy event request, the busy event is next detected by the next oldest transaction arming the O_Called_Party_Busy event. If this older transaction O_Called_Party_Busy event request also receives a continue response, the O_Called_Party_Busy event is now detected by the previous(oldest) transaction, thus if all the OCPB events receive continue response the events are detected from newer to the older transaction and ultimately the calling party is routed to Busy treatment. If any of the O_Called_Party_Busy event request receives Analyze_Route message in response, then the behavior is same as given in section 2.2.3.2.

2.2.3.2.4 Multiple O_Called_Party_Busy events with Send_To_Resource message in response to O_Called_Party_Busy Event Request

When the SSP receives a Send_To_Resource message in response to a O_Called_Party_Busy event request message, the SSP closes the extended transaction and processes the Send_To_Resource message. The older O_Called_Party_Busy event detection depends upon the outcome of the Send_To_Resource processing.

2.2.3.2.5 Multiple O_Called_Party_Busy events interaction with OCM Triggers, TCM Trigger, TCM Events and Switch Based features.

The behavior is the same when O_Called_Party events are armed in multiple call halves as part of the OCM-METT, and also when the Originator is

subscribing O_Called_Party_Busy Trigger, or the Terminator is subscribing to T_Busy Trigger. The Busy event detection is propagated in the backward direction.

2.2.3.2.6 Error condition in response to O_Called_Party_Busy event request.

If an error is encountered while the SSP is awaiting the SCPs response to a O_Called_Party_Busy EDP-R in a newer open extended transaction, the SSP will close all the extended transactions once when the call terminates.

2.2.3.3 Network_Busy(EDP-R)

The Network_Busy event is detected within the switch, when it processes the Analyze_Route or Forward_Call response message and determines that all suggested routes are busy or unavailable.

The OCM-METT behavior when multiple Network_Busy events are armed is similar to O_Called_Party_Busy event when Analyze_Route message is receive by the SSP in response to a Network_Busy Event request.

2.2.3.4 O_Answer(EDP-N)

O_Answer is an event in the backward direction. Upon detection of the O_Answer event the SCP is notified from Newer to the Older extended transaction in the backward direction, when multiple O_Answer event notification are armed by OCM-METT.

2.2.4 Example Scenarios

The examples illustrated describe the OCM-METT functionality broadly. The number of examples given here are very few, compared to the actual combination of scenarios possible on OCM-METT. **Please refer to the Appendix for further examples of OCM-METT call scenarios** Many of these examples depict the functionality of OCM-METT with events taken individually, however the behavior remains the same even if multiple events are armed in one RRBCME message. The setup to describe the example call scenarios can be broken into generic steps. Wherever the generic steps are not applicable the steps are stated explicitly.

The process of arming NELs or Events follow the following generic steps:

a. The events are armed in the response messages as given in the scope of OCM-METT. During call processing, the first RRBCME message with a request for NEL is always sent in response to a trigger request message. Subsequent message requesting for NEL can be in response to a trigger request message or a Event request message.

b. In the example scenarios multiple NELs per OCM call half are created arming Events through serial triggering. SDS trigger is mainly used in the examples to arm events as part of OCM-METT. The same behavior can be achieved through any other serial triggering requests. One example of arming an event is given below:

   i. Party A dials Party B and encounters a SDS trigger at the SSP. The Info_Analyzed query message is sent to the SCP. SSP receives Analyze_Route in response to Info_Analyzed query message and Request_Report_BCM_Event message, arming an Nth event NEL_N O_No_Answer with a timer value T_N, O_Called_Party_Busy, Network_Busy and O_Answer Notification events. The Analyze_Route message also sets the CalledPartyID parameter to Party C which is another SDS trigger number.

Note: N is limited by the maximum number of serial triggers as given in the Scope of the OCM-METT.

Please refer to “Figure 1 Legends used in the diagrams” on page 103, While referring to the diagrams given in the example scenarios, the following rules of thumb apply :

a. The 4 NELs per call half used in many of the examples is just for clarity of information or functionality, but this is not a limitation of the OCM-METT.

b. The example scenarios depict the functionality or processing of OCM-METT and not the final outcome of the call. how the call is processed after the OCM-METT is not shown in the examples, for e.g. the call

may be answered or it may time-out, or it may be abandoned once OCM-METT processing is completed.

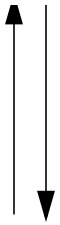
c. The functionality is broken down in steps to isolate the individual transactions which are independent of each other.

d. The TIME scale is used to break down the sequence of event detection and processing especially involving O_No_Answer event. It does not reflect the functionality in real-time perspective.

e. While describing OCM-METT functionality involving more than one call leg per call, for better understanding only 2 call halves are considered. Call halves can be created due to redirection may it be switch based or AIN based. The functionality is the same when multiple call halves exists per call.

f. While describing the functionality in the following example SDS trigger and Analyze_Route response message is used to arm the NELs in the OCM-METT, but the OCM-METT functionality remains the same when other trigger and response as given in the Scope of OCM-METT is used to arm the events.

Figure 1 Legends used in the diagrams



SSP to SCP Query and response processing

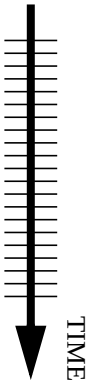
O_No_Answer or T-ONoAnswer timer expiry

Calling Party A the originator

Terminator or Called Party Not answering the call
Terminator ringing.

Terminator or Called Party Answers the Call

Terminator or Called Party is Busy



Time Scale

2.2.4.1 Example 1

Please refer to “Figure 2 OCM-METT functionality in NA013” on page 105, This example compares OCM-METT functionality in NA013 to that in NA012.

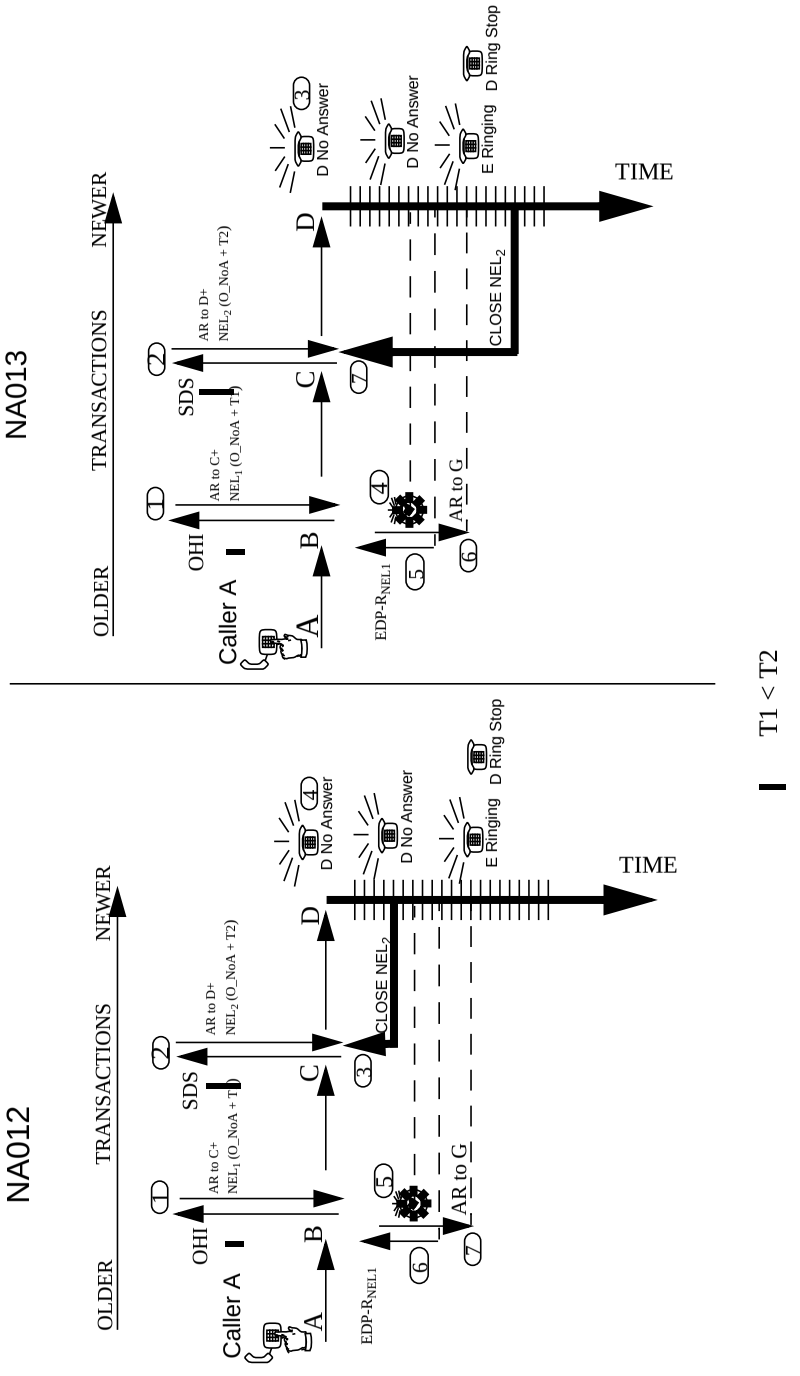
NA012 Behavior

1. The SCP request the SSP to arm the first NEL in a RRBCME message.
2. The SCP requests the SSP to arm the second NEL in a RRBCME message in a serial transaction, while the older NEL is open in the same call half.
3. The SSP will not arm the second NEL included in the RRBCME message of step 2. and the SSP sends a CLOSE message to the SCP.
4. The SSP will route the call according to the CalledPartyID in step 2. The SSP will also start the T-ONoAnswer timer. The Called Party D starts ringing.
5. The T-ONoAnswer timer expires.
6. The O_No_Answer event NEL_1 is detected and the appropriate EDP-R message is sent to the SCP.
7. The SSP receives an Analyze_Route message in response to the EDP-R, setting the parameter CalledPartyID to Party E. The call is forwarded to party E. Party D stops ringing and is disconnected from the call. The Party E starts ringing.

NA013 Behavior

1. The SCP requests the SSP to arm the first NEL in a RRBCME message.
2. The SCP requests the SSP to arm the second NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
3. The SSP will route the call according to the CalledPartyID in step 2. The SSP will also start the T-ONoAnswer timers for NEL_1 and NEL_2. The Called Party D starts ringing.
4. The T-ONoAnswer timer expires.
5. The O_No_Answer event NEL_1 is detected and the appropriate EDP-R message is sent to the SCP.
6. The SSP receives an Analyze_Route message in response to the EDP-R, setting the parameter CalledPartyID to Party E. The call is forwarded to party E. Party D stops ringing and is disconnected from the call. The Party E starts ringing.
7. The SSP will cancel the active T-ONoAnswer timer for NEL_2 , while the call is cut through the connection to the Party E as in step 6, and the SSP will send a CLOSE message to the SCP for the extended transaction NEL_2.

Figure 2 OCM-METT functionality in NA013

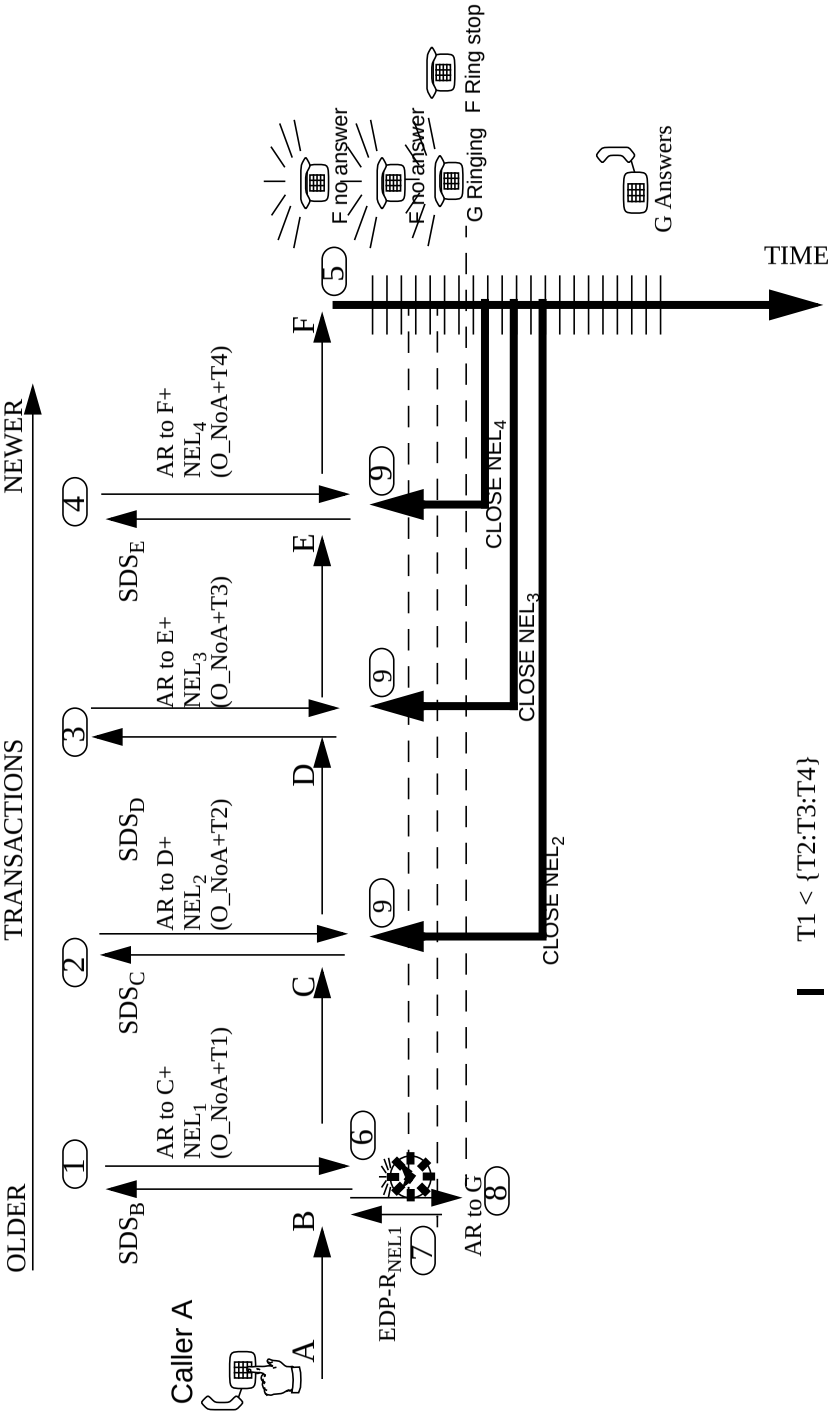


2.2.4.2 Example 2

Please refer to “Figure 3 Multiple O_NoA events with equal older transaction priority” on page 107, This example depicts the OCM-METT behavior while multiple O_No_Answer events are requested by the SCP, The older transaction is given the priority. The outcome of the older transaction processing can cut through the connection to the Called Party and closes the newer transactions if the newer transaction redirects or disconnects the call.

1. The SCP requests the SSP to arm the first NEL in a RRBCME message.
2. The SCP requests the SSP to arm the second NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
3. The SCP requests the SSP to arm the third NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
4. The SCP requests the SSP to arm the fourth NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
5. The call is offered to Party F simultaneously the O_No_Answer Timers T_1 T_2 T_3 and T_4 of all the O_No_Answer Events are started and the Party F starts ringing.
6. The timer T_1 expires for O_No_Answer Events NEL_1 .
7. NEL_1 is detected and an appropriate message is built and sent to the SCP.
8. The SCP responds with a Analyze_Route message to the NEL_1 EDP request, and also sets the CalledPartyID as G. The Analyze_Route message is processed and the call is offered to the Party G. The Party G starts ringing and the Party F is disconnected from the call and stops ringing. The timers T-ONoAnswer trigger timer, T_2 T_3 and T_4 are still running and not expired
9. A CLOSE message is sent to disarm the NEL_4 NEL_3 and NEL_2 once the call is offered to the Party G, eventhough the timers are running T_4 is running and not expired.

Figure 3 Multiple O_NoA events with equal older transaction priority

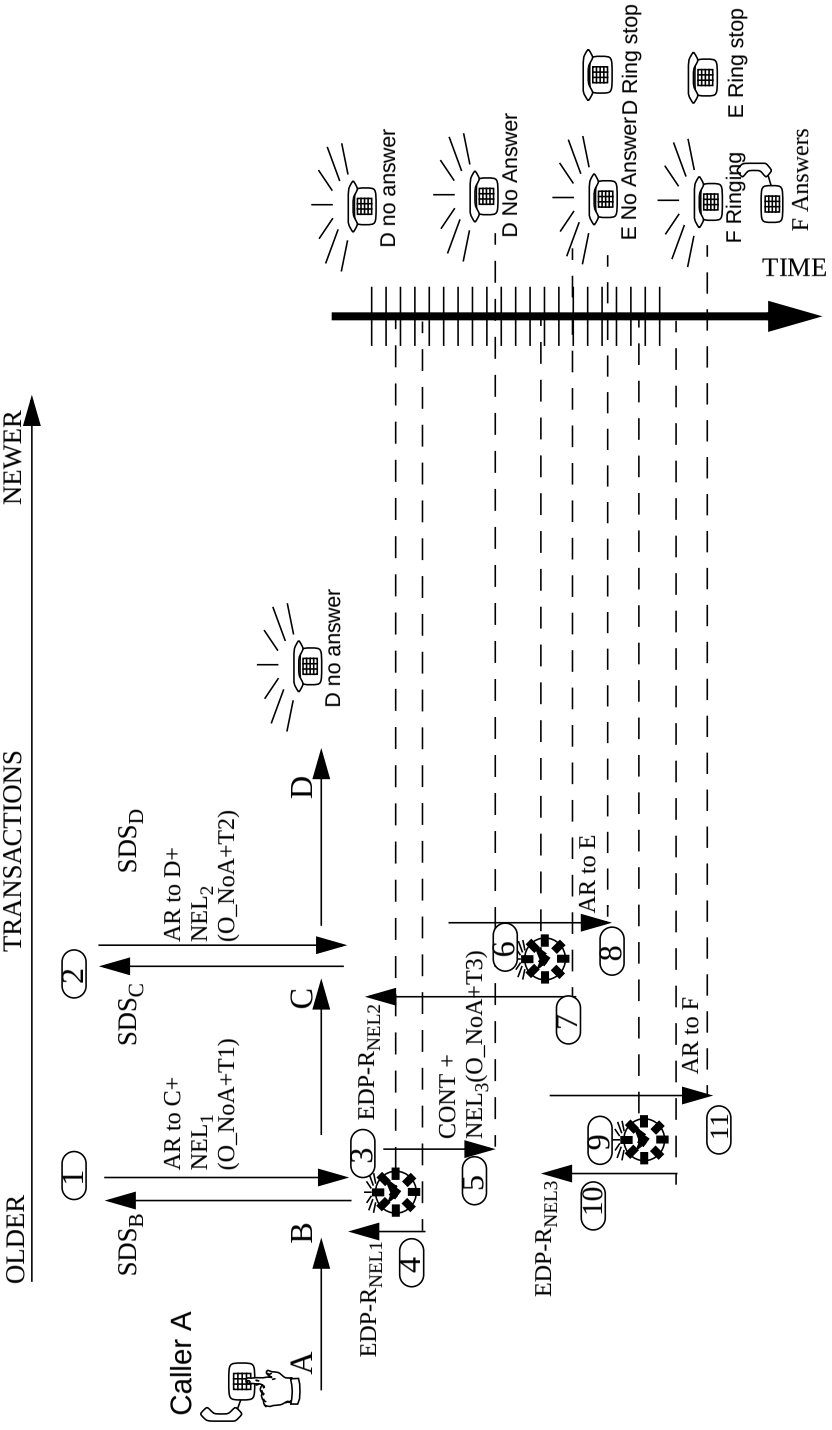


2.2.4.3 Example 3

Please refer to “Figure 4 Multiple O_NoA events with O_NoA EDP-R arming an event” on page 109, this example depicts the OCM-METT behavior while multiple O_No_Answer events are requested by the SCP, with T-ONoAnswer timer values. . The older transaction is given the preference. The outcome of the older transaction processing can cut through the connection to the Called Party and close the newer transaction if the older transaction redirects or disconnects the call.

1. The SCP requests the SSP to arm the first NEL in a RRBCME message.
2. The SCP requests the SSP to arm the second NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
3. The O_No_Answer timer for NEL_1 event expires
4. O_No_Answer event request message is built and sent to the SCP.
5. SCP responds with an Continue message and another Request_Report_BCM_Event message, arming the third O_No_Answer NEL_3 with a timer value T_3. The Party D has not answered and is still ringing and the O_No_Answer timer T_2 is still running.
6. The O_No_Answer timer for NEL_2 event expires
7. O_No_Answer event request message is built and sent to the SCP.
8. SCP responds with an Analyze_Route message for the O_No_Answer event request for NEL_2, it also sets the CalledPartyID as E. The Analyze_Route message is processed and the call is offered to Party E, Party D is disconnected from the call and it stops ringing. Party E starts ringing.
9. While Party E does not answer and the O_No_Answer timer of NEL_3 event expires.
10. O_No_Answer event request message is built and sent to the SCP.
11. SCP responds with an Analyze_Route message for the O_No_Answer event request for NEL_3, it also sets the CalledPartyID as F. The Analyze_Route message is processed and the call is offered to Party F, Party E is disconnected from the call and it stops ringing. Party F starts ringing..

Figure 4 Multiple O_NoA events with O_NoA EDP-R arming an event



2.2.4.4 Example 4

Please refer to “Figure 5 Multiple OCPB events backward direction EDP precedence” on page 112, This example depicts the behavior of OCM-METT when multiple O_Called_Party_Busy events are armed. This is an example of backward event direction EDP precedence. The same behavior can be expected if the SSP receives a Continue response for all the OCPB EDP-R.

Note: The OCM-METT behavior is the same if multiple Network_Busy events are armed.

1. The SCP requests the SSP to arm the first NEL in a RRBCME message.
2. The SCP requests the SSP to arm the second NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
3. The SCP requests the SSP to arm the third NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
4. The SCP requests the SSP to arm the fourth NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
5. The call is offered to Party F, and Party F is busy, the busy treatment is not played back to the called party.
6. The Busy event is detected in the backward direction, i.e newer transactions arming the O_Called_Party_Busy event will see the busy event first. Hence NEL_4 event is detected, an appropriate message is built and sent to the SCP.
7. The SCP responds with a Analyze_Route response for the O_Called_Party_Busy event NEL_4 EDP Request, setting the CalledPartyID as G.
8. The Analyze_Route response message is processed, and the call is routed to Party G, The Party F is disconnected from the call. Since the Party G is busy, the busy event will traverse in the backward direction and O_Called_Party_Busy event NEL_3 will be detected and an appropriate message is built and sent to the SCP.
9. The SCP again responds with a Analyze_Route response for the O_Called_Party_Busy event NEL_3 EDP Request, setting the CalledPartyID as H.
10. The Analyze_Route response message is processed and the call is routed to Party H. The Party G is disconnected from the call. Since party F is still busy, busy event will traverse in the backward direction and O_Called_Party_Busy event NEL_2 will be detected and an appropriate message is built and sent to the SCP.

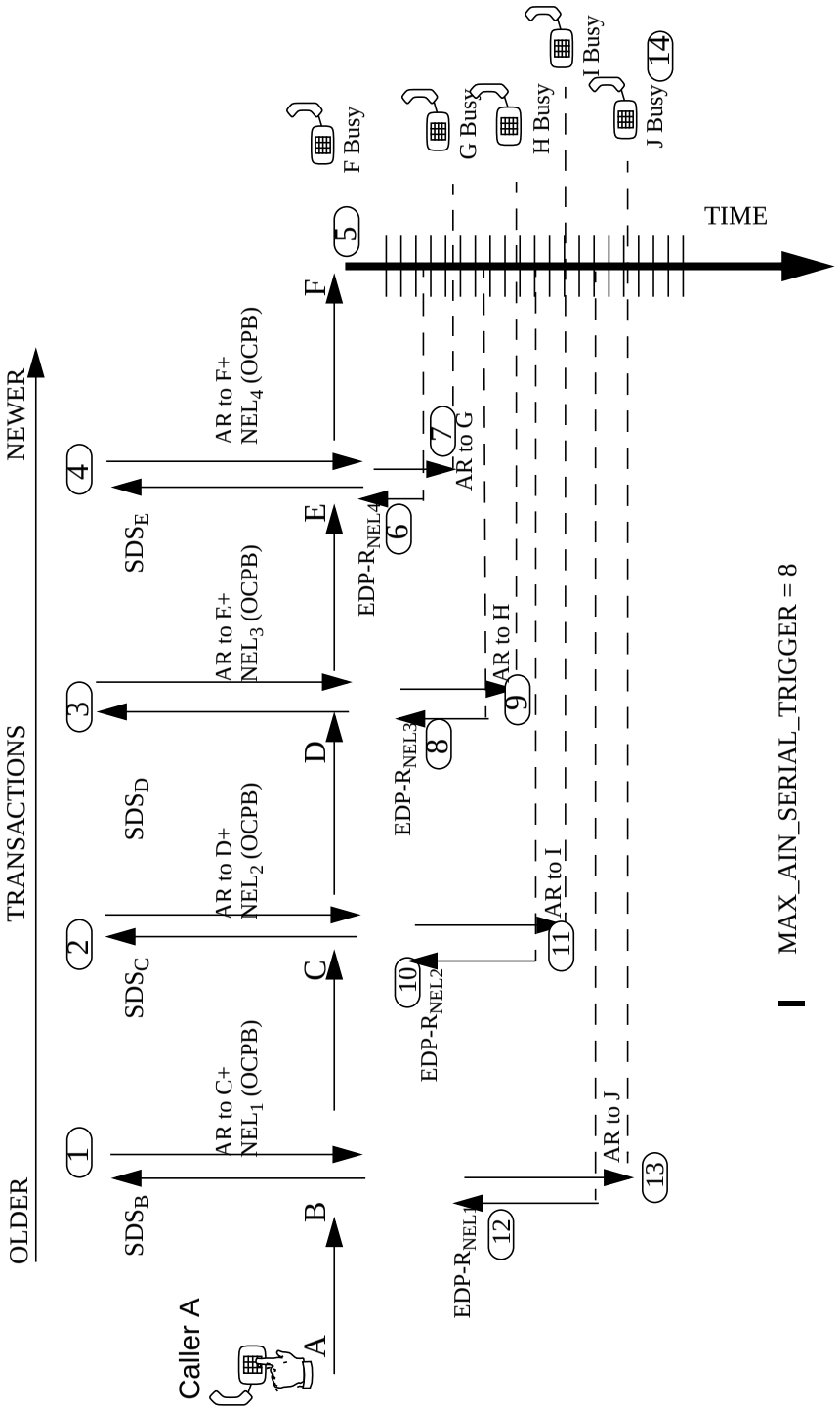
11. The SCP responds with another Analyze_Route response for the O_Called_Party_Busy event NEL_2 EDP Request. setting the CalledPartyID as I.

12. Again since Party I is busy, the Analyze_Route response will traverse the busy event in the backward direction and O_Called_Party_Busy event NEL_1 will be detected and an appropriate message is built and sent to the SCP.

13. The SCP responds with a Analyze_Route message response for the O_Called_Party_Busy event NEL_1 EDP Request.

14. A busy treatment is applied to Calling Party A, after all the O_Called_Party_Busy events have been processed.

Figure 5 Multiple OCPB events backward direction EDP precedence



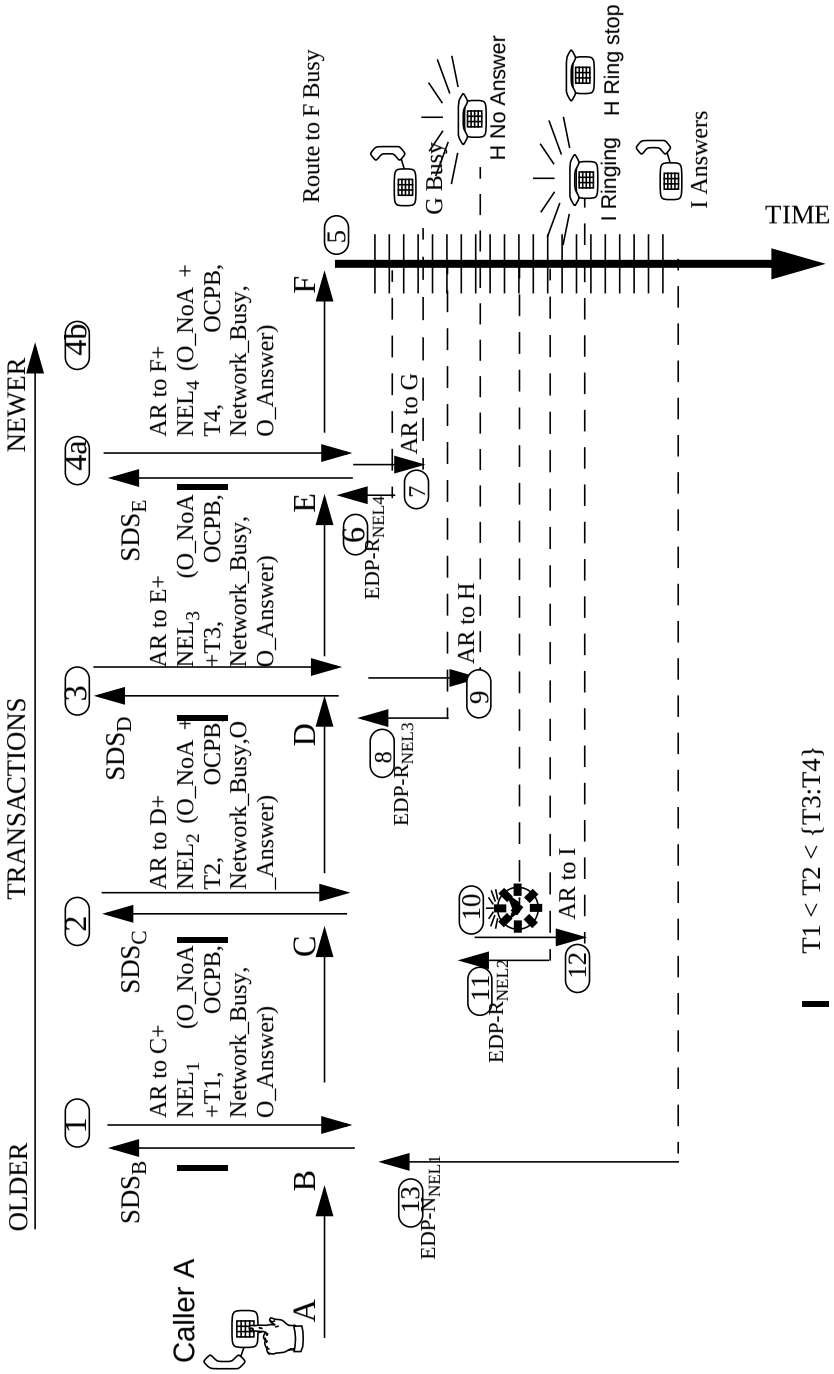
2.2.4.5 Example 5

Please refer to “Figure 6 OCM-METT with O_Answer, OCPB, O_NoA, Network_Busy” on page 115, This example depicts the behavior of OCM-METT when multiple NELs with different request events and notification events are armed.

1. The SCP requests the SSP to arm the first NEL in a RRBCME message.
2. The SCP requests the SSP to arm the second NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
3. The SCP requests the SSP to arm the third NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
4. The SCP requests the SSP to arm the fourth NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
5. The call is routed to Party F, the Route to Party F is busy.
6. The Network_Busy event is detected in the backward direction, i.e newer transactions arming the Network_Busy event will see the busy event first. Hence NEL_4 event is detected, an appropriate message is built and sent to the SCP.
7. The SCP responds with a Analyze_Route response for the Network_Busy event NEL_4 EDP Request, setting the CalledPartyID as G.
8. The Analyze_Route is processed and the call is offered to Party G. Party G is Busy. Since the Party G is busy, the busy event will traverse in the backward direction and O_Called_Party_Busy event NEL_3 will be detected and an appropriate message is built and sent to the SCP.
9. The SCP again responds with a Analyze_Route response for the O_Called_Party_Busy event NEL_3 EDP Request, setting the CalledPartyID as H. The call is offered to Party H and simultaneously the O_No_Answer Timers T_1 T_2 of the O_No_Answer Events are started and the Party H does not answers and starts ringing
10. Timer T_2 expires for O_No_Answer Events NEL_2.
11. NEL_2 is detected and an appropriate message is built and sent to the SCP while H is still ringing.
12. The SCP responds with a Analyze_Route message to the NEL_2 EDP request, and also sets the CalledPartyID as I. The Analyze_Route message is processed and the call is offered to the Party I. The Party I starts ringing and the Party H is disconnected from the call and stops ringing. The O_No_Answer event timer T_1 is still running and not expired.

13. I answers the call before the O_No_Answer event timer T_1 expires. A EDP Notification message is built for the O_Answer Notification event NEL_1 and sent to the SCP.

Figure 6 OCM-METT with O_Answer, OCPB, O_NoA, Network_Busy

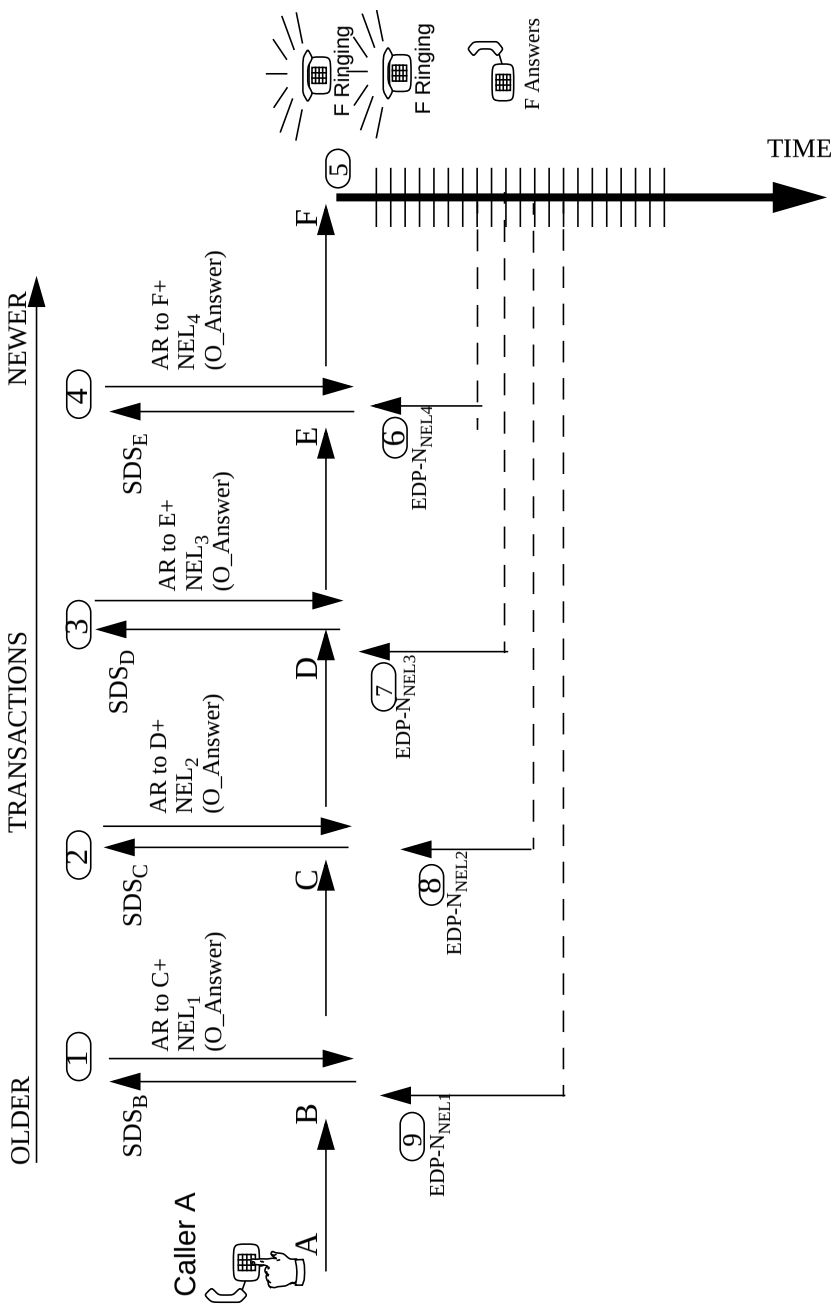


2.2.4.6 Example 6

Please refer to “Figure 7 OCM-METT with multiple O_Answer event notification” on page 117, This example depicts the behavior of OCM-METT when multiple O_Answer notification events are armed.

1. The SCP requests the SSP to arm the first NEL in a RRBCME message.
2. The SCP requests the SSP to arm the second NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
3. The SCP requests the SSP to arm the third NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
4. The SCP requests the SSP to arm the fourth NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
5. The call is offered to Party F, Party F starts ringing.
6. F answers the call. A EDP Notification message is built for the O_Answer Notification event NEL_4, NEL_3, NEL_2, and NEL_1 sent to the SCP sequentially from newer to the older transaction

Figure 7 OCM-METT with multiple O_Answer event notification



2.2.4.7 Example 7

Please refer to “Figure 8 OCM-METT with multiple O_NoA and STR-IP response to EDP-R” on page 120, This example depicts the behavior of OCM-METT when multiple O_No_Answer events are armed and when the SSP receives STR to IP in response to a O_No_Answer event request.

For a more clear understanding of STR-IP processing refer to Chapter 15.

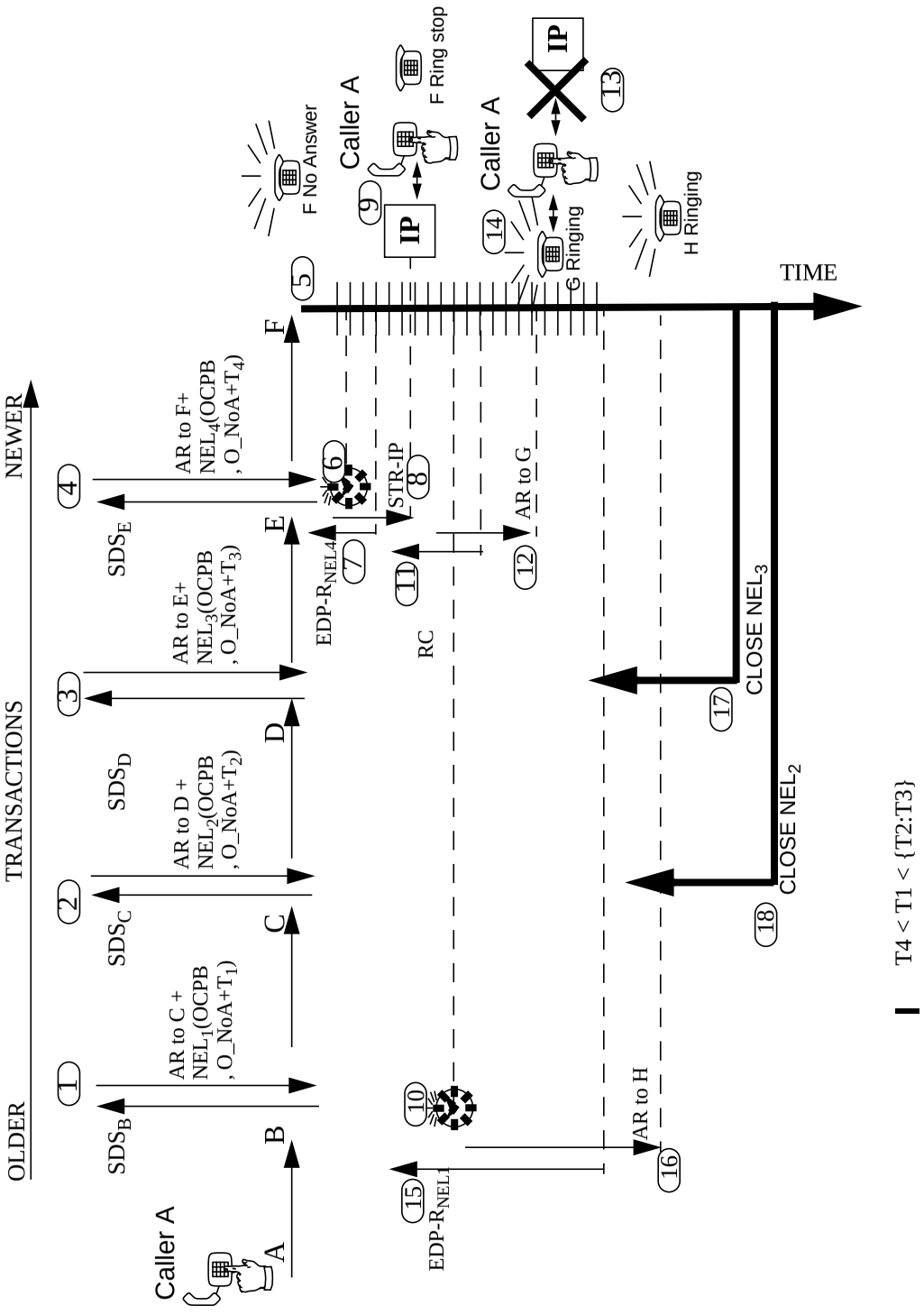
1. The SCP requests the SSP to arm the first NEL in a RRBCME message.
2. The SCP requests the SSP to arm the second NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
3. The SCP requests the SSP to arm the third NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
4. The SCP requests the SSP to arm the fourth NEL in a RRBCME message through a serial transaction, while the older NEL is open in the same call half.
5. The call is offered to Party F simultaneously the O_No_Answer Timers T_1 T_2 T_3 and T_4 of all the O_No_Answer Events are started and the Party F starts ringing.
6. The timer T_4 expires for O_No_Answer Events NEL_4.
7. NEL_4 is detected and an appropriate message is built and sent to the SCP.
8. The SCP responds with an Send_To_Resource to IP for the O_No_Answer event NEL_4.
9. The Send_To_Resource connects the Calling Party A to an IP and Party F is disconnected from the call and stops ringing. An announcement is being played by the IP to the Calling Party A.
10. The timer T_1 expires next for O_No_Answer Events NEL_1. While the Calling Party A is connected to IP and listening to the announcement. The expired O_No_Answer event NEL_1 is not processed till STR-IP processing is completed.
11. Resource_Clear message is sent to the SCP, after collecting the digits from the party Caller A.
12. SSP receives Analyze_Route message in response to the original EDP-R message sent in step 7. The CalledPartyID is set to G in the Analyze_Route message.
13. The SSP disconnects the IP connection from the Calling Party A.
14. The Calling Party A is connected to Party G.
15. The already expired event NEL_1 is detected and an appropriate message is built and sent to the SCP., after digit collection from the Calling Party A.

16. The SCP responds with a Analyze_Route message to the NEL_1 EDP request, and also sets the CalledPartyID as G. The Analyze_Route message is processed and the call is offered to the Party G. The Party G starts ringing. The timers T_2 and T_3 are still running and not expired.

17. A CLOSE message is sent to disarm the O_No_Answer Event NEL_3.

18. A CLOSE message is sent to disarm the O_No_Answer Event NEL_2.

Figure 8 OCM-METT with multiple O_NoA and STR-IP response to EDP-R

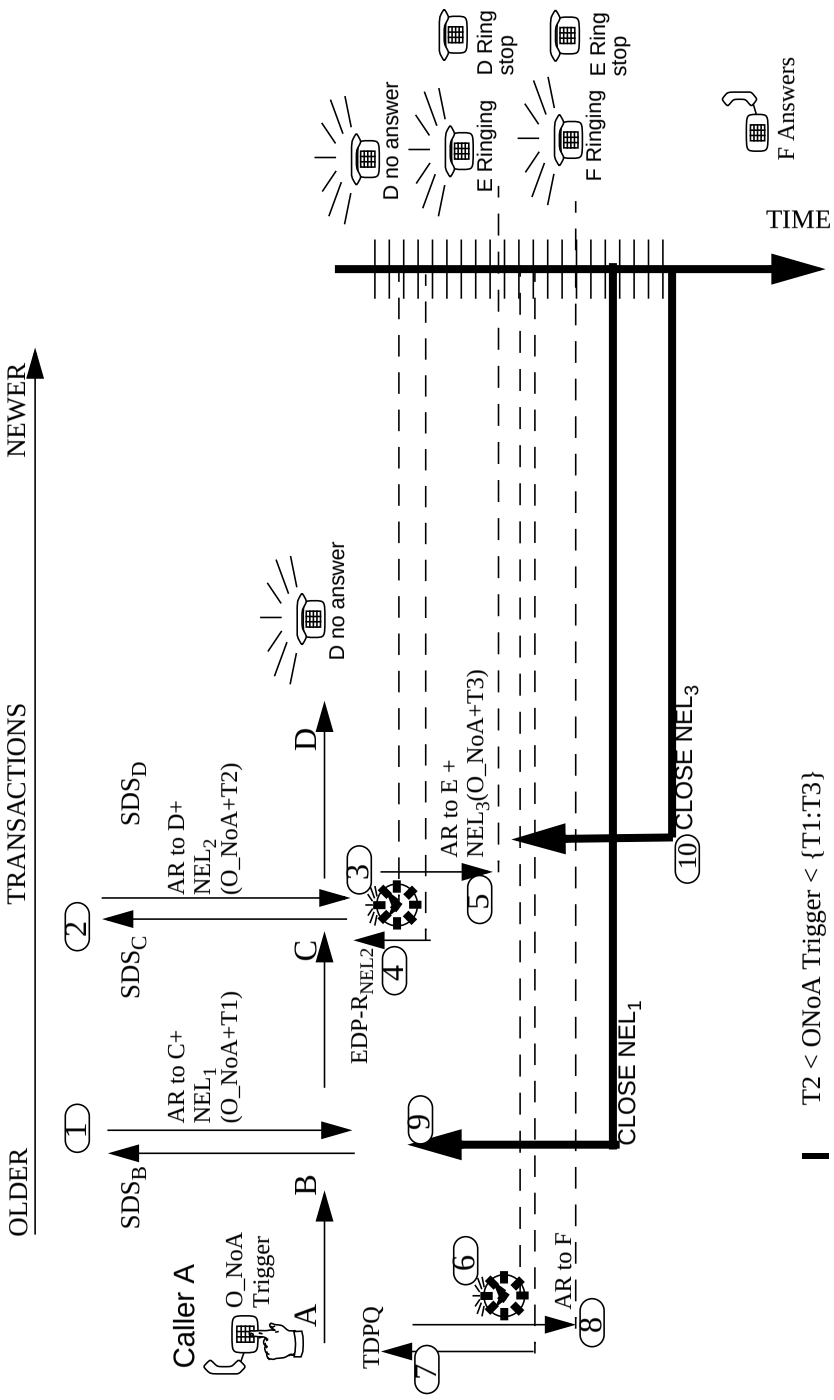


2.2.4.8 Example 8

Please refer to “Figure 9 OCM-METT with multiple O_NoA events interaction with O_NoA Trigger” on page 122, This example depicts the behavior of OCM-METT while interacting with O_No_Answer Trigger.

1. Party A is subscribed to O_No_Answer Trigger. Party A dials party B encounters a SDS trigger at the SSP. The Info_Analyzed query message is sent to the SCP. SCP responds with an Analyze_Route message and an Request_Report_BCM_Event message, arming the first O_No_Answer NEL_{1-} with a timer value T_1. The Analyze_Route message also sets the CalledPartyID parameter as C which is another SDS trigger number.
2. The call again encounters SDS trigger at the SSP. The Info_Analyzed query message is sent to the SCP(not necessarily the same SCP as in step 1). SCP responds with an Analyze_Route message and another Request_Report_BCM_Event message, arming the second O_No_Answer NEL_2 with a timer value T_2. The Analyze_Route also sets the CalledPartyID as D. The Analyze_Route message is processed and the call is offered to the party D, D is not answering and is ringing, simultaneously the O_No_Answer timers T-ONoAnswer, T_1 and T_2 are started.
3. The O_No_Answer timer for NEL_2 event expires
4. O_No_Answer event request message is built and sent to the SCP.
5. SCP responds with an Analyze_Route message and another Request_Report_BCM_Event message, arming the third O_No_Answer NEL_3 with a timer value T_3. The Analyze_Route also sets the CalledPartyID as E. The Analyze_Route message is processed and the call is offered to the party E, D is disconnected from the call and it stops ringing. Party E start to ring. The O_No_Answer timer T-ONoAnswer, T_1 is still running.
6. The T-ONoAnswer trigger timer expires before the Party E answers the call.
7. O_No_Answer trigger query message is built and sent to the SCP.
8. SCP responds with an Analyze_Route message for the O_No_Answer trigger query for Party A, it also sets the CalledPartyID as F. The Analyze_Route message is processed and the call is offered to Party F, Party E is disconnected from the call and it stops ringing. Party F stops ringing.
9. Once the call is offered to the Party F, a CLOSE message is sent to disarm the O_No_Answer event NEL_1 and NEL_3.

Figure 9 OCM-METT with multiple O_NoA events interaction with O_NoA Trigger



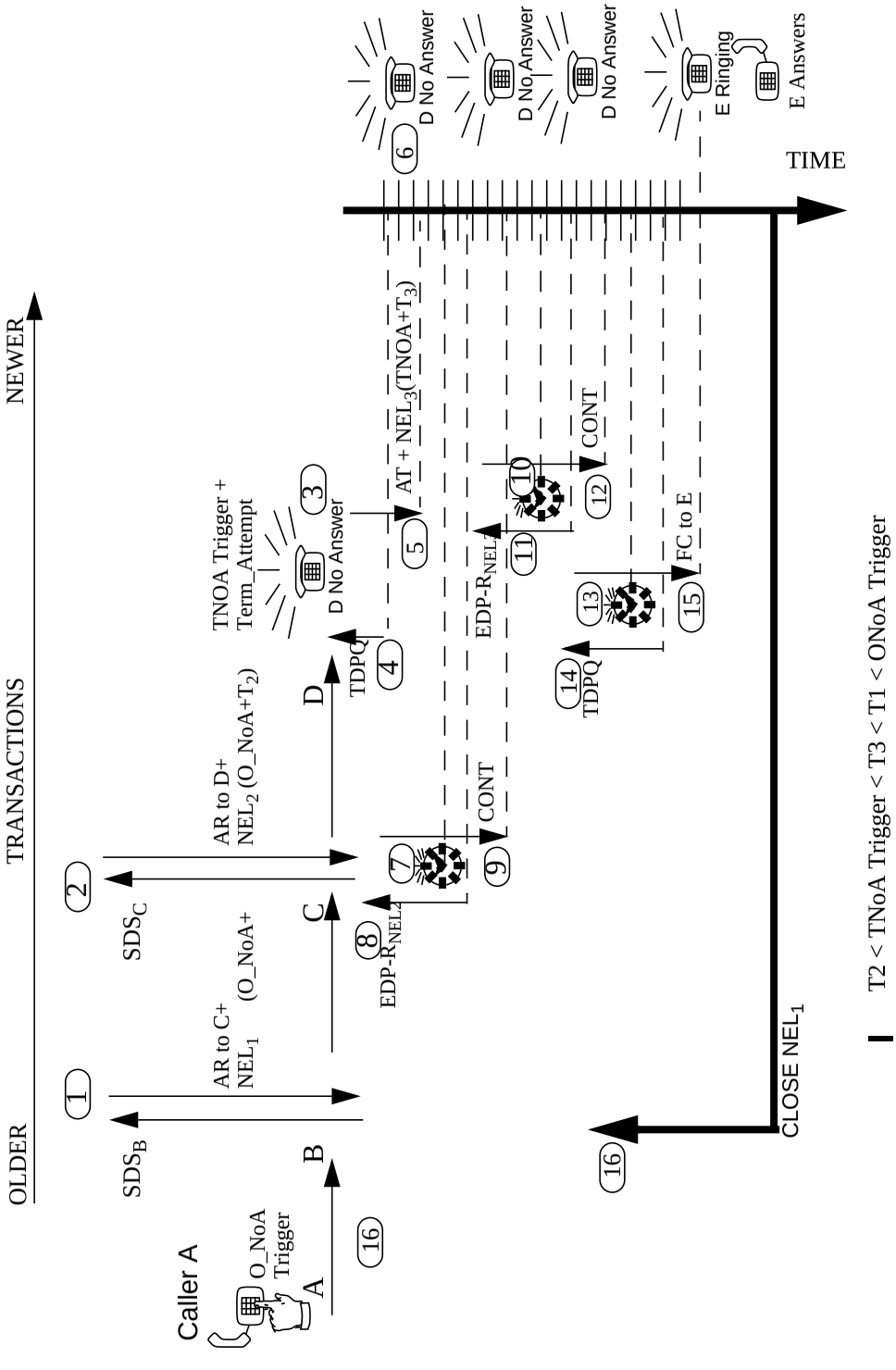
2.2.4.9 Example 9

Please refer to “Figure 10 OCM-METT with multiple O_NoA events interaction with TCM events and TCM Triggers.” on page 125, This example depicts the behaviour of OCM-METT while interacting with O_No_Answer Trigger, T_No_Answer Trigger and TCM events.

1. Party A is subscribed to O_No_Answer Trigger. Party A dials party B encounters a SDS trigger at the SSP. The Info_Analyzed query message is sent to the SCP. SCP responds with an Analyze_Route message and an Request_Report_BCM_Event message, arming the first O_No_Answer NEL_1. with a timer value T_1. The Analyze_Route message also sets the CalledPartyID parameter as C which is another SDS trigger number.
2. The call again encounters SDS trigger at the SSP. The Info_Analyzed query message is sent to the SCP(not necessarily the same SCP as in step 1). SCP responds with an Analyze_Route message and another Request_Report_BCM_Event message, arming the second O_No_Answer NEL_2 with a timer value T_2. The Analyze_Route also sets the CalledPartyID as D.
3. Party D has subscribed to Termination_Attempt and T_No_Answer Trigger.
4. Termination_Attempt Trigger Query message is built and sent to the SCP since Party D is subscribed to Termination_Attempt trigger.
5. The SCP responds with Autorize_Termination message and also a Request_Report_BCM_Event message, arming TCM event T_No_Answer with a timer T_3 , NEL_3 .
6. Authorize_Termination will terminate the Call on the Party D. Party D is not answering the call is ringing. The timers T-ONoAnswer, T_1 T_2 and T_No_Answer Event NEL_3 timer T_3 are started simultaneously when the Call is offered to D and it starts ringing. **The timer T-T_No_Answer of the T_No_Answer trigger subscribed by the terminating Party D is not started until the T_No_Answer Event NEL_3 is processed. There is a precedence between T_No_Answer Trigger and Event, T_No_Answer Event is processed first**.
7. The timer T_2 expires for O_No_Answer Events NEL_2 .
8. NEL_2 is detected and an appropriate message is built and sent to the SCP.
9. The SCP responds with a Continue for the O_No_Answer event NEL_2. Even at this moment the timers T-ONoAnswer, T_1 and T_No_Answer Event NEL_3 timer T_3 are running and not expired. **The timer T-T_No_Answer of the T_No_Answer trigger subscribed by the terminating Party D is not started until the T_No_Answer Event NEL_3 is processed.**
10. The timer T_3 expires for T_No_Answer Event NEL_3 .
11. NEL_3 is detected and an appropriate message is built and sent to the SCP.

12. The SCP responds with another Continue for the T_No_Answer event $NEL_{3.}$ Even at this moment the timers T-ONoAnswer, T_1 are running and not expired. **The timer T-T_No_Answer of the T_No_Answer trigger subscribed by the terminating Party D is now started since the T_No_Answer Event NEL_3 is processed. This will happen only if Continue response message is received for the T_No_Answer Event NEL_3 , any other response will close the T_No_Answer Trigger, but a CLOSE message is not sent to the SCP.**
13. The timer T-T_No_Answer now expires for T_No_Answer trigger on the Party D. while T-ONoAnswer, T_1 are running.
14. Query message is built for the T_No_Answer trigger and sent to the SCP.
15. The SCP responds with a Forward_Call message to the T_No_Answer Query , and also sets the CalledPartyID as E. The Forward_Call message is processed and the call is offered to the Party E. The Party E starts ringing and the Party D is disconnected from the call and stops ringing. The timers T-ONoAnswer, T_1 are still running and not expired
16. A CLOSE message is sent to disarm the NEL_1 once the Party E answers the call eventhough the timer T_1 is running and not expired.
17. **No CLOSE message is sent for the O_NO_Answer trigger whose timer was started when the call was offered to Party D initially and had not expired while Party E answered the call.**

Figure 10 OCM-METT with multiple O_NoA events interaction with TCM events and TCM Triggers.



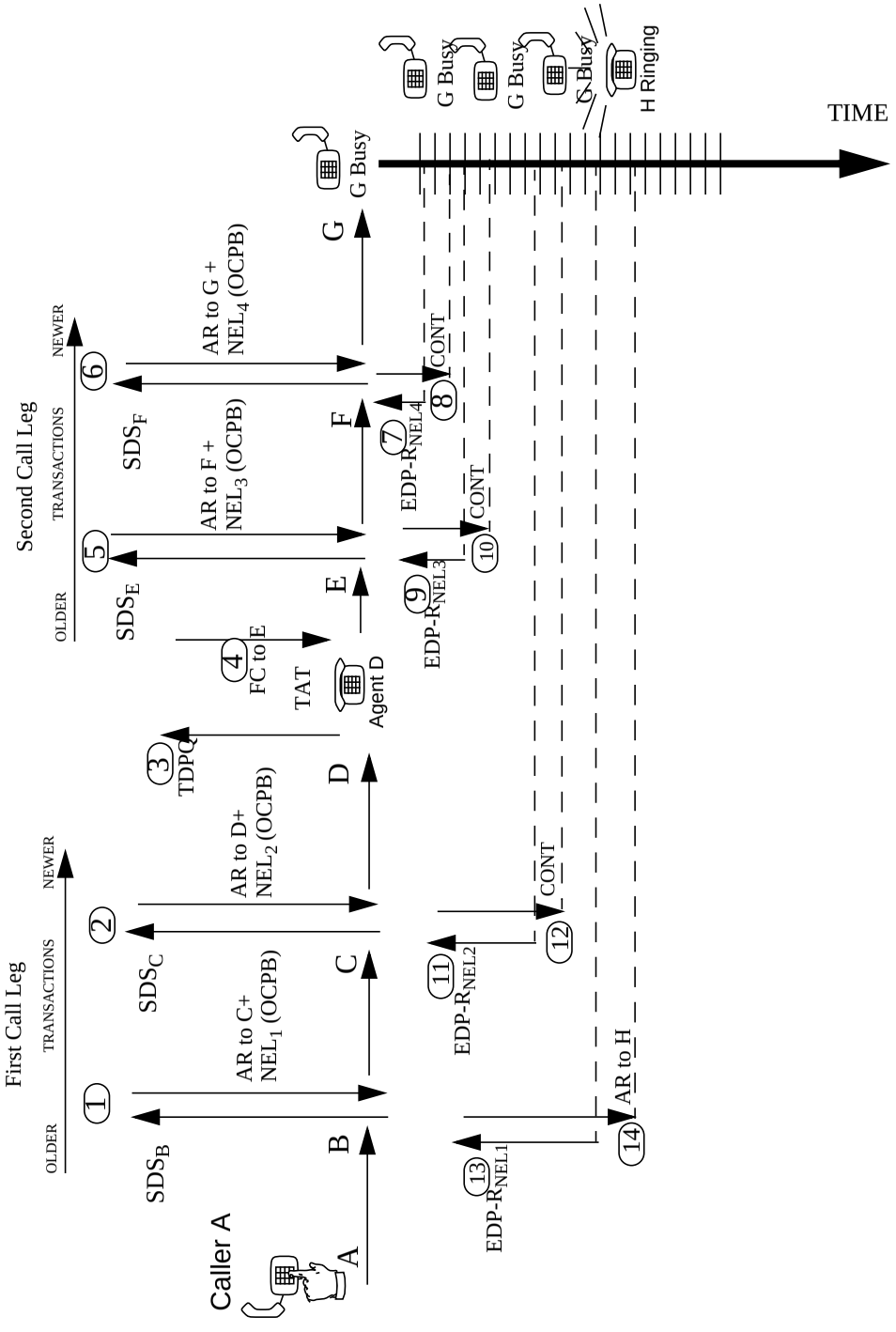
2.2.4.10 Example 10

Please refer to “Figure 11 OCM-METT in multiple call halves” on page 128, This scenario depicts the behavior of OCM-METT while more than one call half is present per call. For clarity of understanding only 2 call legs are considered here per call, and in this case the second call half is created when redirection occurs due to AIN. The functionality behaves similarly while the redirection occurs due to switch based call forward and any other features which causes a redirection.

1. Party A dials party B encounters a SDS trigger at the SSP. The Info_Analyzed query message is sent to the SCP. SCP responds with an Analyze_Route message and an Request_Report_BCM_Event message, arming the first O_Called_Party_Busy NEL_1. The Analyze_Route message also sets the CalledPartyID parameter as C which is another SDS trigger number.
2. The call again encounters SDS trigger at the SSP. The Info_Analyzed query message is sent to the SCP(not necessarily the same SCP as in step 1). SCP responds with an Analyze_Route message and another Request_Report_BCM_Event message, arming the second O_Called_Party_Busy NEL_2. The Analyze_Route also sets the CalledPartyID as D.
3. Party D is subscribed to Termination_Attempt,. Termination_Attempt Trigger Query message is built and sent to the SCP.
4. The SCP responds with Forward_Call message. The Forward_Call message also sets the CalledPartyID parameter as E which is another SDS trigger number. The Forward_Call message takes the call into second call leg.
5. The call again encounters SDS trigger at the SSP, in the second call leg. The Info_Analyzed query message is sent to the SCP(not necessarily the same SCP as in step 1). SCP responds with an Analyze_Route message and another Request_Report_BCM_Event message, arming the first event in the second call leg and the third event for the whole call, O_Called_Party_Busy NEL_3. The Analyze_Route also sets the CalledPartyID as F which is another SDS trigger number.
6. The call again encounters SDS trigger at the SSP, in the second call leg. The Info_Analyzed query message is sent to the SCP(not necessarily the same SCP as in step 1). SCP responds with an Analyze_Route message and another Request_Report_BCM_Event message, arming the second event in the second call leg and the fourth event for the whole call, O_Called_Party_Busy NEL_4. The Analyze_Route also sets the CalledPartyID as G. The call is offered to the Party G as instructed by the Analyze_Route message. Party G is Busy.

7. The busy event is first seen by the O_Called_Party_Busy event NEL_4 armed in the second call half. Appropriate message is built for the NEL_4 Event Request and sent to the SCP.
8. The SCP responds with a Continue message, for the O_Called_Party_Busy event NEL_4 request .
9. The busy event is first seen by the O_Called_Party_Busy event NEL_3 armed in the second call half. Appropriate message is built for the NEL_3 Event Request and sent to the SCP.
10. The SCP responds with a Continue message, for the O_Called_Party_Busy event NEL_3 request.
11. The busy event is now seen by the O_Called_Party_Busy event NEL_2. armed in the first call half, appropriate message is built for the NEL_2 Event Request and sent to the SCP.
12. The SCP again responds with Continue message.
13. The busy event is now seen by the O_Called_Party_Busy event NEL_1 armed in the first call half, appropriate message is built for the NEL_1 Event Request and sent to the SCP.
14. The SCP responds with Analyze_Route message to the O_Called_Party_Busy event NEL_1 request and sets the CalledPartyID as H. The Analyze_Route is processed and the call is offered to the Party H. Party D is disconnected from the call, and Party H is ringing.

Figure 11 OCM-METT in multiple call halves



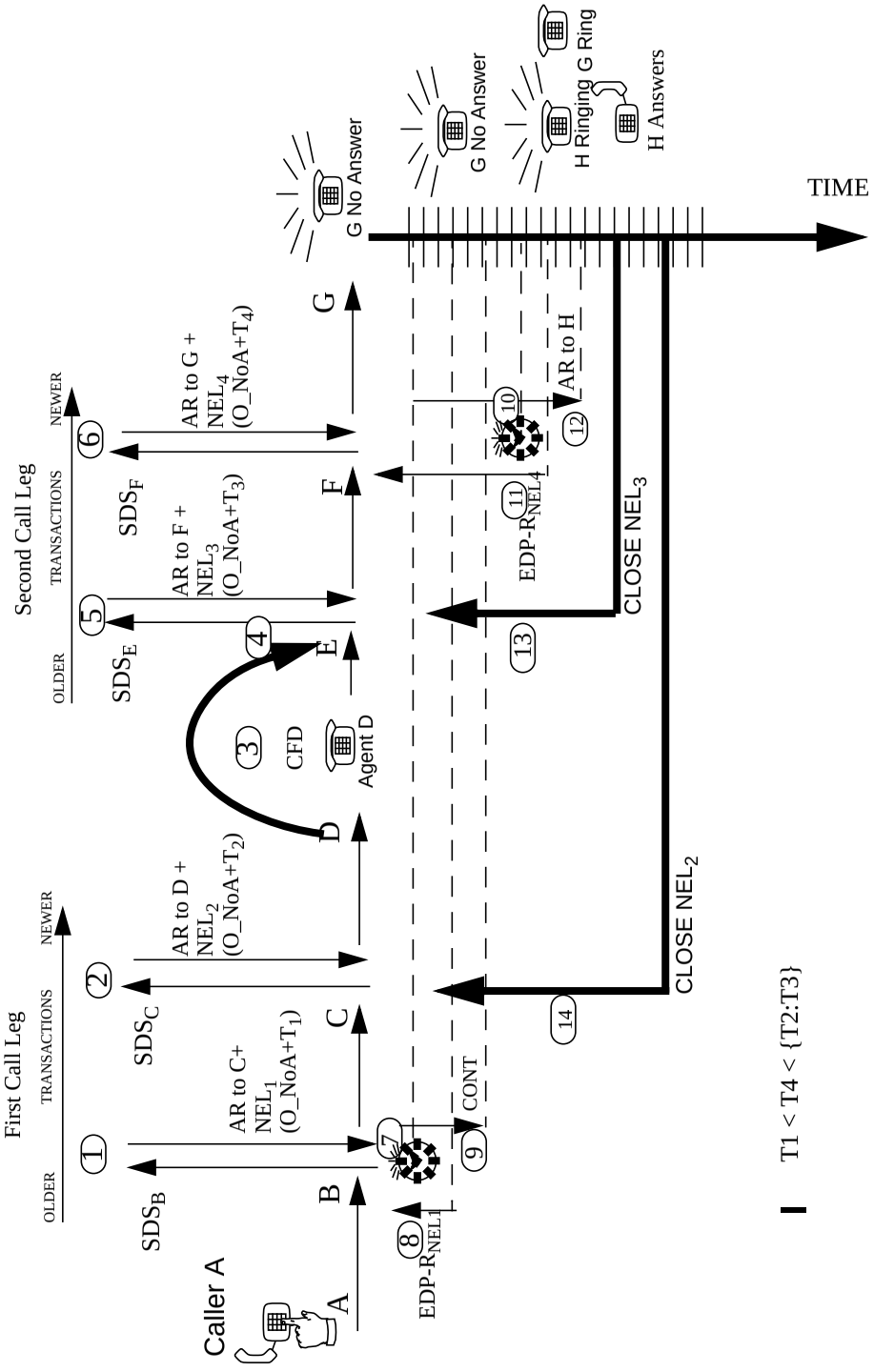
2.2.4.11 Example 11

Please refer to “Figure 12 OCM-METT in multiple call halves with switch based redirection” on page 131, This scenario depicts the behavior of OCM-METT while more than one call half is present per call. For clarity of understanding only 2 call legs are considered here per call, and in this case the second call half is created when redirection occurs due to switch based feature.

1. Party A dials party B encounters a SDS trigger at the SSP. The Info_Analyzed query message is sent to the SCP. SCP responds with an Analyze_Route message and an Request_Report_BCM_Event message, arming the first O_No_Answer NEL_1. The Analyze_Route message also sets the CalledPartyID parameter as C which is another SDS trigger number.
2. The call again encounters SDS trigger at the SSP. The Info_Analyzed query message is sent to the SCP(not necessarily the same SCP as in step 1). SCP responds with an Analyze_Route message and another Request_Report_BCM_Event message, arming the second O_No_Answer NEL_2. The Analyze_Route also sets the CalledPartyID as D.
3. Party D is subscribed to Call_Forward.
4. The Call is forwarded by D to E which is a SDS trigger number. Due to the Call_Forward redirection on the Agent D a second call leg is created.
5. The call encounters SDS trigger at the SSP, in the second call leg. The Info_Analyzed query message is sent to the SCP(not necessarily the same SCP as in step 1). SCP responds with an Analyze_Route message and another Request_Report_BCM_Event message, arming the first event in the second call leg and the third event for the whole call, O_No_Answer NEL_3. The Analyze_Route also sets the CalledPartyID as F which is another SDS trigger number.
6. The call again encounters SDS trigger at the SSP, in the second call leg. The Info_Analyzed query message is sent to the SCP(not necessarily the same SCP as in step 1). SCP responds with an Analyze_Route message and another Request_Report_BCM_Event message, arming the second event in the second call leg and the fourth event for the whole call, O_No_Answer NEL_4. The Analyze_Route also sets the CalledPartyID as G. The call is offered to the Party G as instructed by the Analyze_Route message. The O_No_Answer timers T_1, T_2, T_3, and T_4 are started and the Party G starts ringing
7. The O_No_Answer timer for NEL_1 T_1 expires.
8. The O_No_Answer event NEL_1 armed in the first call half sends and Event Request to the SCP with appropriate message.
9. The SCP responds with a Continue message, for the O_No_Answer event NEL_1 request.

10. While Party G is still ringing and does not answer, the O_No_Answer event timer T_4 for NEL_4 expires which was armed in the second call half.
11. Appropriate message is built for the NEL_4 Event Request and sent to the SCP.
12. The SCP responds with a Analyze_Route message, for the O_No_Answer event request NEL_4, it also sets the CalledPartyID as H. The Analyze_Route message is processed and the call is offered to Party H. Party G is disconnected from the call and it stops ringing. party H starts ringing.
13. While the other O_No_Answer event timers are running T_3 and T_2 are still running and not expired, Party H answers the call. A CLOSE message is sent to the SCP for the extended transaction NEL_3 .
14. CLOSE message is also sent to the SCP for the extended transaction NEL_2.
15. Speech path will be established between A and H.

Figure 12 OCM-METT in multiple call halves with switch based redirection



For further example scenarios please refer to the Appendix, which is saved as chapter fnappendix.fm in FMDOC.

2.3 Hardware requirements

None.

2.4 Limitations and restrictions

- The parameter AIN_MAX_SERIAL_TRIGGERS in table OFCENG limits the number of EDP-Rs, EDP-Ns & TDP-Rs that can be sent in a call half. This parameter has a default value of 6 and a maximum value of 8.
- The number of timer resources that can be simultaneously attached to a call is 8. So, the number of O_NoA and T_NoA events/triggers and switch based features, using timers (e.g. CFDA, ISA NoA...) combined can use only 8 timer resources at any given instant in a call.
- TCM-METT is not supported by this activity.
- OCM-METT does not apply if there is an AC agent involved in the call.

2.5 Interactions

The OCM-METT feature does not by itself modify the interaction of AIN triggers/events with switch-based features. As explained in the previous sections, the scope of the OCM-METT feature is to enhance AIN functionality to allow multiple OCM NELs to be armed/detected in a call leg.

The behavior of AIN interaction with switch-based features is kept consistent. The only visible changes are,

- Multiple AIN OCM NELs (instead of 1) can be armed before or after a switch based feature is encountered. These multiple OCM NELs behave similar to a single OCM NEL in their interaction with the SSP feature.
  - — If a switch-based feature causes OCM NELs to be closed (for e.g., AC Night Service feature), many close messages might be sent (1 per every OCM NEL armed).
  - — If a switch-based feature allows OCM NELs to be armed and detected (for e.g., CFW/CFX), multiple events could be detected when appropriate conditions match.

The bullets above capture in brief, the impact of the this activity on AIN interaction with SSP based features.

The information listed in this section will be incorporated into a new section 21.4.6 “Multiple Extended OCM transaction” in AIN SIG.

2.6 Logs (LG)

2.6.1 New/modified logs

None/Not Applicable

2.7 Data schema (DS)

2.7.1 New/modified tables

None/Not Applicable

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

None/Not Applicable

2.9 Service orders (SO)

None/Not Applicable

2.10 Alarms (AL)

2.10.1 New/modified directories

None/Not Applicable

2.11 Command interface (CI)

2.11.1 New/modified commands

None/Not Applicable

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

None/Not Applicable

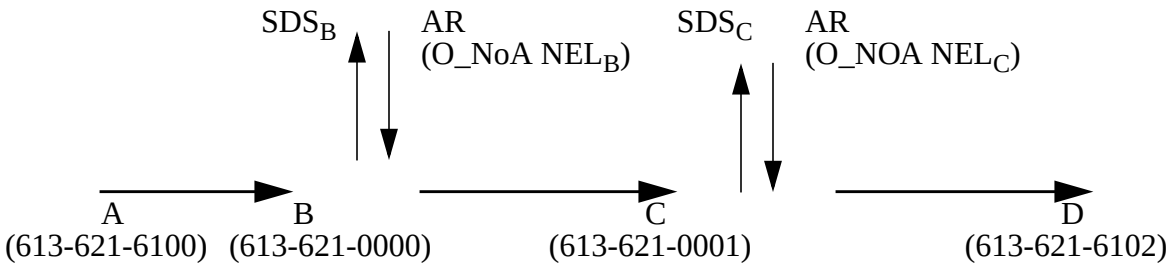
2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

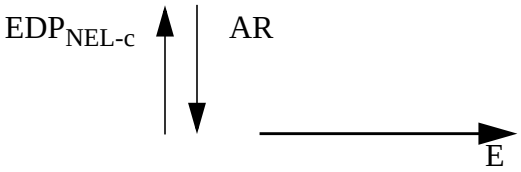
This activity does not affect the AIN AMA functionality in any way, this section is filled up in order to illustrate, how typical AMA records for Multiple OCM transactions enabled by this activity.

Please refer to “Figure 13 Sample OCM METT scenario” on page 135, shows an typical OCM METT transaction. The AMA record corresponding to the scenario is listed below.

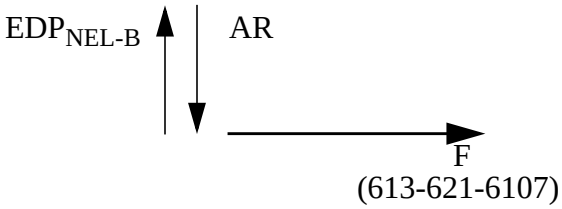
Figure 13 Sample OCM METT scenario



D does not answer and O_No_Ans NEL$_C$ timer expires (has smaller timer value)



E does not answer and O_No_Ans NEL$_B$ timer expires



F Answers

The AMA record for the SDS trigger encountered at B and getting an AR response to C with a O_NoA NEL armed is shown below,

```
*HEX ID:AA  STRUCTURE CODE:40220C  CALL CODE:047C  SENSOR TYPE:036C
 SENSOR ID:0200200C  REC OFFICE TYPE:036C  REC OFFICE ID:0200200C
DATE:90708C  TIMING IND:00000C  STUDY IND:0200000C  COMPLETION IND:014C
OPER ACTION:0C  SERVICE FEATURE:027C  ORIG NPA:613C  ORIG NUMBER:6210000C
 OVERSEAS IND:0C  TERM NPA:00613C  TERM NUMBER:6210001C
CONNECT TIME:1015427C  ELAPSED TIME:000000000C  SLP ID:000000001C
MODULE CODE:025C  CIRCUIT DATE:90708C  CIRCUIT TIME:1015464C
 MODULE CODE:000C
```

The AMA record for the SDS trigger encountered at C and getting an AR response to D with a O_NoA NEL armed is shown below,

```
*HEX ID:AA  STRUCTURE CODE:40220C  CALL CODE:047C  SENSOR TYPE:036C
 SENSOR ID:0200200C  REC OFFICE TYPE:036C  REC OFFICE ID:0200200C
DATE:90708C  TIMING IND:00000C  STUDY IND:0200000C  COMPLETION IND:014C
OPER ACTION:0C  SERVICE FEATURE:027C  ORIG NPA:613C  ORIG NUMBER:6210001C
 OVERSEAS IND:0C  TERM NPA:00613C  TERM NUMBER:6216102C
CONNECT TIME:1015429C  ELAPSED TIME:000000000C  SLP ID:000000002C
```

```
MODULE CODE:025C  CIRCUIT DATE:90708C  CIRCUIT TIME:1015454C
 MODULE CODE:000C
```

The AMA record for the O_NoA EDP-R encountered at C and getting an AR response to E, is shown below,

```
*HEX ID:AA  STRUCTURE CODE:40220C  CALL CODE:047C  SENSOR TYPE:036C
 SENSOR ID:0200200C  REC OFFICE TYPE:036C  REC OFFICE ID:0200200C
DATE:90708C  TIMING IND:00000C  STUDY IND:0200000C  COMPLETION IND:006C
OPER ACTION:0C  SERVICE FEATURE:027C  ORIG NPA:613C  ORIG NUMBER:6210001C
 OVERSEAS IND:0C  TERM NPA:00613C  TERM NUMBER:6216103C
CONNECT TIME:1015454C  ELAPSED TIME:000000000C  SLP ID:000000003C
MODULE CODE:025C  CIRCUIT DATE:90708C  CIRCUIT TIME:1015464C
 MODULE CODE:000C
```

The AMA record for the O_NoA EDP-R encountered at B and getting an AR response to F, is shown below,

```
*HEX ID:AA  STRUCTURE CODE:40220C  CALL CODE:047C  SENSOR TYPE:036C
 SENSOR ID:0200200C  REC OFFICE TYPE:036C  REC OFFICE ID:0200200C
DATE:90708C  TIMING IND:00000C  STUDY IND:0200000C  COMPLETION IND:006C
OPER ACTION:0C  SERVICE FEATURE:027C  ORIG NPA:613C  ORIG NUMBER:6210000C
 OVERSEAS IND:0C  TERM NPA:00613C  TERM NUMBER:6216107C
CONNECT TIME:1016151C  ELAPSED TIME:000000000C  SLP ID:000000004C
MODULE CODE:025C  CIRCUIT DATE:90708C  CIRCUIT TIME:1016157C
 MODULE CODE:000C
```

Note:

- The OCM-METT activity does not destroy (affect) the AIN AMA records.
- When there are multiple OCM NELs armed with same timer value on a call, the number of AIN AMA records generated are indeterminate.

2.14 Software optionality control (SOC)

Table 1 SOC

SOC option name:	AIN SE R7 OCM Nested Xct
SOC option title:	AIN SE R7 OCM Nested Xct
SOC option control type:	state
New SOC option?	Yes
SOC option order code	AIN00272
Option defined in DRU:	CNA

Affected products:	

2.15 Glossary

Term	Description
New term	definition
AC	Attendant Control
AIN	Advanced Intelligent Network
AFR	Automatic Flexible Routing
AMA	Automatic Message Accounting
AR	Analyze Route
BCM	Basic Call Model
DN	Directory Number
DRU	Delivery Release Unit
EDP	Event Detection Point
EDP-N	Event Detection Point Notification
EDP-R	Event Detection Point Request
IP	Intelligent Peripheral
ISA	In-Session Activation
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
METT	Multiple Extended TCAP Transaction
NEL	Next Event List
O_Answer/OAN	Originating Answer
OCM	Originating Call Model
O_CPB/OCPB	Originating Call Party Busy
OM	Operational Measurement
O_NOA/O_NoA	Originating No Answer
PIC	Point In Call
PODP	Public Office Dial Plan

RRBCME	Request Receive Basic Call Model Events
SCP	Services Control Point
SDS	Specific Digit String
SIE	Services Interaction Environment
SSP	Service Switching Point
STR	Send To Resource
TCAP	Transaction CAPability
TAT	Termination Attempt
T_Busy	Terminating Busy
T_NoA	Terminating No Answer
TCM	Termination Call Model
TDP	Trigger Detection Point
TDP-R	Trigger Detection Point Request
T-O_NoA	Timer - Originating No Answer
T-T_NoA	Timer - Terminating No Answer

2.16 References

1. GR-1298-CORE “AINGR: Switching System”, Bellcore, Issue. 4, revision 1, October 1998.

2. GR-1299-CORE “AINGR: Switch-SSP/Adjunct Interface”, Bellcore, Issue. 4, revision 1, October 1998.

3. AIN Service Implementation Guide, Nortel Networks.

4. AJ5520 FN of TOME Activity.

5. Product Specification Version AF02, March 24, 1999.

6. Service Implementation Guide, version AF07, July 23, 1999.

2: Functional description (FN)

2.1 Feature name

59013251: NETWORK TOOLS in NA013

2.2 Description

2.2.1 Feature Synopsis

This feature enhances the AIN Network Test and Surveillance tools. It adds support for the Create_Call message, and for a selected set of NCR messages to AINTrace.

2.2.2 Functional overview

Specifically, the updates to AINTrace are:

- Support for the SCP/Adjunct message Create_Call
- Support for the NCR messages ACG, Monitor_For_Change, Update, Update_Data, Update_Request, and Update_Success.

2.2.3 Feature description

AIN TCAP Message Tracing (AINTrace)AINTrace is a single-user CI tool available through the maintenance and adminstrative position (MAP) terminal. The tool displays CCS7 TCAP messages associated with a particular call. The messages can be to or from an off-board processor (for example, an SCP or adjunct). CallP AIN messages, except Create_Call, are captured for a particular line or for a trunk by selecting the desired agent's terminal identifiers (TID) for tracing. The captured TCAP messages, along with the TID and time stamp, are stored in a log and are then displayed in hexadecimal format, text format, or both.

Using the AINTrace CI commands, TIDs are selected by specifying a directory number (DN), line equipment number (LEN), logical terminal identifier (LTID) number, attendant console clli (AC), or trunk group name and member

number. Up to 40 selected TIDs can be added to the list. TIDs can be removed from the list.

Create_Call message and the NCR messages (ACG, Monitor_For_Change, Update, Update_Data, Update_Request, Update_Success) can be selected for capture by AINTrace by using the AINTrace CI commands to select these messages.

After selecting TIDs and/or messages, set AINTrace to start tracing. AINTrace checks all AIN incoming and outgoing messages against the TIDs and messages selected. When a match occurs, AINTrace writes the related information to the AINT 700 log.

It is not necessary to stop tracing before viewing the log. Tracing must be stopped before TIDs and messages can be added or removed from AINTrace's selection list.

The AINT 700 log can store up to 200 messages for messages that are 256 bytes or under; it can store up to 90 messages for messages that are 610 bytes. Information for each message includes the time stamp, and TCAP details.

This feature adds the capability of tracing specific messages to AINTrace. In consequence, the AINTrace CI is extended. Affected AINTrace commands are: HELP, SELECT, REMOVE, and STATUS. AINTrace HELP is extended to indicate that AINTrace can select messages by operation code as well as by agent. SELECT and REMOVE are both extended to contain a new syntax, 'MESSAGE <message>', where <message> is one of Create_Call, ACG, Monitor_For_Change, Update. Selecting the Update message will select all of the Update messages (Update, Update_Data, Update_Request, and Update_Success). Finally, STATUS is extended to display what messages have been selected.

See Figure 1 for AINTrace command syntax and Table 1 for the descriptions of the AINTrace commands.

Figure 1 AINTrace command syntax (Changes shown in bold)

```
CI
  AINTRACE
     STATUS

     SELECT
        TID <node> <term>
        DN <dn>
        LEN <site> <frame> <bay> <drawer> <card>
        TRK <clli> <member>
        LTID <ltgrp> <ltnum> <key>
        AC <clli>
        MESSAGE <operation_code>
     REMOVE
       TID <node> <term>
       DN <dn>
       LEN <site> <frame> <bay> <drawer> <card>
       TRK <clli> <member>
       LTID <ltgrp> <ltnum> <key>
       AC <clli>
       MESSAGE <operation_code>
       ALL

     START

     STOP

     FORMAT [ HEX | TEXT | BOTH ]

     QUIT
```

Table 1 Descriptions of AINTrace commands

STATUS	Displays the current status of the AINTrace tool: which text format is selected, whether tracing is active or not, and the list of call processing terminals selected, and the list of messages selected.
SELECT	Selects an originating call processing terminal (line or trunk) or message to trace. The terminal can be specified by terminal identification number (TID), directory number (DN), line equipment number (LEN), trunk group name and member number (TRK), logical terminal id (LTID), or attendant console clli (AC). Messages are specified by operation code. The messages that can be selected are: Create_Calll, ACG, Monitor_for_Change, Update, and Update_Request.
REMOVE	Deselects a call processing terminal (line or trunk) or message.
START	Turns tracing on; captures in the AINT 700 log all TCAP messages matching the criteria that has been selected.
STOP	Turns tracing off; no further messages are captured in the AINT 700 log.
FORMAT	Select the format of the message for display.

Table 1 Descriptions of AINTrace commands

QUIT	Leaves AINTrace tool.
HELP	Gives a general description of all available commands.

2.0.0.1 Supported messages and parameters

The AINTrace tool supports the AIN Essentials as well as the AIN Service Enablers messages and parameters, shown in Table 2 and Table 3. The shaded areas indicate the new/changed messages in NA013 AINTrace.

Table 2 Messages supported by AINTrace (NA013)

Type	Message
Switch Call Related Messages	Call_Info_From_Resource
	Close
	Info_Analyzed
	Info_Collected
	Network_Busy
	O_Answer
	O_Called_Party_Busy
	O_No_Answer
	Origination_Attempt
	Resource_Clear
	T_Busy
	T_No_Answer
	Termination_Attempt
SCP/Adjunct Call Related Messages	Analyze_Route
	Authorize_Termination
	Cancel_Resource_Event
	Close
	Collect_Information
	Continue
	Create_Call
	Disconnect
	Forward_Call
	Offer_Call
	Send_To_Resource
Non-Call Related Messages	ACG
	Monitor_For_Change
	Update
	Update_Data
	Update_Request

The following table lists the supported parameters for the supported messages. New/changed parameters are shaded and in boldface. All unsupported incoming parameters are displayed in HEX regardless of whether the formatting option selected was “Text”, “HEX”, or “Both”.

Table 3 Parameters supported by AINTrace in NA013

AccessCode	CloseCause	NetworkSpecificFacilities
ACGEncountered	CollectedAddressInfo	**NotificationDuration**
AdministrableObject	CollectedDigits	NotificationIndicator
AlternateBillingIndicator	ConnectTime	ONoAnswerTimer
AlternateCarrier	ControlCauseIndicator	OriginalCalledPartyID
AlternateTrunkGroup	**ControlEncountered**	OutpulseNumber
AMAAlternateBillingNumber	ControllingLegTreatment	OverflowBillingIndicator
AMABusinessCustomerID	DestinationAddress	PassiveLegTreatment
AMADigitsDialedWC	DisconnectFlag	Prefix
AMALineNumber	DisplayText	PrimaryBillingIndicator
AMAMeasure	EchoData	PrimaryTrunkGroup
AMAMeasurement	**EditListType**	RedirectingPartyID
AMAslpID	EDPNotification	RedirectionInformation
Amp1	EDPRequest	ResourceType
AnswerIndicator	ErrorCause	SecondAlternateBillingIndicator
ApplicationErrorString	FacilityGID	SecondAlternateCarrier
BearerCapability	FacilityMemberID	SecondAlternateTrunkGroup
BusyCause	FacilityStatus	Spid
BusyType	FailureCause	StatusCause
CalledPartyID	ForwardCallIndicator	StrParameterBlock
CalledPartyStationType	GapDuration	Tcm
CallingPartyBGID	GapInterval	TerminationIndicator
CallingPartyID	GenericAddress	TimeoutTimer
Carrier	GenericAddressList	TNoAnswerTimer
CarrierUsage	GenericName	TranslationType
ChargeNumber	GlobalTitleAddress	TriggerCriteriaFlag
ChargePartyStationType	IPReturnBlock	TriggerCriteriaType
ClearCause	Lata	UserID
ClearCauseData	MonitorTime	VerticalServiceCode

The AdminstrableObject parameter is only partially supported by GAME; AINTrace will support what settings of this parameter are supported by GAME. The parameter is a placeholder for five parameters, of which TriggerItemAssignment and SSPUserResource are partially supported by GAME and the other three are not supported. Consult Table 4 for a summary on what parts of AdminstrableObject are supported..

Table 4 AdminstrableObject parameter

Parameter	Field	Subfield	Supported?
TriggerItemAssigmnment			Partially
	SSPUserResourceID		Partially
		Dn	Yes
		DnCtID	Yes
		Spid	No
		TrunkGroupID	Yes
		LocalSSPID	Yes
		PublicDialingPlan	No
	TriggerItemID		Yes
	ActivationStateCode		Yes
	PotentialUse		No
SSPUserResource			Partially
	SSPUserResourceID		Yes
	ServiceProviderID		msrID supported but not OCN
	UpdateGroups		Partially
		UpdateGroup1	Yes
		UpdateGroup2	Yes
		All other update groups	No
	ONoAnswerTimer		Yes
	TNoAnswerTimer		Yes
	DisplayText		Yes
	DPConverter		No
	CancelInterdigitTimer		No
SrhrGroup			No
NetworkTestOriginator			No
OperationsMonitoringAssignment			No

2.0.0.2 SOC idle warning

Since the Create_Call and Monitor_For_Change messages are controlled by SOC, warnings will be displayed for these messages if the corresponding SOC option is IDLE at the time AINTrace displays the messages.

Since the AIN00210, AIN00220, AIN00230, AIN0024X SOC options control parameter use, AINTrace warns the user that SOC options are idle in the following scenarios:

- AIN Release 1 SOC (AIN00210), AIN Release 2 SOC (AIN00220), AIN Release 3 SOC (AIN00230), and AIN Release 4 SOC (AIN00241, AIN00242, AIN00243, AIN00244, AIN00245) are all idle.
- AIN Release 1 SOC (AIN00210) is on but the AIN SOC options of the later Releases are idle.
- AIN Release 2 SOC (AIN00220) are on but the AIN SOC options of the later Releases are idle.
- AIN Release 3 SOC (AIN00231) are on but the AIN SOC options of the later Releases are idle.

Table 5 summarizes the behaviours of AINTrace when the controlling SOC options are in idle state.

Table 5 AINTrace Behaviour for SOC-idle messages and parameters

Scenario	AINTrace behaviour
Incoming message is supported but is controlled by a SOC option which is currently idle	The message is displayed with the warning “message is associated with SOC option <option name> which is currently idle”. The option-names are as follows: • AIN Service Enablers Release 1 (AIN00210) • AIN Service Enablers Release 2 (AIN00220) • AIN SE R3 - GETS EACR (AIN00231) • AIN SE R4 - ISDN IW (AIN00241) • AIN SE R4 - OTS (AIN00242) • AIN SE R4 - TCM Control (AIN00243) • AIN SE R4 - Collect Info (AIN00244) • AIN SE R4 - OHD Esc ICM (AIN00245) • AIN SE R4 - OnePlus Pfx (AIN00251) • AIN SE R5 - Spfd CxrPfx (AIN00252) • AIN SE R5 - Intnl Pfx (AIN00253) • AIN SE R5 - OperSvcs Pfx (AIN00254) • AIN SE R5 - Offer Call(AIN00255) • AIN SE R6 - BRI MDN DpTxt(AIN00261) • AIN SE R6 - MonChng HuntGr(AIN00262) • AIN SE R6 - ExtndRing Parm(AIN00263) • AIN SE R7 - Create_Call (AIN00271)
Incoming parameter is supported but is controlled by a SOC option which is currently idle	The parameter is displayed with the warning “parameter is associated with SOC option <option name> which is currently idle”. The option names are listed immediately above.

2.0.0.3 AINTrace example

Table 6 shows an example of using AINTrace to trace Create_Call messages.

Table 6 AINTrace example: Create_Call

```
>aintrace
AINTRACE:
>select message create_call
1 Message selected
Warning: tracing messages may have a real-time impact on CallP processing.
>start
Tracing started. Messages will be logged to log AINT 700.
>stop
Tracing stopped. Messages were logged to log AINT 700.
>logutil
>open AINT 700
   COMI09BC AINT700 NOV07 14:57:16 9900 INFO AINTrace Report
         TCAP Message recorded by AINTrace:
         Time: 99/01/19 15:22:19
         Direction:    from SCP or Adjunct (incoming)

               ***** TCAP message in TEXT format *****
         TCAP Package Type:    Query
           Origin ID:          NIL
           Respond ID:         00 00 61 00

        Component Sequence
        ==================

        COMPONENT:              1
        Component Type:         Invoke (not last) Component
        Invoke ID:              1
        Correlation ID:         0
        Operation Code
          Operation Family:   Connection Control(Call Model)
          Operation Name:     Create_Call

      CalledPartyID:          6135551230
          Nature of Number:   National number
          Numbering Plan:     ISDN Numbering Plan
      CallingPartyID:         6135559876
          Nature of Number:   National number
          Numbering Plan:     ISDN Numbering Plan
          Presentation Indicator: Presentation allowed
          Screen Indicator:   Network provided
```

Table 7 shows an example of using AINTrace to trace the NCR message ACG.

Table 7 AINTrace example: ACG

```
>aintrace
AINTRACE:
>select message acg
1 message selected
Warning: only unidirectional ACG messages will be traced.
Warning: tracing messages may have a real-time impact on CallP processing.
>start
Tracing started. Messages will be logged to log AINT 700.
>stop
Tracing stopped. Messages were logged to log AINT 700.
>logutil
>open AINT 700
   COMI09BC AINT700 NOV07 14:57:16 9900 INFO AINTrace Report
         TCAP Message recorded by AINTrace:
         Time: 99/01/19 15:22:19
         Direction:    from SCP or Adjunct (incoming)

               ***** TCAP message in TEXT format *****
         TCAP Package Type:      Unidirectional
           Origin ID:          NIL
           Respond ID:         00 00 61 00

       Component Sequence
       ==================

       COMPONENT:              1
       Component Type:         Invoke (not last) Component
       Invoke ID:              1
       Correlation ID:         0
       Operation Code
         Operation Family:   Network Management
         Operation Name:     ACG
       ControlCauseIndicator:
           Control Digits:     10 digit control
           SMS Indicator:      SMS initiated controls encountered
           SCP Indicator:      no SCP overload controls encountered
       GapDuration:            no128Seconds
       PrivateGapInterval:     no30Seconds
       Translation Type:       AINPOP - internetwork applications - 15
       GlobalTitleValue:       6136214310
```

2.1 Hardware requirements

No new hardware requirements are introduced in this feature.

2.2 Limitations and restrictions

Even when AINTrace is tracing ACG messages, an ACG in a multi-component message will not be detected and displayed unless the affected TID is being traced as well.

2.3 Interactions

None.

2.4 Logs (LG)

2.4.1 New/modified logs

Table 8 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)
AINT	700	MOD	SOS

2.5 Data schema (DS)

2.5.1 New/modified tables

There are no new or modified tables in this feature.

Table 9 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

2.6 Office parameters (OP)

2.6.1 New/modified office parameters

There are no new or modified office parameters in this feature.

Table 10 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.7 Service orders (SO)

There are no impacts on Service Orders introduced by this feature.

2.8 Alarms (AL)

No alarms have been created or changed by this feature.

2.8.1 New/modified directories

No directories have been created or changed by this feature.

Table 11 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.9 Command interface (CI)

2.9.1 New/modified commands

Table 12 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN
HELP	CHANGED	N/A	AINTRACE	
SELECT	CHANGED	N/A	AINTRACE	
REMOVE	CHANGED	N/A	AINTRACE	
STATUS	CHANGED	N/A	AINTRACE	

2.10 Operational measurements (OM)

No OMs have been created or changed by this feature.

2.10.1 New/modified OM groups

Table 13 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.11 AMA/Billing information (AM)

No AMA/Billing information has been introduced or changed by this feature.

2.11.1 New/changed AMA/billing information

Table 14 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.12 Software optionality control (SOC)

This feature is not controlled by SOC.

AINTrace warns the user when SOC options are idle and controlling messages or parameters when the user displays messages captured by AINTrace. AINTrace's behaviour regarding SOC is unchanged by this feature. The Create_Call feature introduces a SOC option that controls the Create_Call message, so AINTrace will display a warning when this option is idle when it is displaying a Create_Call message. Monitor_For_Change is also controlled by a SOC option, so AINTrace will display a warning when this option is idle and it is displaying a Monitor_For_Change message.

2.13 Glossary

Term	Description
New term	definition

2.14 References

GR-1299: Switch - Service Control Point (SCP)/Adjunct Interface

2: Functional description (FN)

2.1 Feature name

Alternate Trunk Group Selection

2.2 Description

2.2.1 Feature synopsis

Feature *Alternate Trunk Group Selection* (ATGS) provides the capability to uniformly spread E911 calls over a set of trunk groups in the route list. Currently, calls are routed to a primary trunk group with overflow to designated secondary routes in the route list.

This activity aims at distributing calls as evenly as possible over all the elements designated for a given route.

This feature capability is provided as optional and can be turned on using the password controlled SOC and the routing datafill introduced by this feature. With ATGS SOC turned on and the new ATGS option datafilled in the route list, all elements in the route list will be treated as equal primary routes.

Route selection provided by this activity will proceed in a clockwise, circular direction. When the end of the list of elements is reached, the search will continue with the first element of the list. The search for an idle member within an element will be controlled by existing trunk group select sequence methods.

This new trunk search mechanism also includes a control for the maximum number of elements to be attempted in a route list, as specified by the operating company, to be searched for an idle member. When the maximum number of elements have been searched without finding any element available to accept the call, then it will be considered as the route exhaust condition and the call may be routed to treatment.

The new functionality is provided for the following routing tables:

- IBNRTE, IBNRT2-4,
- OFRT, OFR2-4.

The new functionality provided by this feature is in form of generic framework and can be used by non E911 call applications, but the scope of this activity is restricted to E911 call applications only. Testing and support for non E911 call applications is beyond the scope of this activity.

Similarly, the new functionality will only be tested and supported on the ES, OP, ISUP IT and ISUP ATC trunk types used in E911 call applications in North American translation.

This feature modifies the TRAVER tool to display only the element in the route list which will be attempted for call termination when using this functionality. This is different from the existing behavior where all the elements in the route list are getting displayed at the end of the traver.

This feature also modifies the existing Debugging tools: DEBUG and DISPCALL, in order to reflect the new fields added in CCM refinement of CCB.

In the existing case, the problems associated with routing are:

— The translation system would always try to present the call to the first trunk group in the route list which has a free trunk member. This causes heavy usage on certain trunks and terminating equipment while others may be under utilized. Thus there is not an even distribution of calls.

  A killer trunk is a trunk with a very high seizure rate, but a very short holding time per call. It might indicate that calls are hitting this trunk but subscribers get a bad connection and hang up right away. With existing algorithms, the selection methodology continues to hit killer trunk every time it is called and the call cannot move onto the next trunk group in the route list thus causing severe impact on the traffic. Also, In an outage condition, calls continued to be offered to the trunk group, even though there is an outage of equipment in the path to the destination. Calls cannot complete over next trunk group until all members in the previous trunk group are busy.

— Each time when a call advances to the next route in the route list there needs to be retranslation which consumes some real time. In case where the number of route advances reached above 50, problems like running unpremptable trap were experienced in the field.

This feature when turned ON aims to

- attempt an even distribution of calls over all the elements in the route list and hence reducing the chance of E911 calls not completing due to network failure.
- supports the maximum of 50 route advances or route element search per call. This will help in minimizing the running unpremptable trap.

2.2.2 Background Information

Traditionally, in a route which has elements a, b, c and d, element a is the primary route and elements b, c and d are secondary routes. Element b is used only if there are no members available in a, and c is used only if there are no members available in a and b, and so on. With this feature, elements a, b, c and d will be treated as equal primary routes with calls spread as evenly as possible over these elements.

Figure 1 E911 Network Configuration Example

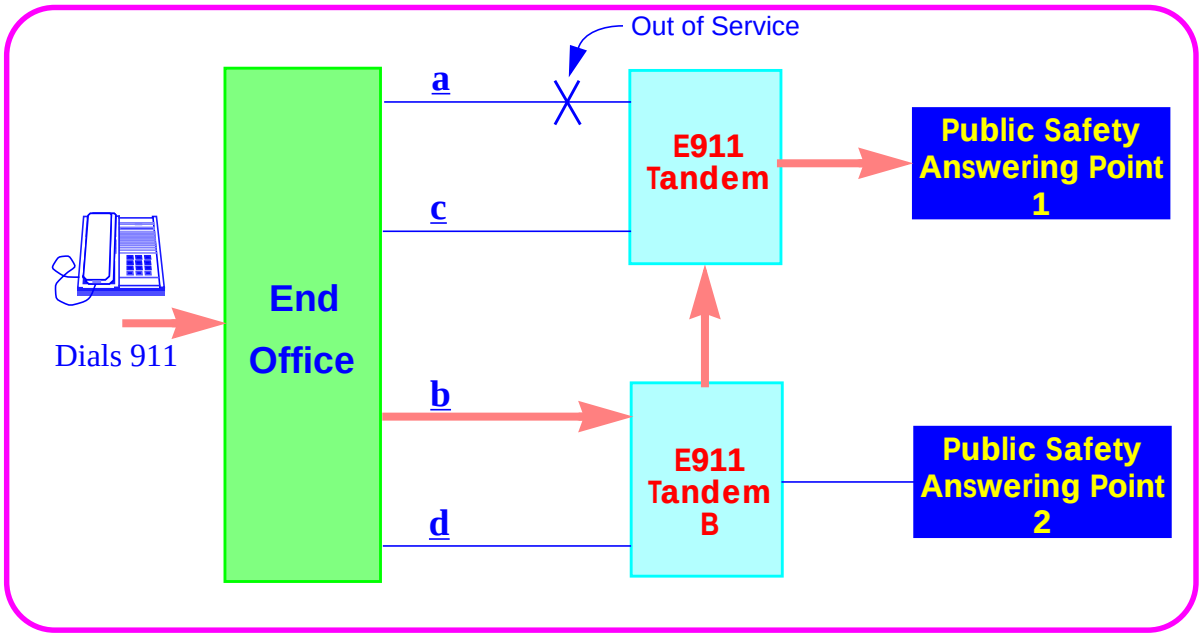


Figure 1 E911 Network Configuration Example on page 68 illustrates the customers network configuration. Consider an example of outage condition where there is an outage of equipment in the path to the destination E911 tandem. Now, 911 calls destined for Public Safety Answering Point 1 continued to be offered to Trunk Group a even though there is an outage. This will result in calls not getting presented to Trunk Group b until all members in a are busy.

The requested end-office capability provided by this activity would minimize the probability of a similar network failure from disrupting the completion of E911 calls. With this feature, assuming there are idle members in each trunk group which can handle the call, the first call will complete on a member from a, a second call will complete on a member from b, the next will complete over c, and so on.

2.2.3 Feature Description:

With this feature enabled for a given route list, calls are distributed as evenly as possible over all elements designated for this route list. Elements in the grouped route list are treated as equal primary routes with calls spread as evenly as possible over these elements.

The search for each call begins from element n+1 in the route list; where, n is the last route element selected by this algorithm for processing the preceding call, irrespective of whether that call was directed to treatment or completed on an idle member.

New route element selection algorithm proceeds in a clockwise, circular direction. When the end of the list of elements is reached, the search will continue with the first element of the list.

The search will continue until one the following condition is satisfied:

1. an idle member is found to complete the call: Call is offered to this element in the route list.

2. maximum attempt number (MAX_ATMPT) datafilled for the given route list is reached: This condition is treated as the route exhaust condition which may route the call to treatment as in the existing case.

3. total number of elements attempted reaches or exceeds maximum allowable value of 50 and one of the routes involved in the call had ATGS functionality turned on: In this case new DFIL 802 log is generated and the call is routed to treatment. This will help in minimizing the running unpremptable trap occuring due to non availability of an idle member in the route lists.

This activity only determines the next element in the route list from where the search should start, availability of the given route element to accept the call is determined by the existing selection methods. The search for an idle member within a trunk group element is controlled by existing trunk group select sequence methods.

The activities involved in this feature are:

- Provisioning of the new functionality using SOC and route option datafill
- Alternate Route Element selection algorithm
- Traver changes

2.2.3.1 Provisioning

The feature optionality is controlled by SOC as well as route table datafill.

2.2.3.1.1 Software Optionality Control (SOC)

Office wide control for this feature is achieved through Software Optionality Control (SOC). SOC provides a mechanism to activate/ deactivate the ATGS software. SOC utility is a base layer tool which controls activation or use of options in the software load. SOC order code for ATGS feature is LOC00033.

The two supported states are IDLE (inactive) and ON (active). If the option's SOC state is IDLE, route table ATGS option datafill is allowed, with no alternate route element selection functionality present. If the option's SOC state is ON, this feature is fully functional based on the ATGS option datafill in the route list.

2.2.3.1.2 Route Table Datafill: New ATGS Option

Provisioning of the new routing mechanism at route list level is provided by new ATGS option in route tables. Datafill for the maximum number of element search is also provided using subfield MAX_ATMPT when ATGS option is datafilled. ATGS option datafill is independent of the ATGS SOC and can be datafilled even with the SOC set to IDLE. However, the new route selection algorithm provided by this feature will only work when this option is datafilled and ATGS SOC is turned ON.

The new functionality is provided for the following routing tables:

- IBNRTE, IBNRT2-4,
- OFRT, OFR2-4.

This feature provides a new field OPTIONS into the routing tables mentioned above. The only acceptable option provided by this activity is ATGS. This new option is prompted when the user finishes entering the route elements in a route list either by datafilling maximum number of route elements or by entering a dollar sign '$' after entering the desired route elements. When ATGS is datafilled in the OPTIONS field, MAX_ATMPT is prompted as a subfield. MAX_ATMPT can take values in the range of 1-50 and specifies the number of route elements to be attempted for call termination in a given route list.

2.2.3.2 Alternate Route Element selection

This feature when enabled will distribute calls as evenly as possible over all elements designated for a given route. Trunk group selection will proceed in a clockwise, circular direction. When the end of the list of elements is reached, the search will continue with the first element of the list. The search for an idle member within an element is controlled by existing trunk group select sequence methods.

Please refer to “Figure 1 E911 Network Configuration Example” on page 68. If trunk group elements a, b, c and d all have idle members, the first call will complete on a member from a, the second call will complete on a member from b, the next will complete over c, the fourth over d, the fifth call over a, and so on.

If no members are available in a to accept the call, then search will continue for an idle member in b. If no idle member is found in b it will roll to c. Similarly, If no idle member is found in c it will roll to d. Finally, If no idle member is found in d, it will roll over and continue the search in first element a. The search will end when an idle member is found to complete the call or the maximum number of search elements (either MAX_ATMPT datafilled for the given route list or maximum element search allowed value i.e. 50) is reached. When the search ends due to MAX_ATMPT condition, it is considered as route exhaust case and it may route the call to treatment as in the existing case. In case when the total number of elements attempted reaches or exceeds maximum allowable value of 50 and one of the routes involved in the calls had ATGS functionality turned on, new DFIL 802 log is generated and the call is routed to treatment.

Figure 2 Existing call flow on page 72 shows the existing route list search algorithm. In the existing case, router always start the search from head element of the routing list. If the terminator finds that the selected element is not in idle condition, then the router finds the next element to be attempted and so on. If none of the elements in the route list is found idle for call termination, it returns the route exhaust condition and may route the call to treatment.

Figure 2 Existing call flow

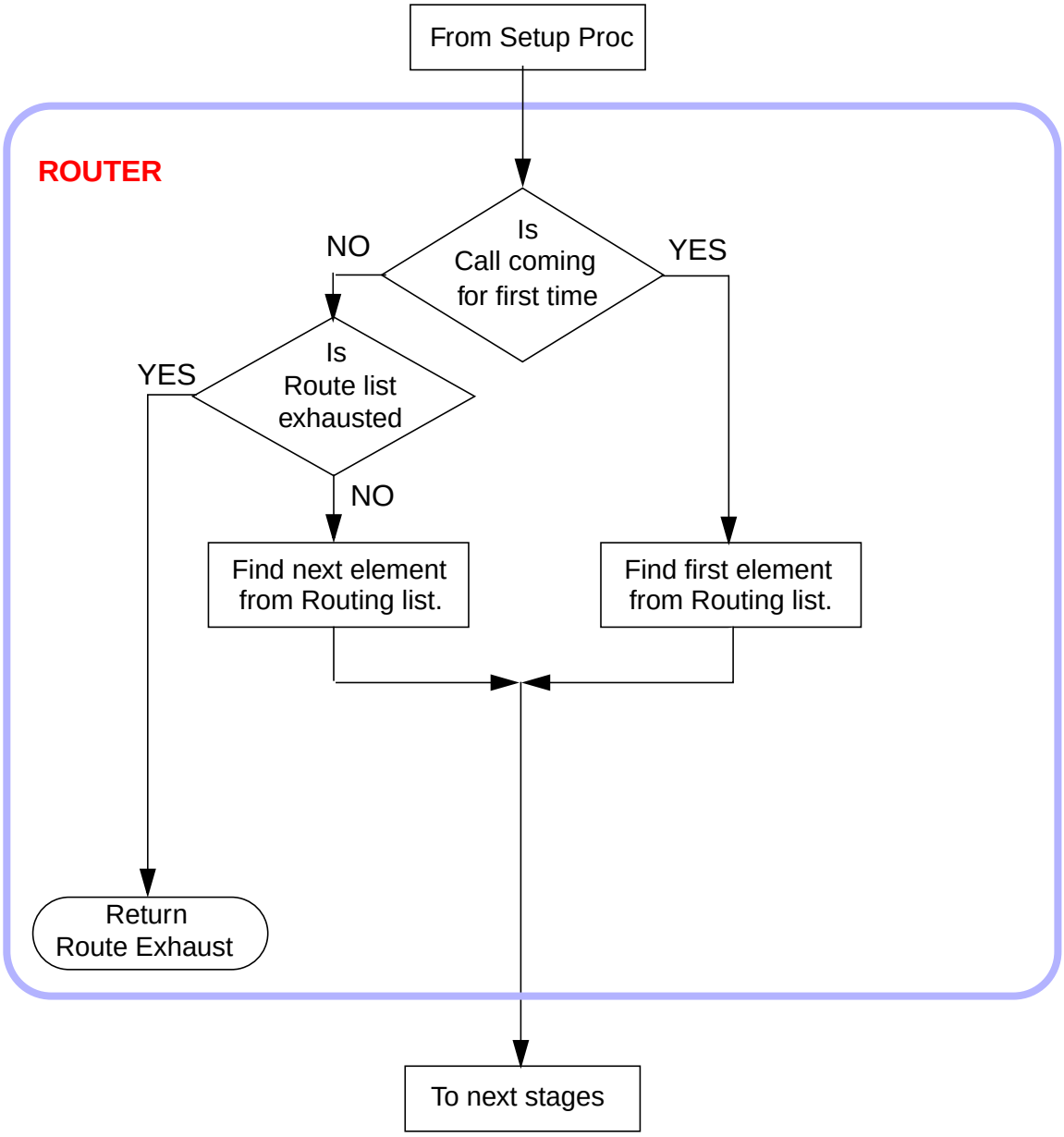


Figure 3 Simplified Flow Chart of the Required Functionality on page 74 shows the flowchart of the modified router.

This feature modifies the router functionality such that for the very first call, router will start the search from head element of the list. For subsequent calls, the search will start from the n+1 element, where n was the last element attempted for the previous call. Thus the router attempts to uniformly distribute calls across all the elements of the routing list.

With this feature, for every tuple in the route table (routing list) datafilled with ATGS option, there is a maximum attempt (MAX_ATMPT) value stored. This value indicates the maximum number of elements in the given route list to be attempted for call termination. Once the number of elements attempted in the given route list equals or exceeds this value, it is treated as the route exhaust condition.

The datafilled maximum attempt value can have minimum value equal to 1 and maximum value of 50. This maximum attempt value can be greater than the total elements datafilled in the route list.

In Figure 3 below

‘**T**’ represents the total route elements attempted for the given call

‘**R**’ represents the total number of route elements attempted in the current route list

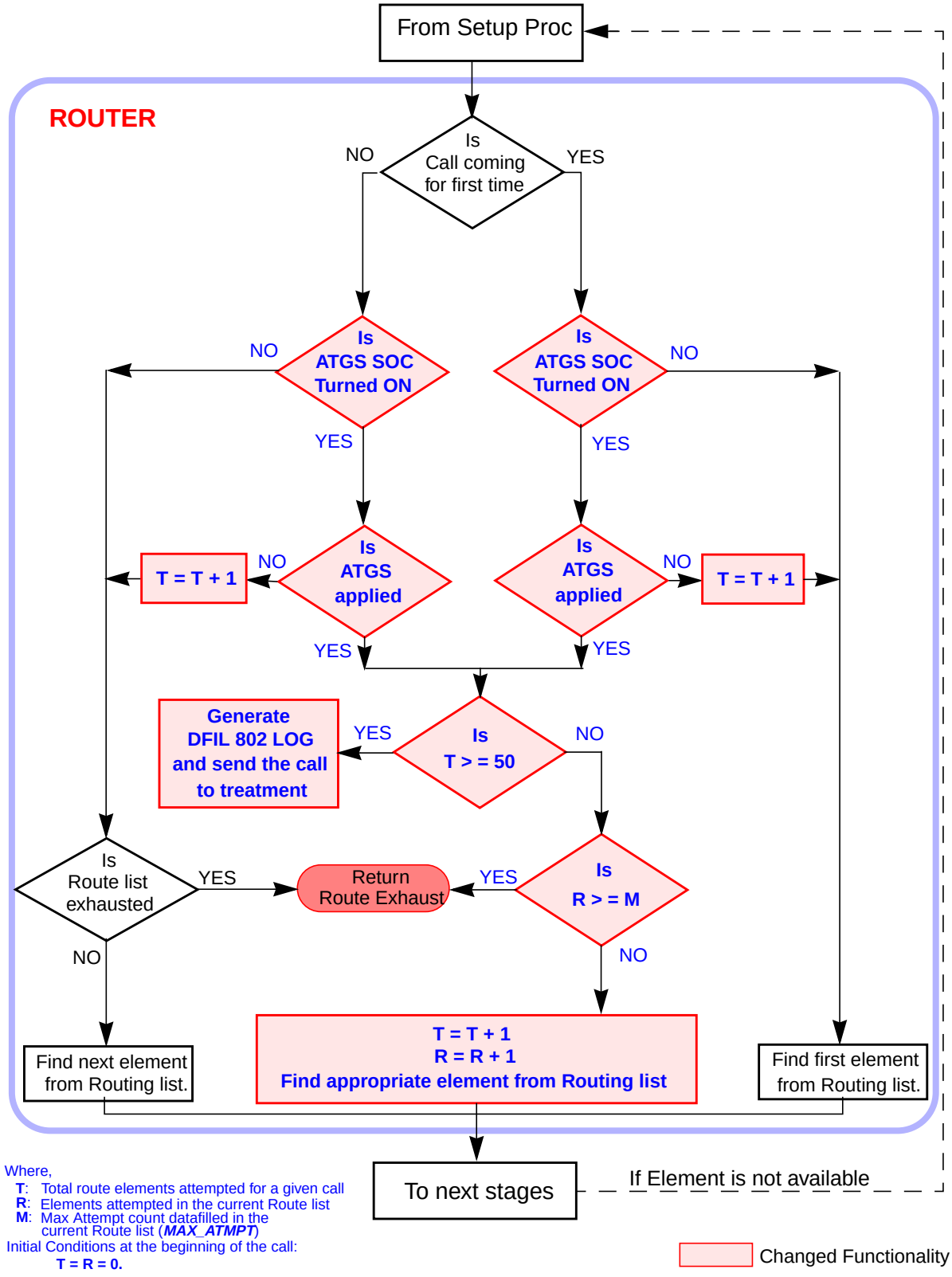
‘**M**’ represents the MAX_ATMPT datafill of the current rout list

Blocks with **ATGS applied** indicates that either the current route list contains ATGS option or one of the route lists used in the call had ATGS option datafilled.

As shown in Figure 3 Simplified Flow Chart of the Required Functionality on page 74, count T is incremented if the ATGS SOC is turned on and is not dependent on the ATGS datafill of the current route list. This is to minimize the possibility of unpremptable trap in the conditions when the call encounters more than one route list, one having ATGS option and other without ATGS option. In this case value 50 is used as the limiting value and once the total number of elements attempted for the given call (T) reaches this value, new DFIL 802 log is generated and the call is routed to treatment.

Also, if in the given route list (datafilled with ATGS option), number of elements attempted in this route list (R) reaches the MAX_ATMPT datafilled (M) without finding an element ready to handle the call, then the search for the next element is stopped and it is treated as route exhaust condition.

Figure 3 Simplified Flow Chart of the Required Functionality



2.2.3.3 TRAVER Changes

In the existing case, when the translation routes the call to a given route list, it always attempts to terminate the call on the head element of the list, and hence the Traver display shows the primary route on top of the list and all other elements after this in the digit translation routes. The only exception is the case when the route list contains a reroute element. In this case once the reroute element is encountered, traver does not display the element in the route list after the reroute element. However, If this reroute element indexes into another route list then elements in the list pointed by the reroute element are displayed.

Since this feature treats all the elements in the route list as equal primary routes, traver display is modified by this activity to display only the element in the route list to be attempted for the call.

In this case, TRAVER will display the same results, if executed more than once and no call is made in between. However, if in between the two traver commands, call will try to terminate on the route selected by the first traver, then the second traver displays the selected route which may be different from the result of the first traver. This example assumes that the two traver commands attempts to terminate the call on the same route list.

The new Traver changes will only be displayed when the ATGS SOC is turned ON and ATGS option is datafilled in the given route list.

For more details on the traver example, please refer to Section 11:Data schema changes (DS) on page 369.

2.3 Hardware requirements

Not applicable

2.4 Limitations and restrictions

Following are the interactions and restrictions investigated and their behaviour with ATGS are explained below. Interactions and restrictions other than those mentioned below and in section 2.5 are not supproted by this activity.

2.4.1 Routing Tables

This functionality is provided only for the routes datafilled in IBNRTE, IBNRT2, IBNRT3, IBNRT4, OFRT, OFR2, OFR3, and OFR4 tables.

2.4.2 Call Applications

The scope of this feature is restricted to E911 call applications. Only the E911 call application will be tested with this new functionality.

2.4.3 Trunk groups

The scope of this activity is restricted to ES, OP, ISUP IT, and ISUP ATC trunks used in E911 call applications. Only these trunk agents will be tested for E911 call applications with this new functionality.

2.4.4 Trunk Member datafill

In the existing case; the first element from routing list is always a first choice for all calls. Thus it may be possible that with the existing datafill, trunk group in the first element may have large number of members and other elements may have less number of trunk members assigned.

As this feature is going to attempt to uniformly distribute the calls over all the elements of the routing list; it is Telcos responsibility to see that all trunk group in the route list have a sufficient number of members.

2.4.5 Route Selectors routing the call to default routes

It may be possible that with the existing datafill, route list may have route elements datafilled to route the call to some treatment, announcement or some default route, if none of the elements in the route list is found idle.

As this feature searches for an available element in clockwise circular direction until idle element is found or MAX_ATMPT count is reached. With the datafilled mentioned above if the search starts from the last route element,

it will simply route the call to treatment, announcement or some default route and hence may lead to confusion. It is Telcos responsibility to see that route list datafill is proper when using this functionality.

2.4.6 Translations

The scope of this feature is restricted to North American translations only.

2.4.7 Scopedial Feature

This feature is incompatible with scopedial feature. Hence, this feature should not be used with scopedial or vice versa.

2.5 Interactions

2.5.1 Total Number of Elements attempted is greater than or equal to 50

When the total number of route list elements attempted for the given call reaches maximum allowed value of 50, a new DFIL 802 log is generated and the call is routed to treatment.

2.5.2 More than one route list, one with ATGS and other without ATGS

Consider the case in which one of the route list in the call do not have an ATGS option and also contains reroute element which points to the next route list that has ATGS option. Now, in this case it could be possible that by the time the call enters the route list having ATGS option, number of elements already attempted reaches or exceeds the allowable limit of 50. In such a case as soon as the call enters the list having ATGS option, DFIL 802 log is generated indicating the same and the call is routed to treatment. In case when the total number of elements attempted reaches the allowable limit of 50 within the route list having ATGS options, search will terminate and the call will be routed to treatement with DFIL 802 log.

2.5.3 Two route lists, both having ATGS option

Consider the case in which one of the route list in the call having an ATGS option and also contains reroute element which points to the next route list that also has ATGS option. Let element n is selected for the call in the second route list. Now when another call tries to terminate on the second list, the search for this second call will start from n+1 element, irrespective of whether this route list is selected directly or through another route list with reroute element.

2.5.4 Traver

1. With ATGS SOC turned ON and ATGS datafilled for the given route list, Traver will only display the element going to be selected for the next call in this route list.
2. With ATGS SOC is idle, Traver display will remain the same as in existing case.
3. With ATGS not datafilled for the given route list, Traver display will be the same as in the existing case for this route list.
4. Message "**ATGS IS TURNED ON: Alternate Routes will be used.**" will be displayed only for the route list having ATGS option datafilled and with ATGS SOC turned ON.
5. Consider the case in which one of the route list in the call do not have an ATGS option and also contains reroute element which points to the next route list that has ATGS option. In this case, Traver will display the elements in the list not having ATGS option starting from the head element to the reroute element. And will display only the element going to be selected for the next call in the list having ATGS option pointed by the reroute element of the previous list.

2.5.5 Restarts

After reload restart the element search for the first call will start from the head element of the route list.

2.5.6 ATGS SOC: State changed from IDLE to ON

After the ATGS SOC state is changed from ON to IDLE and then from IDLE to ON state, the element search for the call will start from the element next to last selected element when ATGS SOC was ON initially.

2.5.7 Route List Datafill Changes

If the route list datafill is changed, then the next route element search in this route list will start the search from the head element of the route list.

2.5.8 Interaction with Conditional (CND) selector:

If the call encounetrs the CND selector, the next element search either for the next or the current call will start from the element next to the one selected by the CND selector in the current route list.

For example:

1. Consider the case where a route tuple contains four elements (all of them are idle) and the first element is CND selector datafilled such that it always skips 1 element. Now for the very first call CND element is selected and call will terminate on third route element. The second call will then start the search from the fourth route element and not the second route element.
2. Consider the case where a route tuple contains four elements (all of them are busy) and the first route element is CND selector datafilled such that it always skips 1 element. Now for the very first call CND element is selected and call attempts to terminate on third element. Since, the third route element is busy, call goes back to the first element and continues the search until one of the member becomes available to accept the call or MAX_ATMPT count is reached.

2.5.9 Interaction with IBNRTE selectors:

2.5.9.1 ARS (Automatic Route Selection):

1. Consider the case where a tuple in Table IBNRTE contains 3 routing elements. The ATGS tuple pointer is present at the second routing element which is ARS with the ARS route busy and the NCOS of the call same as that of ARS. In such a case, the call will be given a busy treatment even though the other 2 routing elements in the tuple are idle.
2. Consider the case where a tuple in Table IBNRTE contains 3 routing elements. The ATGS tuple pointer is present at the second routing element which is ARS with the ARS route busy and the NCOS of the call not same as that in ARS. In suthough thech a case, the call will be given a busy treatment even though all the routing elements are idle.

2.5.9.2 QH:

1. Consider a case where a tuple in Table IBNRTE has 3 elements with QH selector as the second element. The ATGS element pointer is pointing to the second route element (QH selector). In such a case, the call will terminate on the route element datafilled next to the QH selector. And the same is reflected in the TRAVER also.
2. Consider a case where a tuple in Table IBNRTE has 3 elements with QH selector as the second element. The ATGS element pointer is pointing to the third element which is an expensive route. In such a case, the call will directly terminate on the expensive route and will not be Call Back Queued (CBQed) against the inexpensive route.
3. Consider a case where a tuple in Table IBNRTE has 3 elements with QH selector as the second element. The ATGS element pointer is pointing to the third element which is an expensive route. In such a case, the call will directly terminate on the expensive route without trying to Offhook Queue (OHQ) against the inexpensive route.

2.5.10 Interaction with OFRT selectors:

2.5.10.1 Dynamically Controlled Routing (DCR) :

Dynamically Controlled Routing (DCR) monitors the status of a network and provides, in near real time, the best route recommendations for calls. Hence, ATGS and DCRT can not coexist together.

This feature is not compatible with DCRT/NODE selector used for Dynamic Controlled Routing.

2.5.10.2 Test Circuit (TC):

If the call encounetrs the TC selector, the next element search either for the next or the current call will start from the element next to the TC selector in the current route list.

1. Consider the case where a route tuple contains four elements (all of them are idle) and the first element is TC selector datafilled such that the agent specified in the TESTSEL field is not the same as the directory number or the trunk invoved in the call. Now for the very first call the TC element is selected and the call will terminate on third route element. The second call will then start the search from the second route element.
2. Consider the case where a route tuple contains four elements (all of them are idle) and the first element is TC selector datafilled such that the agent specified in the TESTSEL field is the same as the directory number or the trunk invoved in the call. Now for the very first call the TC element is selected and the call will terminate on the second route element. The second call will then start the search from the second route element.
3. Consider the case where a route tuple contains four elements (all of them are idle except the second route element) and the first element is TC selector datafilled such that the agent specified in the TESTSEL field is the same as the directory number or the trunk invoved in the call. Now for the very first call the TC element is selected and the call will terminate on the third route element.The second call will then start the search from the fourth route element.
4. Consider the case where a route tuple contains four elements (all of them are idle except the third route element) and the first element is TC selector datafilled such that the agent specified in the TESTSEL field is not the same as the directory number or the trunk invoved in the call. Now for the very first call the TC element is selected and the call will terminate on the second route element as the third route is busy. The second call will then start the search from the third route element

2.6 Logs (LG)

2.6.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)
DFIL	802	NEW	SOS

A new DFIL 802 log is created by this feature. For more details, please refer to Section 10:Log changes (LG) on page 365

2.7 Data schema (DS)

2.7.1 New/modified tables

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
IBNRTE, IBNRT2, IBNRT3, IBNRT4, OFRT, OFR2, OFR3, OFR4.	CHANGED	OLD

For more details, please refer to Section 11:Data schema changes (DS) on page 369

2.8 Office parameters (OP)

Not Applicable

2.9 Service orders (SO)

Not Applicable

2.10 Alarms (AL)

Not Applicable

2.11 Command interface (CI)

Not Applicable

2.12 Operational measurements (OM)

Not Applicable

2.13 AMA/Billing information (AM)

Not Applicable

2.14 Software optionality control (SOC)

Table 3 SOC

SOC option name:	ATGS
SOC option title:	Alt Route Selection
SOC option control type:	state
New SOC option?	Yes
SOC option order code	LOC00033
Option defined in DRU:	SHR
Affected products:	NA100

2.15 Glossary

Term	Description
ATC	Access Tandem to Carrier
ATGS	Alternate Trunk Group Selection
CCB	Call Condense Block
CHB	Call Handler Block
ES	Emergency Services
FSD	Feature Specification Document
ISUP	Integrated Services Digital Network User Part
IT	Intertoll
OP	Operator Position
PRI	Primary Rate Interface
RTEB	Routing Block

2.16 References

REF #	Description of Reference
FSD	FSD for feature Alternate Trunk Group Selection.
A59013383	HLD for this activity
AF7338	ISP Even Call Distribution
AJ4929	Random and Circular Hunting

2: Functional description (FN)

2.1 Feature name

A59013430 - Provide a new line option PDO (Prevent Delete Option).

2.2 Description

This feature will provide a new line option that can be assigned to a DN. When this option is present, the line cannot be removed from service. Any attempt to remove the line from service will result in an error message and the command will fail.The option must first be deleted from the line before any attempt to remove the line from service will succeed.

This feature will prevent the accidental or inadvertent deletion of a DN. This will provide an additional level of security by preventing instances of unwanted service interruptions. Additionally, the PDO option can be assigned to individual DN’s or to hunt group pilots listed as destinations to a PSAP XLA route. Since the pilot is the last member of a hunt group to be deleted, marking the pilot will prevent the last destination to a PSAP XLA route from being removed.

The PDO option can be assigned to a DN using NEW, EST, ADD, NEWACD and ADO SERVORD commands. The option can be removed from a DN with the SERVORD command DEO.

The provisioning, de-provisioning of PDO option and the behavior of a line with PDO option is described by the following examples.

Example 1:

This example explains the procedure to add PDO option on a given POTS line.

```
>ado $
DN_OR_LEN:
>6219010
OPTION:
>pdo
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 99 3 19 AM 6219010 ( PDO ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y

>qdn 6219010
------------------------------------------------------------------------
DN:    6219010
TYPE: SINGLE PARTY LINE
SNPA: 613   SIG: DT    LNATTIDX:    32
LINE EQUIPMENT NUMBER:     HOST  05 1 08 01
LINE CLASS CODE:      1FR
LINE TREATMENT GROUP:     0
CARDCODE:  6X17AC    GND: N  PADGRP: STDLN  BNV: NL MNO: Y
PM NODE NUMBER     :    50
PM TERMINAL NUMBER :    258
OPTIONS:
CWT PDO DGT

------------------------------------------------------------------------
```

Example 2:

This example demonstrates the behavior of a line, having PDO option, being deleted. It exhibits how the OUT command fails with the error message.

ERROR: Protected Service. Verify Action.
*****Error - Inconsistent Data*****

```
>qdn 6219010
------------------------------------------------------------------------
DN:    6219010
```

```
TYPE: SINGLE PARTY LINE
SNPA: 613   SIG: DT    LNATTIDX:    32
LINE EQUIPMENT NUMBER:     HOST  05 1 08 01
LINE CLASS CODE:      1FR
LINE TREATMENT GROUP:     0
CARDCODE:  6X17AC    GND: N  PADGRP: STDLN  BNV: NL MNO: Y
PM NODE NUMBER     :    50
PM TERMINAL NUMBER :    258
OPTIONS:
CWT PDO DGT

------------------------------------------------------------------------

>out $
DN:
>6219010
LEN_OR_LTID:
>5 1 8 1
INTERCEPT_NAME:
>bldn
COMMAND AS ENTERED:
OUT NOW 99 3 19 AM 6219010 HOST 05 1 08 01 BLDN
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
ERROR: Protected Service. Verify Action.
***Error - Inconsistent Data***
COMMAND AS ENTERED:
OUT NOW 99 3 19 AM 6219010 HOST 05 1 08 01 BLDN
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
```

Example 3:

This example explains the procedure to remove a line from service which has the PDO option present. The PDO option is first removed from the line using a DEO command and then the line is removed using an OUT command.

```
>qdn 6219010
--------------------------------------------------------------------------------
DN:     6219010
TYPE: SINGLE PARTY LINE
SNPA: 613   SIG: DT    LNATTIDX:    32
LINE EQUIPMENT NUMBER:     HOST  05 1 08 01
LINE CLASS CODE:      1FR
LINE TREATMENT GROUP:     0
CARDCODE:  6X17AC    GND: N  PADGRP: STDLN  BNV: NL MNO: Y
PM NODE NUMBER     :    50
PM TERMINAL NUMBER :    258
OPTIONS:
CWT PDO DGT

--------------------------------------------------------------------------------

>deo $
DN_OR_LEN:
```

```
>6219010
OPTION:
>pdo
OPTION:
>$
COMMAND AS ENTERED:
DEO NOW 99 3 19 AM 6219010 ( PDO ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y


>out $
DN:
>6219010
LEN_OR_LTID:
>5 1 8 1
INTERCEPT_NAME:
>bldn
COMMAND AS ENTERED:
OUT NOW 99 3 19 AM 6219010 HOST 05 1 08 01 BLDN
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y


>qdn 6219010
--------------------------------------------------------------------------------
DN:          6219010
TYPE: UNASSIGNED
--------------------------------------------------------------------------------
```

2.3 Hardware requirements

None.

2.4 Limitations and restrictions

2.4.1 Option Incompatibilities

The options that are incompatible with the PDO option are as follows:

- SDN (Secondary Directory Number)
- MDN (Multiple Appearance Directory Number)

Additionally, options that cause service interruptions will not be compatible. These are options which temporarily put the line out of service.

- PLP (Plug-Up)
- SUS (Suspended Service)
- RSUS (Requested Suspension)
- DTM (Denied Termination)

Attempts to add incompatible options will be rejected with appropriate error message. These messages will be in accordance with current SERVORD practice.

2.4.2 Hunt Groups compatibilities

The following hunt groups will be supported for both pilots and members:

- DNH - Directory Number Hunt
- DLH - Distributed Line Hunt
- MLH - Multi Line Hunt
- PRH - Preferential Hunting

Hunt group that will not be supported are :

- BNN - Bridged Night Number
- CPU - Call Pickup
- MPH - Multiple Position Hunt
- SIMRING - Simultaneous Ringing
- CMG - Call Management Group

2.4.3 Compatible call distribution groups

PDO option can be assigned to following call distribution groups :

- UCD - Universal Call Distribution
- ACD - Automatic Call Distribution

PDO option cannot be assigned ACD/UCD DN (Feature DN) as PDO option is not supported for Virtual DNs.

2.4.4 Supported Line Class Codes

The PDO option is compatible with the following LCC's:

- 1FR - One Party Flat Rate
- 2FR - Two Party Flat Rate
- 4FR - Four Party Flat Rate
- 8FR - Eight Party Flat Rate
- 10FR - Ten Party Flat Rate
- IBN - Integrated Business Network
- RES - Residential Services
- 1MR - One Party Message Rate
- PBX - Private Business Exchange
- PBM - PBX Message Rate
- OWT - Outgoing Wide Area Telephone System
- EOW - Enhanced Outgoing Wide Area Telephone System
- INW - Incoming Wide Area Telephone System
- 2WW - Two Way Wide Area Telephone System
- ETW - Enhanced Two Way Wide Area Telephone System
- TWX - Teletypewriter Exchange System
- CSD - Circuit Switched Digital Data System
- ZMD - Zero Minus Dialing
- ZMZPA - Zero Minus Zero Plus Allowed
- CCF - Coin, Coin First
- CDF - Coin, Dialtone First
- CSP - Coin, Semi-Postpay
- CFD - Coin Free Dialing
- DATA - Data Unit
- PDATA - POTS Data Unit
- PSET - Proprietary Business Set
- ISDNKSET - Integrated Services Digital Network Key Set

2.4.5 Command Incompatibilities

The commands that apply to virtual DN's are not supported for this option, these commands are:

- OUTDN
- NEWDN

The PDO option is incompatible to MDN option hence the following commands are not compatible :

- EXBEST - Establish MDN huntgroup
- EXBADO - Add option to MDN huntgroup
- EXBDEO - Delete option from MDN huntgroup
- EXBCHG - Change a MDN huntgroup.

2.5 Interactions

Not applicable.

DDOC section summaries

2.6 Logs (LG)

Not applicable.

2.7 Data schema (DS)

2.7.1 New/modified tables

Tuples in table OPTOPT will be added to reflect the incompatibility of PDO with specific options and tuples in table LCCOPT will be added to reflect the compatibility of PDO option and Line Class Codes.

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
OPTOPT	Changed	Unchanged
LCCOPT	Changed	Unchanged

2.8 Office parameters (OP)

Not applicable.

2.9 Service orders (SO)

The PDO option can be assigned to a DN through SERVORD commands that permit the assignment of options.

- NEW - The option can be added when creating new service orders.
- EST - The option can be added to hunt group pilots when establishing a hunt group.
- ADO - The option can be added to an existing DN.
- NEWACD - The option can be added when creating new ACD lines.
- ADD - The option can be added while creating a huntgroup member..

The PDO option can be deleted from a DN through SERVORD commands that remove options.

- DEO - The option can be deleted from any DN it is assigned.

If the PDO option is assigned to a line, error messages will be displayed when SERVORD commands are issued that attempt to remove a line from service. The command will result in failure.

- OUT
- CHG
- CDN
- SUS
- PLP
- SUSGRP
- CHDN
- CLN
- CKLN
- SWAP
- DEL

All the commands listed above will be blocked.

Note: The SUSGRP command will suspend all group members without PDO. Only group members with PDO will not be suspended.

2.10 Alarms (AL)

Not applicable.

2.11 Command interface (CI)

Query commands will display the Prevent Delete Option when assigned to the line.

- QDN - Query Directory Number
- QDNWRK - Query Working Directory Numbers
- QLEN - Query Line Equipment Number
- QLENWRK - Query Working Line Equipment Numbers
- QLT - Query Logical Terminal
- QIT - Query ISDN Terminal

2.12 Operational measurements (OM)

Not applicable.

2.13 AMA/Billing information (AM)

Not applicable.

2.14 Software optionality control (SOC)

Not applicable.

2.15 Glossary

Term	Description
New term	**Definition**
ADD	Add member to huntgroup
ADO	Add Option Command
CDN	Change Directory Number Command
CHG	Change Translation/Routing Information
CMG	Call Management Group
DEL	Delete member from huntgroup
DEO	Delete Option Command

DN	Directory Number
DTM	Denied Termination
EST	Establish a Hunt Group
ISDN	Integrated Services Digital Network
MDN	Multiple Appearance Directory Number
NEW	Create New Service Command
OUT	Remove from Service command
PDO	Prevent Delete Option
PLP	Plug-Up
PSAP	Public Safety Answering Point
QDN	Query Directory Number
QDNWRK	Query Working Directory Numbers
QIT	Query ISDN Terminal
QLEN	Query Line Equipment Number
QLENWRK	Query Working Line Equipment Numbers
QLT	Query Logical Terminal
RSUS	Requested Suspension
SDN	Secondary Directory Number
SUS	Suspend Service
SIMRING	Simultaneous Ringing

2.16 References

2: Functional description (FN)

2.1 Feature name

Public Feature Code (PFC) and Specific Feature Code (SFC) triggers group subscription and Public Feature Code trigger Line Attribute Response Processing (LARP).

2.2 Description

This feature allows the LARP option to be assigned to PFC trigger items in table TRIGITM. For PFC triggers with the LARP option, the line attributes that are stored in the LARP option are retrieved and used for the resonse processing of the call. This allows the customer to overcome the toll restrictions imposed by the originator's line attributes.

Also included in this feature is the ability to assign PFC and SFC trigger items to customer/RES groups. Only RES and ISDN BRI agents are allowed to trigger on PFC and SFC triggers that are subscribed at the customer group level.

All of the changes listed here are based on the G1A NA012 version of the SIG. The NA013 view was not available at the time of writing this document.

The following is a list of all of the changed/updated sections from the SIG that are modified as a result of this feature.

Chapter 6: Generic SSP Procedures
- 6.5.6.2 - Collect_Information Message
- 6.5.6.2.1 - Determining the Dial Plan in Effect
- 6.5.6.2.3 - Equal Access Routing

Chapter 8: Orginating Call Model Events
- 8.4.4.1 - Interactions with AIN triggers with overriding line attributes

Chapter 34: Data Schema
- 34.15.3 - Datafill

Table 672 - Fields from table TRIGITM
Chapter 35: Software Optionality Control
35.1 - Activating AIN SSP Software
35.2 - Summary of AIN SOC options and controlled functionality
Table 674 - Summary of AIN SOC options and controlled functionality
35.3 - Order code relationships
Figure 117 - AIN Service Enablers and AIN Essentials order code relationships
35.4 - SOC option status
Figure 119 - Example of SOC option status
35.7 - Toggling state SOC options to ON and IDLE
35.14 (NEW) AIN SOC features for NA013
35.15 - PACK output report
Figure 124 - Example of PACK output report
Chapter 46: Specific Feature Code Trigger
46.2 Trigger Item Provisioning Interface
Figure 231 - Datafilling hierarchy for trigger SFC
46.2.2 - Subscribing to trigger SFC
Table 723 - Trigger Definition and subscription tables for the SFC trigger type
46.2.4 - Sample SFC Datafill
Figure 232 - Sample datafill for trigger SFC
Chapter 47: Public Feature Code Trigger
47.2 - Trigger Item Provisioning Interface
Figure 237 - Datafilling hierarchy for trigger PFC
47.2.1 - Datafilling table TRIGITM
47.2.2 - Subscribing to trigger PFC
Table 730 - Trigger definition and subscription tables for the PFC trigger type
47.2.4 - Sample Datafill for trigger PFC
Table 731 - Table TRIGITM
Figure 238 - Datafill table dependencies for trigger PFC
47.3.7 - Verifying the Datafill
Figure 243 - Sample trigger item TRAVER output for trigger PFC
Chapter 62: Analyze_Route response
62.2 - Overriding Line Attributes
Chapter 73: AIN response translations for public agents
Chapter 75: AIN response translations for private agents

Note: Wherever possible, the changes are **highlighted in bold**.

2.2.1 Determining the Dial Plan in Effect (6.5.6.2.1)

Begin Product Spec

When the Collect_Information message is received in response to triggers SDS **or PFC** with line attributes, the attributes taken from either then entry in table

PODPATTR for a trigger group or the LARP option for a trigger item are ignored. Either the triggering agents or the VFG dial plan characteristics are used.

End Product Spec

2.2.2 Equal Access Routing (6.5.6.2.3)

Begin Product Spec

When the Collect_Information message is received in response to a **[SDS]** trigger with **overriding** line attributes and the CollectedDigits contains a non-local number without a carrier, then the LPIC or PIC associsted with the **[SDS]** trigger is used to route the call.

End Product Spec

2.2.3 Interactions with AIN triggers with overriding line attributes (8.4.4.1)

Begin Product Spec

The trigger item provisioning interface implements trigger-specific line attributes by datafilling the LARP option on an SDS or PFC trigger item. See section 53.2 “Trigger item provisioning interface” on page 1498 (SDS chapter) **or section 47.2.1 “Datafilling table TRIGITM” on page XXXX (PFC chapter)** for the datafill steps for the LARP option.

End Product Spec

2.2.4 Datafill (34.15.3)

Begin Product Spec

Table 672 - Fields from table TRIGITM

Under Explanation and action column for the LARP option, the last paragraph should read:

Enter LARP to specify overriding line attributes. This option applies only to triggers SDS **and PFC**. Datafill subfields LINEATTR, XLAPLAN, RATEAREA, PIC, and LPIC.

End Product Spec

2.2.5 Activating AIN SSP software

Begin Product Spec

- AIN00262: AIN SE R6 - MonChng HuntGr to control the NA012 AIN SE Monitor For Change for Hunt Group functionality.
- AIN00263:AIN SE R6 - ExtndRing Parm to control the NA012 AIN SE Extended Ringing Parameter functionality.
- **AIN00274: AIN SE R7 - PFC LARP to control the NA013 AIN SE Line Attribute Response Processing for the PFC trigger.**
- **AIN00275: AIN SE R7 - Group SFC/PFC to control the NA013 AIN SE group-based SFC and PFC triggers.**

To activate AIN SSP call processing, both AIN00002 and AIN00006 SOC options must be in the ON state. When these SOC options are ON, triggering is enabled at the TDPs, thus making database queries possible. When they are IDLE, triggering is disabled and only datafilling and testing are allowed.

End Product Spec

Begin Product Spec

- The Service Enablers Release 6 MonChng HuntGr SOC option AIN00262 controls the AIN Service Enablers Monitor For Change for Hunt Group functionality and must be in the ON state if it is desired.
- The Service Enablers Release 6 ExtndRing Parm SOC option AIN00263 controls the AIN Service Enablers Extended Ringing Parameter functionality and must be in the ON state if it is desired.
- The Service Enablers Release 7 PFC LARP SOC option AIN00274 controls the AIN Service Enablers PFC LARP functionality and must be in the ON state if it is desired.
- The Service Enablers Release 7 SFC/PFC Group SOC option AIN00275 controls the AIN Service Enablers SFC/PFC customer group subscription functionality and must be in the ON state if it is desired.

End Product Spec

2.2.6 Summary of AIN SOC options and SOC controlled functionality (35.2)

Begin Product Spec

Table 674 - Summary of SOC options and SOC controlled functionality

Desription of change: Add AIN00274 and AIN00275.

[snip]

AIN00260	SE R6 Base	Track	NA012
Track option associated with AIN SE Release 6 functionality. This option tracks the functionality introduced by features 59006039, 59007218, 59010421, 59008267, 10202203, 10216514, 10206792 and 10206878. Number of redirections limitation removal AIN 0.0-0.1 Interworking code removal Redirection interactions with Busy/NoAnswer triggers AIN line attribute response processing (provisioning) Network tools enhancements AIN equal access CAC dialing enhancements AIN Display Text for MADN AIN response processing DFIL log			
AIN00261	SE R6 BRI MDN DpTxt	State	NA012
Control the NA012 AIN SE delivery of DisplayText parameter information to an ISDN BRI agents functionality introduced by feature 59006414.			
AIN00262	SE R6 MonChng HuntGr	State	NA012
Controls the NA012 AIN SE Monitor For Change for Hunt Group functionality introduced by feature 59006290.			
AIN00263	SE R6 ExtndRing Parm	State	NA012
Controls the NA012 AIN SE Extended Ringing Parameter functionality introduced by feature 59006320.			
AIN00270	SE R7 Base	Track	NA013
Controls the NA012 AIN SE Extended Ringing Parameter functionality introduced by feature 59006320.			
AIN00274	**SE R7 PFC LARP**	**State**	**NA013**
Controls the NA013 AIN SE PFC LARP functionality introduced by feature 59013476.			
AIN00275	**SE R7 SFC/PFC Group**	**State**	**NA013**
Controls the NA013 AIN SE SFC/PFC customer group subscription introduced by feature 59013476.			

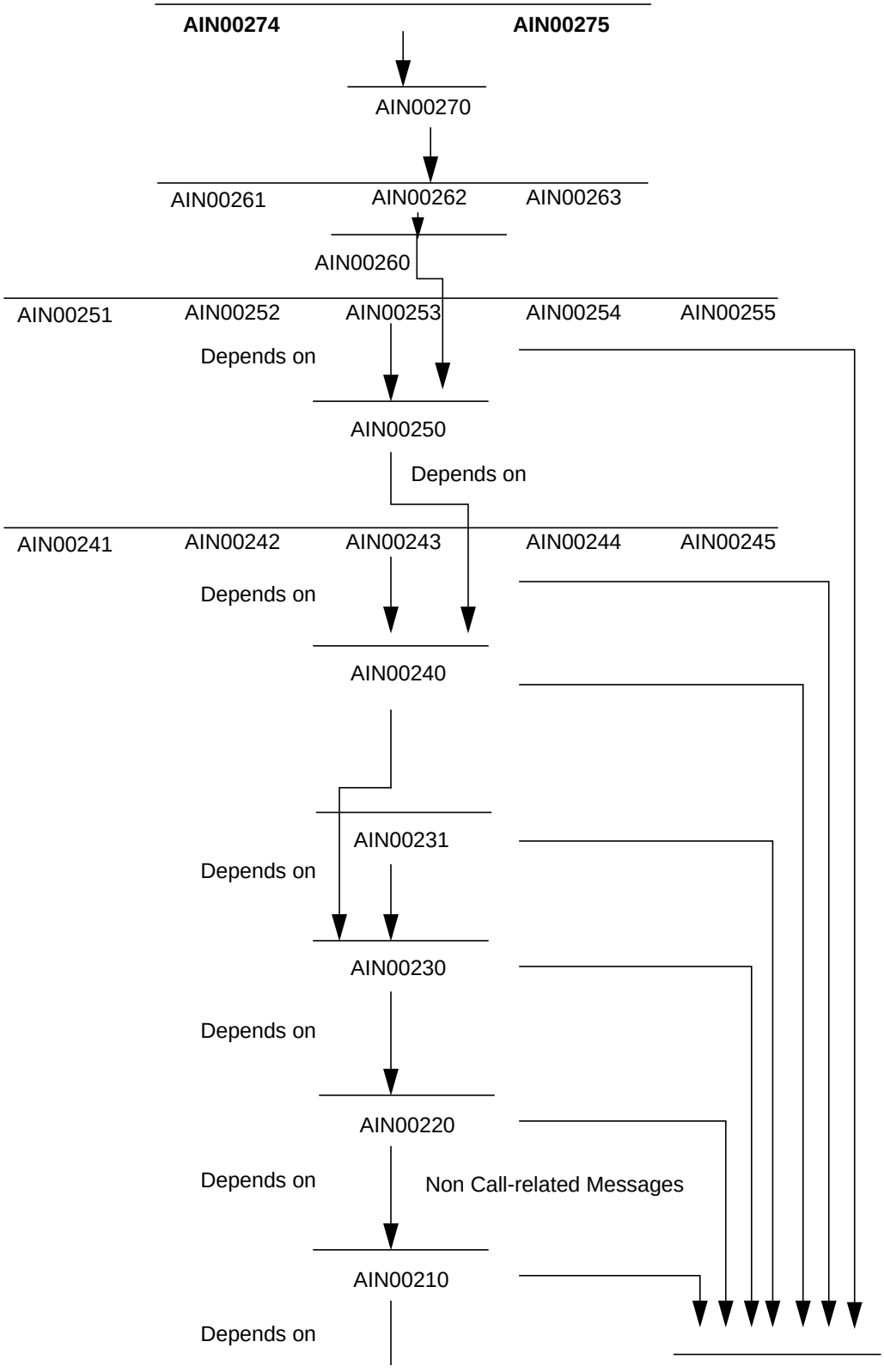
End Product Spec

2.2.7 Order Code Relationships (35.3)

Begin Product Spec

Figure 117 - AIN Service Enablers and AIN essentials order code relationship

Description of change: Add AIN00274 and AIN00275.


AIN00274
AIN00275
AIN00270
AIN00261
AIN00262
AIN00263
AIN00260
AIN00251
AIN00252
AIN00253
AIN00254
AIN00255
Depends on
AIN00250
Depends on
AIN00241
AIN00242
AIN00243
AIN00244
AIN00245
Depends on
AIN00240
AIN00231
Depends on
AIN00230
Depends on
AIN00220
Depends on
Non Call-related Messages
AIN00210
Depends on

End Product Spec

2.2.8 SOC option status (35.4)

Begin Product Spec

Figure 119 - Example of SOC option status

```
CI:
>soc
SOC:
>select group ain

GROUP:AIN
GROUP:AIN
OPTION    NAME                 RTU STATE   USAGE   LIMIT    UNITS  LAST_CHG
------    ----                 --- -----   -----   -----    -----  --------

[Only AIN Service Enablers SOC Options are shown here]

AIN00210  Service Enablers       Y    ON       -       -        -  99/05/27
AIN00211  SE Counter - Office    Y     -     152 MONITOR      1AM  99/05/27
AIN00212  SE Counter - Subscr    Y     -     207 MONITOR      1AM  99/05/27
AIN00213  SE Counter - NCR       Y     -      60 MONITOR      1AM  99/05/27
AIN00220  Service Enablers R2    Y    ON       -       -        -  99/05/27
AIN00230  Service Enablers R3    Y     -       -       -        -  99/05/27 TRAK
AIN00231  SE R3 - GETS EACR      Y    ON       -       -        -  99/05/27
AIN00240  SE R4 - Base           Y     -       -       -        -  99/05/27 TRAK
AIN00241  SE R4 - ISDN IW        Y    ON       -       -        -  99/05/27
AIN00242  SE R4 - OTS            Y    ON       -       -        -  99/05/27
AIN00243  SE R4 - TCM Control    Y    ON       -       -        -  99/05/27
AIN00244  SE R4 - Collect Info   Y    ON       -       -        -  99/05/27
AIN00245  SE R4 - OHD Esc ICM    Y    ON       -       -        -  99/05/27
AIN00250  SE R5 - Base           Y     -       -       -        -  99/05/27 TRAK
AIN00251  SE R5 - OnePlus Pfx    Y    ON       -       -        -  99/05/27
AIN00252  SE R5 - Spfd Cxr Pfx   Y    ON       -       -        -  99/05/27
AIN00253  SE R5 - Intnl Pfx      Y    ON       -       -        -  99/05/27
AIN00254  SE R5 - OperSvcs Pfx   Y    ON       -       -        -  99/05/27
AIN00255  SE R5 - Offer Call     Y    ON       -       -        -  99/05/27
AIN00260  SE R6 Base             Y     -       -       -        -  99/05/31 TRAK
AIN00261  SE R6 BRI MDN DpTxt    Y    ON       -       -        -  99/05/31
AIN00262  SE R6 MonChng HuntGr   Y    ON       -       -        -  99/05/31
AIN00263  SE R6 ExtndRing Parm   N  IDLE       -       -        -  99/05/26
AIN00274 SE R7 PFC LARP          Y   ON       -       -        -  99/05/31 TRAK
AIN00275 SE R7 SFC/PFC Group     Y   ON       -       -        -  99/05/31 TRAK
```

Description of change: Add AIN00274 and AIN00275.

End Product Spec

2.2.9 Toggling state SOC options to ON and IDLE (35.7)

Begin Product Spec

Ensure that the option dependency requirements are taken into consideration when changing an option to the “ON” state. Options should always be changed to the “ON” state in the following order:

- AIN00002
- AIN00006
- AIN00008, AIN00010, AIN00018 or AIN00026
- AIN00210
- AIN00220
- AIN00231
- AIN00241, AIN00242, AIN00243, AIN00244 or AIN00245
- AIN00251, AIN00252, AIN00253, AIN00254 or AIN00255
- AIN00261, AIN00262 or AIN00263
- **AIN00274, AIN00275**

End Product Spec

Begin Product Spec

Ensure that the option dependency requirements are taken into consideration when changing an option to the “IDLE” state. Options should always be changed to the “IDLE” state in the following order:

- **AIN00274, AIN00275**
- AIN00261, AIN00262 or AIN00263
- AIN00251, AIN00252, AIN00253, AIN00254 or AIN00255
- AIN00241, AIN00242, AIN00243, AIN00244 or AIN00245
- AIN00231
- AIN00220
- AIN00210
- AIN00008, AIN00010, AIN00018 or AIN00026
- AIN00006
- AIN00002

End Product Spec

2.2.10 AIN SOC features for NA013 (NEW - 35.14)

Begin Product Spec

Order Code AIN00274, AIN SE R7 - PFC LARP optionalizes the PFC LARP functionality.

Order code AIN00275, AIN SE R7 - SFC/PFC Group optionalizes the SFC and PFC triggers customer group subscription.

Order Code	Order Name	Option Type
AIN00274	AIN SE R7 PFC LARP	State
AIN00275	AIN SE R7 SFC/PFC Group	State

SOC ON-TO-IDLE warning messages

The following warning messages are displayed before the NA012 SOC options are toggled from the ON to the IDLE state. The warning messages indicate that the state transition disables the associated AIN Service Enablers functionality.

AIN00275 warning message:

SERVICE AFFECTING: This transition will disable AIN Service Enablers Release 7 PFC LARP functionality for all current and future subscribers.

AIN00275 warning message:

SERVICE AFFECTING: This transition will disable AIN Service Enablers Release 7 SFC/PFC Group functionality for all current and future subscribers.

End Product Spec

2.2.11 Pack Report Output (35.15)

Begin Product Spec

Figure 124 - Example of Pack output report

Description of change: Add AIN00274 and AIN00275.

```
>SOC
>soc
SOC:
>select all pack
Packed report written to file BNR_LAB_LOAD$SSR on device SFDEV
>listsf all
BNR_LAB_LOAD$SSR

  [snip]

>print BNR_LAB_LOAD$SSR
SOC OPTION STATUS SUMMARY
DS9VG26_LOAD
CDN0B008
970815

  [snip]


AIN00002 Y O 970312
SOCOPT16 Y O 122846 MONITORED 0 970312
AIN00006 Y O 970312
AIN00007 N - 970312 TRAK
AIN00008 Y O 970312
AIN00009 N - 970312 TRAK
AIN00010 Y O 970312
AIN00011 N - 970312 TRAK
AIN00015 N - 970312 TRAK
AIN00018 Y O 970312
AIN00022 N - 970312 TRAK
AIN00026 Y O 970312
AIN00027 N - 970312 TRAK
AIN00210 Y O 970312
AIN00211 Y - 1000 MONITORED 0 970304
AIN00212 Y - 3234 MONITORED 0 970304
AIN00213 Y - 23 MONITORED 0 970304
AIN00220 Y O 970312
AIN00230 N - 970312 TRAK
AIN00231 Y O 970312
AIN00240 N - 980108
AIN00241 Y O 980108
AIN00242 Y O 980108
AIN00243 Y O 980108
AIN00244 Y O 980108
AIN00245 Y O 980108
AIN00250 N - 980604 TRAK
AIN00251 Y 0 980604
AIN00252 Y 0 980604
AIN00253 Y 0 980604
AIN00254 Y 0 980604
AIN00255 Y 0 980604
AIN00260 N - 980604 TRAK
AIN00261 Y 0 980604
AIN00262 Y 0 980604
AIN00263 Y 0 980604
AIN00274 Y 0 990604
AIN00275 Y 0 990604

[snip]
S6PCS9EANQBFSCDVDCVA
```

End Product Spec

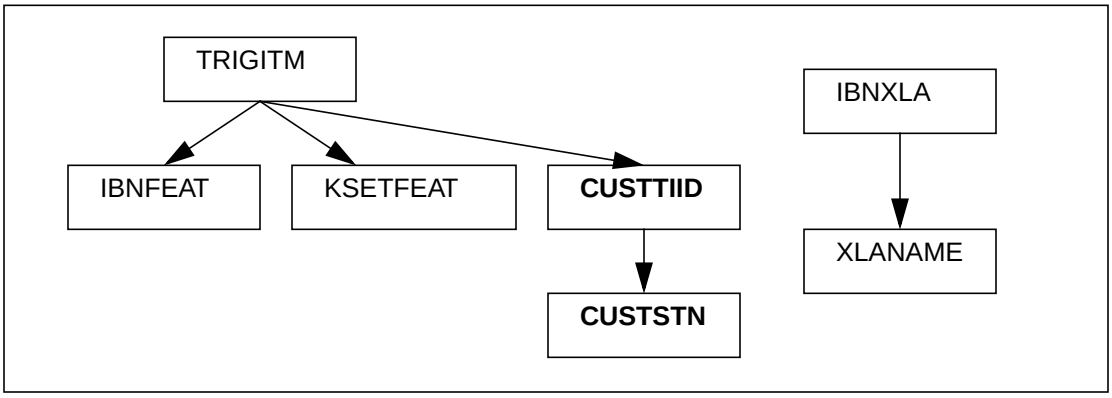
2.2.12 Trigger Item Provisioning Interface (46.2)

Begin Product Spec

Figure 231 Datafilling hierarchy for trigger SFC

Desciption of change: Add a new box CUSTTIID at the same level as IBNFEAT and KSETFEAT. An arrow should point from TRIGITM to CUSTTIID. Below CUSTTIID is another new box, CUSTSTN with an arrow pointing from CUSTTIID.

Figure 231 illustrates the required steps to datafill trigger SFC. Figure 231 assumes that the trigger item provisioning interface for trigger SFC has been selected.



End Product Spec

2.2.13 Subscribing to trigger SFC (46.2.2)

Begin Product Spec

Table IBNFEAT stores subscriptions to AIN for RES lines. Table KSETFEAT stores subscriptions to AIN for ISDN BRI lines.

Use Table Control to subscribe SFC trigger items to a customer group. When a customer group is subscribed to SFC triggers, only RES and ISDN BRI agents in the customer group can encouter the triggers. Enter table CUSTTIID, then type ADD.

1. **In response to the CUSTNAME, enter a valid customer group name.**
2. **In response to the TDP prompt, enter 4 to specify the Information_Analyzed TDP.**

3. **In response to the TINAME prompt, enter the 8 character alphanumeric string of a valid SFC trigger item in table TRIGITM.**
4. **In response to the TRIGACT prompt, enter ON or OFF for the trigger activation state.**

The selector for the customer group in table CUSTSTN needs to be checked to make sure that the customer group is using trigger items. Enter table CUSTSTN and type POS.

5. **In response to the CUSTNAME prompt, enter a valid customer group name.**
6. **In response to the OPTNAME prompt, enter AIN.**

The current AIN subscription, if available, is displayed for the customer group. It should be changed to TIID if necessary.

End Product Spec

Begin Product Spec

Table 723 - Table definition and subscription tables for the SFC trigger type

Description of Change: A new row is needed in columns "Subscription Basis" - Customer Group (RES and ISDN BRI agents only), "Subscription Tables" - CUSTTIID, CUSTSTN, "Servord" - No.

TDP	Trigger type	Criteria	Definition tables	Subscription basis	Sub-scription tables	Option	SERVORD
INFOANAL	SFC	CT	TRIGITM	Line (RES, ISDN)	IBNFEAT	AIN	YES
		DG(M)			KSETFEAT		
				Customer Group (RES, ISDN agents only	**CUSTTIID**	**AIN**	**NO**
					CUSTSTN		

End Product Spec

Begin Product Spec

Table 727 - Table IBNFEAT (no changes)

LEN	DNNO	DF	FEATURE	DATA
				AINGRP
HOST 00 1 09 10	0	AIN	AIN	TIID (4 SFCTRIG1 ON) $

Desciption of Change: New Table

Table 1 Table CUSTTIID

CUSTNAME	TIID	TRIGACT
COMKODAK	4 SFCTRIG1	ON

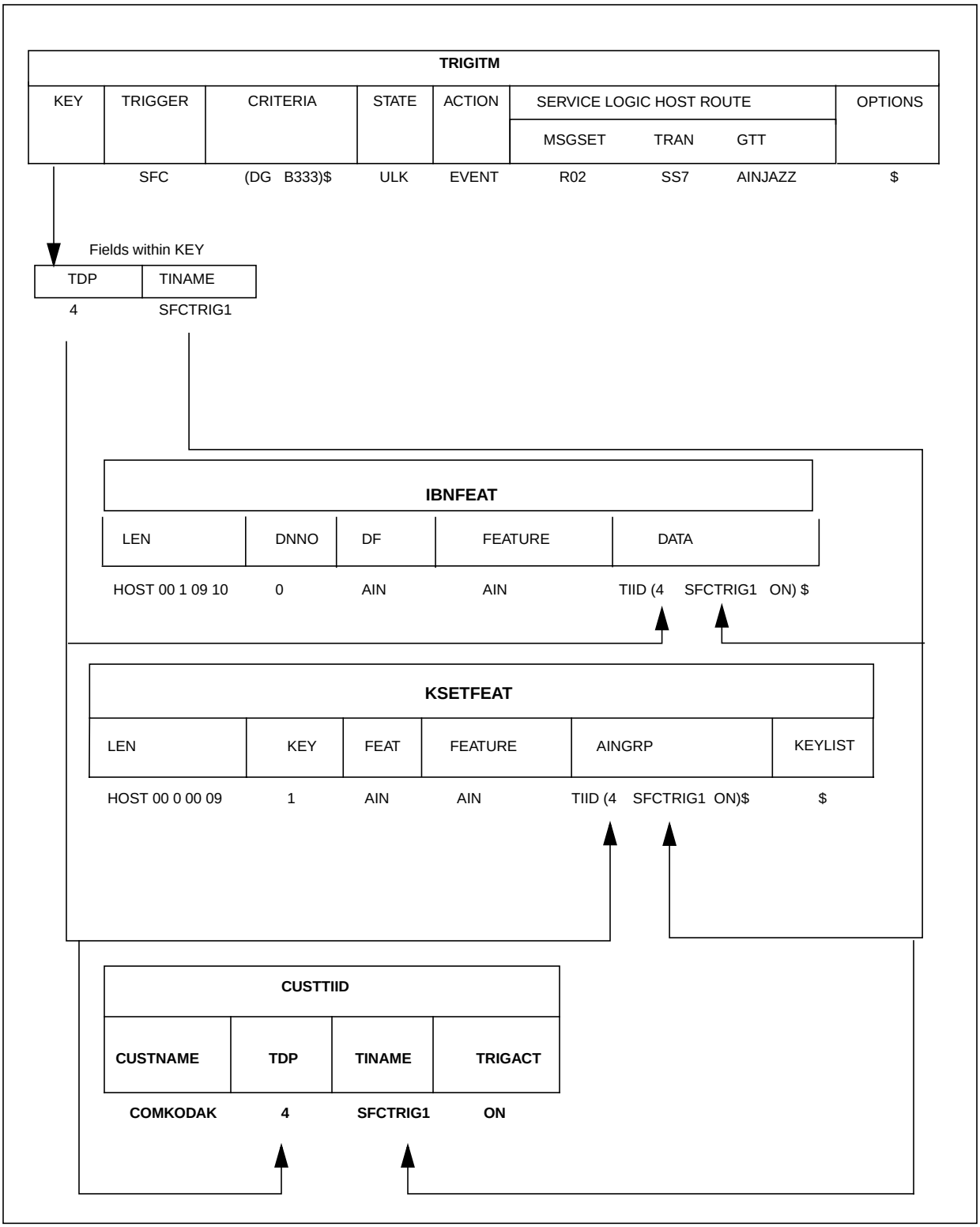
End Product Spec

2.2.14 Sample SFC Datafill (46.2.4)

Begin Product Spec

Figure 232 - Sample datafill for trigger SFC

Description of Change: Add table CUSTTIID (same as above) to the figure under KSETFEAT and IBNFEAT. Arrows should point to the 4 SFCTRIG1 in the table.


TRIGITM
KEY
TRIGGER
CRITERIA
STATE
ACTION
SERVICE LOGIC HOST ROUTE
MSGSET
TRAN
GTT
OPTIONS
SFC
(DG B333)$
ULK
EVENT
R02
SS7
AINJAZZ
$
Fields within KEY
TDP
TINAME
4
SFCTRIG1
IBNFEAT
LEN
DNNO
DF
FEATURE
DATA
HOST 00 1 09 10
0
AIN
AIN
TIID (4 SFCTRIG1 ON) $
KSETFEAT
LEN
KEY
FEAT
FEATURE
AINGRP
KEYLIST
HOST 00 0 00 09
1
AIN
AIN
TIID (4 SFCTRIG1 ON)$
$
CUSTTIID
CUSTNAME
TDP
TINAME
TRIGACT
COMKODAK
4
SFCTRIG1
ON

End Product Spec

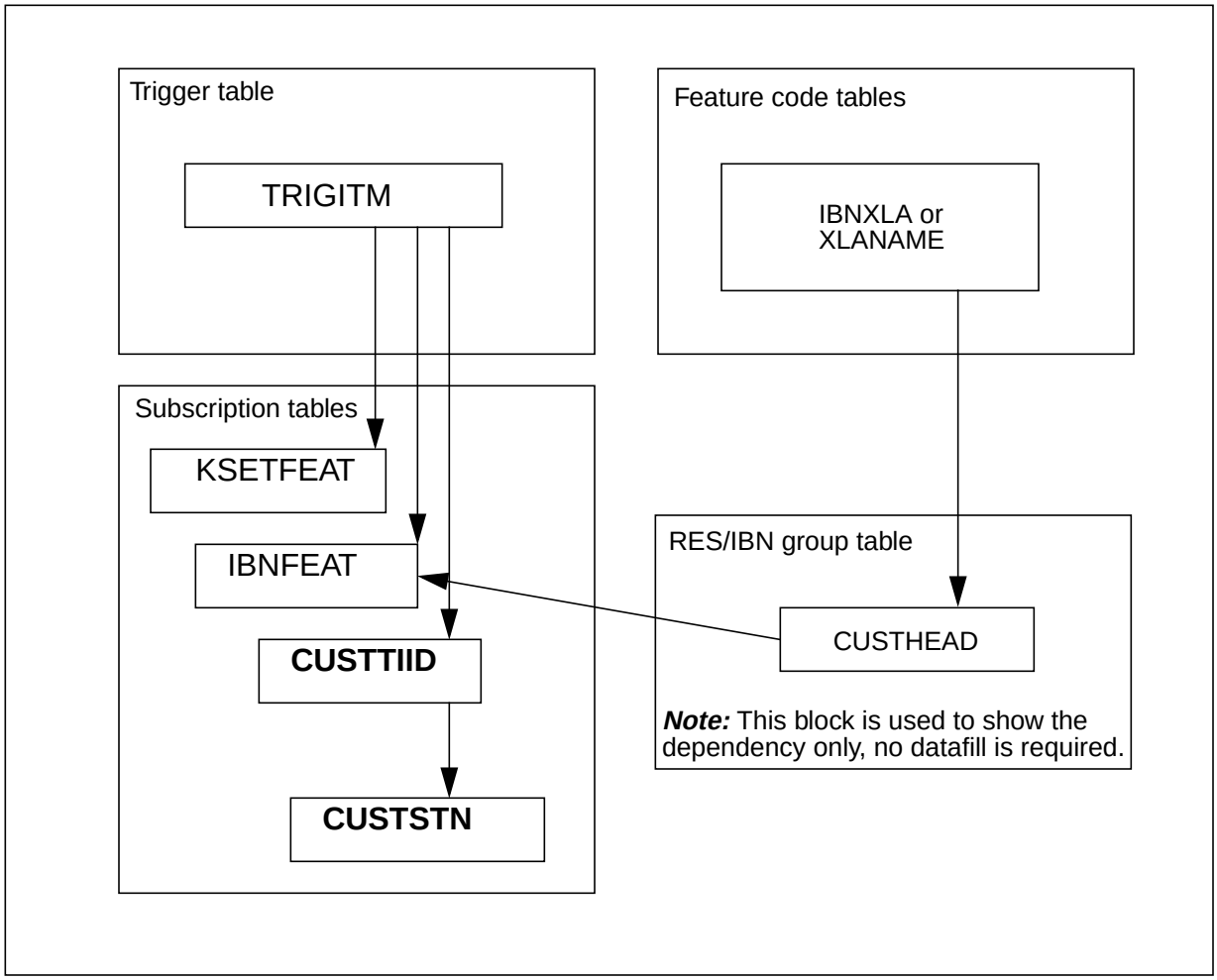
2.2.15 Trigger Item Provisioning Interface (47.2)

Begin Product Spec

Figure 237 - Datafilling hierarchy for trigger PFC

Description of Change: Add a new box CUSTTIID at the same level as IBNFEAT and KSETFEAT. An arrow should point from TRIGITM to CUSTTIID. Below CUSTTIID is another new box, CUSTSTN with an arrow pointing from CUSTTIID.

Figure 237 shows the datafilling steps required by the PFC trigger. Figure 237 assumes that the trigger item provisioning interface for the PFC trigger has been selected.



End Product Spec

2.2.16 Datafilling table TRIGITM (47.2.1)

Begin Product Spec

8. In response to the OPTION prompt, **the LARP option can be specified but it is optional. See section 47.2.1.1 - Datafilling for line attribute response processing.**

47.2.1.1 - Datafilling for line attribute response processing (copied from SDS chapter)

The line attribute response processing (LARP) option provides post query processing for triggers. This option allows overriding line attributes to be assigned against individual trigger items that replace the originator's line attributes during response processing. When this option is not specified, the originator's line attributes are used. Overriding line attributes are defined by the following fields: LINEATTR, XLAPLAN, RATEAREA, PIC, and LPIC. This functionality is available whether or not the switch has lines provisioned. The switch must be able to provision line attributes and trigger items in order to provide overriding line attributes for a trigger. The following steps describe how to datafill the LARP option for a trigger item: Note: The following tables must be datafilled before the LARP option: LINEATTR, XLAPLAN, RATEAREA, OCCNAME, and OCCINFO.

1. **Enter LARP at the OPTION prompt while datafilling the trigger item.**
2. **In response to the LINEATTR prompt, enter the value that associates the trigger with the corresponding index in table LINEATTR. This field is mandatory.**
3. **In response to the XLAPLAN prompt, enter the value that associates the trigger with the corresponding index in table XLAPLAN.This field is mandatory.**
4. **In response to the RATEAREA prompt, enter the value that associates the trigger with the corresponding index in table RATEAREA.This field is mandatory.**
5. **In response to the PIC prompt, enter the name of the Primary Interexchange Carrier. It has a range of values corresponding to the tuple keys in table OCCNAME. In scenarios where no carrier is desired, the value NILC is used, denoting the equivalent of a NIL carrier.**

6. **In response to the LPIC prompt, enter the Local PIC. The local PIC can have the same values as the PIC field defined in step 5.**

End Product Spec

2.2.17 Subscribing to trigger PFC (47.2.2)

Begin Product Spec

All modifications to the IBNFEAT and KSETFEAT tables must be performed with Servord.

Use Table Control to subscribe PFC trigger items to a customer group. When PFC trigger items are subscribed to a customer group, only RES and ISDN BRI agents in the customer group can encounter the triggers. Enter table CUSTTIID, then type ADD.

1. **In response to the CUSTNAME, enter a valid customer group name.**
2. **In response to the TDP prompt, enter 4 to specify the Information_Analyzed TDP.**
3. **In response to the TINAME prompt, enter the 8 character alphanumeric string of a valid PFC trigger item in table TRIGITM.**
4. **In response to the TRIGACT prompt, enter ON or OFF for the trigger activation state.**

The selector for the customer group in table CUSTSTN needs to be checked to make sure that the customer group is using trigger items. Enter table CUSTSTN and type POS.

5. **In response to the CUSTNAME prompt, enter a valid customer group name.**
6. **In response to the OPTNAME prompt, enter AIN.**

The current AIN subscription, if available, is displayed for the customer group. It should be changed to TIID if necessary.

End Product Spec

Begin Product Spec

Table 730 - Trigger definition and subscription tables for the PFC trigger type

Description of Change: A new row is needed in columns "Subscription Basis" - Customer Group (RES and ISDN BRI agents only), "Subscription Tables" - CUSTTIID, CUSTSTN, "Servord" - No.

TDP	Trigger type	Criteria	Definition tables	Subscription basis	Subscription tables	Option	SERVORD
INFOANAL	PFC	CT	TRIGITM	Line (RES)	IBNFEAT	AIN	YES
		DG (M)		Line (ISDN)	KSETFEAT		
				Customer Group	**CUSTTIID**	**AIN**	**NO**
				(RES and ISDN agents only)	**CUSTSTN**		

End Product Spec

2.2.18 Sample Datafill for trigger PFC (47.2.4)

Begin Product Spec

Table 731 - Table TRIGITM

Description of Change: Under the Option column, replace "$" with "(LARP 55 613_P621_0 L613_LATA1_55 NILC NILC) $"

TIID		Trigger	Criteria	State	Action	MsgSet	Transport	GTT	Option
TDP	NAME								
4	PODP TRG1	PFC	(DG B901)$	ULK	EVENT	R02	SS7	AIN JAZZ	**LARP (55 613_P621_0 L613_LATA1_55 NILC NILC)$**

Table 732 - Table IBNFEAT (No changes)

LEN	DNNO	DF	FEATURE	DATA
				AINGRP
HOST 02 0 00 01	0	AIN	AIN	TIID (4 PODPTRG1 ON) $

Description of Change: New Table

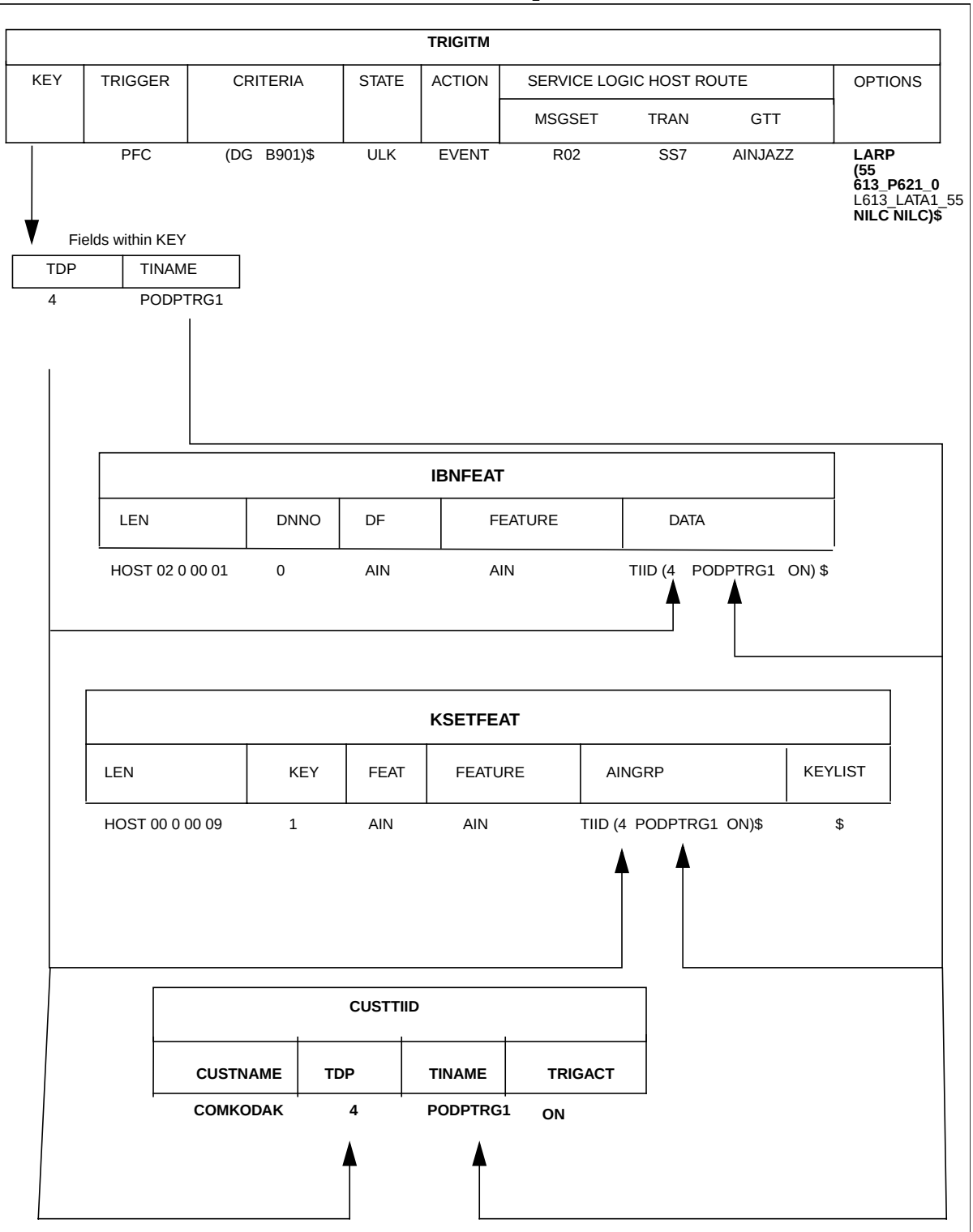
Table 2 Table CUSTTIID

CUSTNAME	TIID	TRIGACT
COMKODAK	4 PODPTRG1	ON

Figure 238 - Datafill table dependencies for trigger PFC

Description of Change: Remove table DNFEAT from figure (DISA DNs are not supported for PFC). Add table CUSTTIID above, with arrows pointing

to 4 PODPTRG1. Add the LARP option to table TRIGITM.



End Product Spec

2.2.19 Verifying the Datafill (47.3.7)

Begin Product Spec

When using the trigger item provisioning interface **with the LARP option**, the TRAVER output should match the output provided in TRAVER 243 on page 1449.

Figure 243 - Sample trigger item TRAVER output for trigger PFC

Description of Change: Add the LARP two-TRAVER warning message.

```
>TRAVER L 6136216138 B901 B
TABLE IBNLINES
HOST 02 0 14 14 0 DT STN RES 6216138 263 613_AIN2_263 L613_LATA1_0 613
(ACB)
    (AR) $
TABLE LINEATTR
263 1FR NONE NT 0 10 NILSFC 0 NIL NIL 00 613_AIN2_263 L613_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
613_AIN2_263 FR01 613 AIN2 TOPS Y RESG263 0 0 $
TABLE RATEAREA
L613_LATA1_0 L613 NIL LATA1 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
HOST 02 0 14 14 0 AIN AIN TIID (4 PB901 ON) $
TABLE CUSTSTN
RESG263 AIN AIN TIID
TABLE OFCVAR
AIN_OFFICE_TRIGGRP TIID
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
RESG263 0 0 0 RNCOS $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
RESG263 NXLA RXCMN263 RXCFNXXX 0 RES
TABLE DIGCOL
RES specified: RES digit collection
NCOS FEAT XLA name is NIL. Go to next XLA name.
TABLE IBNXLA: XLANAME RXCFNXXX
RXCFNXXX 901 FTR 3 AIN IMMED
Checking AIN PFC Trigger Items as PFC is compatible with current call
 .  . TABLE TRIGITM
```

```
 .  . 4 PB901 PFC (DG B901) $ ULK EVENT R02 SS7 AINJAZZ (LARP 55 613_P621_0
L613_LATA1_55 NILC NILC) $
 .  .  . TABLE C7GTTYPE
 .  .  . AINJAZZ ANSI7 3 $
 .  .  . TABLE IBNFEAT
 .  .  . TUPLE NOT FOUND
 .  .  . TABLE C7GTT
 .  .  . AINJAZZ 6136216138 6136216138 SSNONLY (AINTEST) $
 WARNING: LARP option datafilled for PFC trigger. Use line originator
 .........with LINEATTR 55, XLAPLAN 613_P621_0,
 .........and RATEAREA L613_LATA1_55 in response TRAVER.
AIN Info Analyzed TDP: trigger criteria met.
Querying the database would occur now.
Use the AINMQG option to save the query to a file for use in TstQuery.
Use the AINRES option for further information

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++


 WARNING: LARP option datafilled for PFC trigger. Use line originator
 .........with LINEATTR 55, XLAPLAN 613_P621_0,
 .........and RATEAREA L613_LATA1_55 in response TRAVER.
AIN Info Analyzed TDP: trigger criteria met.
Querying the database would occur now.
Use the AINMQG option to save the query to a file for use in TstQuery.
Use the AINRES option for further information


+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

End Product Spec

2.2.20 Overriding Line Attributes (62.2)

Begin Product Spec

Overriding line attributes replace the originator's line attributes during response processing, when triggers SDS **or PFC** with overriding line attributes receives an Analyze_Route response from the SCP.

End Product Spec

2.2.21 AIN response translations for public agents (73)

Begin Product Spec

- The generic SSP supports overriding line attributes when an agent triggers on SDS **or PFC** and receives an Analyze_Route response. Overriding line attributes are used during response processing in place of the originator's

line attributes, allowing the customer to overcome the toll restrictions imposed by the originator's line attributes.

End Product Spec

2.2.22 AIN response translations for private agents (75)

Begin Product Spec

- The generic SSP supports overriding line attributes when an agent triggers on SDS **or PFC** and receives an Analyze_Route response. Overriding line attributes are used during response processing in place of the originator's line attributes, allowing the customer to overcome the toll restrictions imposed by the originator's line attributes.

End Product Spec

2.3 Hardware requirements

Not applicable.

2.4 Limitations and restrictions

PFC/SFC customer group subscriptions will only be encountered by RES or ISDN BRI agents in the customer group.

Existing TRAVER support is maintained for this feature.

2.5 Interactions

This feature does not alter current feature interactions.

2.6 Logs (LG)

Not applicable

2.7 Data schema (DS)

2.7.1 New/modified tables

Table TRIGITM will allow the LARP option on PFC triggers.

Table 3 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
TRIGITM	CHANGED	UNCHANGED

2.8 Office parameters (OP)

Not applicable.

2.9 Service orders (SO)

Not applicable.

2.10 Alarms (AL)

Not applicable.

2.11 Command interface (CI)

eNot applicable.

2.12 Operational measurements (OM)

Not applicable.

2.13 AMA/Billing information (AM)

Not applicable.

2.14 Software optionality control (SOC)

Table 4 SOC for PFC LARP

SOC option name:	AIN SE PFC LARP
SOC option title:	
SOC option control type:	Controlled
New SOC option?	Yes
SOC option order code	AIN00274
Option defined in DRU:	CNA
Affected products:	CNA

Table 5 SOC for PFC/SFC Group Subscription

SOC option name:	AIN SE PFC/SFC Group Subscr.
SOC option title:	
SOC option control type:	Controlled
New SOC option?	Yes
SOC option order code	AIN00275
Option defined in DRU:	CNA
Affected products:	CNA

2.15 Glossary

Term	Description
LARP	Line Attribute Response Processing

2.16 References

Table 1

REF#	Document
1	AT.59008267 - Line Attribute Response Processing for the PFC trigger
2	BellCore GR-1298-CORE Issue 4, September 1997

3: Functional description (FN)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This mandatory section is one of the earliest documents received by other organizations that pertains to the specific software functionality. This section helps Customer Information Development (CID) writers determine the customer documentation requirements for the functionality. This section provides Nortel system engineering, customer engineering, customer service, customer information development, and others with advance information about forthcoming software functionalities. Other functionality design teams may reference this section when they are documenting their functionalities.

Instructions: FN should be reviewed by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.The following sections go to the customer: FN, DS, OP, LG, AL,CI, OM, SO, and AM. Do not refer to any other sections. Preliminary estimates for system recovery and real time are to be entered in the real time (RT) template in the same timeframe as the FN.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

3.1 Feature name

Use the title given in the DDOC ID section expanding out all acronyms.

3.2 Description

Give a high-level description of this feature's purpose and main function(s). This description should provide the reader with an understanding of the structure and operation of the software from a customer perspective.

Specify system behavior under all conditions, including errors and exceptions. Include diagrams or flow charts to support the text. Give a detailed step-and-response procedure describing how a person (subscriber) activates or deactivates this functionality.

Use appropriate techniques to describe the feature operation such as examples, block diagrams, state diagrams, or any other functional diagrams.

3.3 Hardware requirements

Describe any new customer hardware dependencies introduced in this feature. Provide functional hardware block diagrams where applicable. Identify various hardware configurations and/or settings available to customer. For example, different trunk types or transmission level settings. Include PEC (Product Engineering Code) numbers tthat will be used to market the product.

Note: Do not include packaging information. Do not refer to sections that are not seen by the customer, such as the EI section.

3.4 Limitations and restrictions

Include only those that are visible to the user. Describe the incompatibilities, limitations and restrictions imposed by this feature that may affect the customer. For example, call waiting is not compatible with call forwarding busy. Put non-visible limitations and restrictions in the DD section.

3.5 Interactions

Describe the interactions between this feature and existing features as seen by the customer. Describe the impact of these changes, where applicable. For example, describe the effect a conference call has on call waiting, call forwarding, and so forth.

DDOC section summaries

The following sections are executive summaries of the DDOC to identify to the customer if they need to read the other sections.

Complete summary section for all of the effected DDOC sections, otherwise indicate if not applicable.

Summarize the effects of the feature (for example, list the DS, LOGs, OPs, OMs, and commands that are being introduced, changed, or deleted) on the components of DMS listed below. The FN is a summary format presented to

the customer. The details of the changes to the components must be described in the appropriate DDOC section. Do not use customer names.

3.6 Logs (LG)

List ALL log reports effected by this feature.

3.6.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

3.7 Data schema (DS)

3.7.1 New/modified tables

Table names must not exceed 8 characters; no special characters; alphanumeric only. For example, do not use'$', '_', '®'.
Example: Table Control: OLD -- table size is fixed; NEW -- table size is dynamically allocated.

> ***Note:*** If you are making changes to tables that will effect the RES Environment (e.g. adding a new line option), please see PLS DIS document LTRESCHK. Refer to the PLS home page (http://47.80.12.39:31462/pls). DS section entries should be specifically numbered 0 to 32 000, which is the default entry, and any customer restrictions should be highlighted.

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

3.8 Office parameters (OP)

3.8.1 New/modified office parameters

If the office parameter has been relocated, specify the old table name.
Make office parameter names as simple as possible.

PARM table names should be in the format “OFC... “ (for example, OFCENG, OFCstd, OFCVAR, etc.).

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

3.9 Service orders (SO)

Summarize Service Order impacts of this feature. Also, identify other limiting conditions that may apply to the line class code (LCC) or option.

IDENTIFY any NEW LCC introduced by this feature:

IDENTIFY any NEW OPTIONS introduced by this feature:

LIST options NOT compatible with new options introduced:

FOR EACH OPTION, list other options that must be assigned.

3.10 Alarms (AL)

List any alarms created or changed by this feature.

3.10.1 New/modified directories

List all the directories affected by this feature.

Directory names cannot exceed 15 characters. Commands that can be entered directly from the CI environment belong to one of the two base directories which are automatically attached to the user's symbol table at logon: PROGDIR or SYSDIR.

TARGET: Indicate if SUPERNODE, BRISC, BOTH or OTHER. If OTHER, specify.

Indicate if directory is RESident or NONRESident in the load.

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

3.11 Command interface (CI)

3.11.1 New/modified commands

List all the commands effected by this feature. Command names must not exceed 12 characters.

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

3.12 Operational measurements (OM)

3.12.1 New/modified OM groups

List all OM GROUPS effected by this feature. Group Name acronym must not exceed 8 characters. Provide a brief explanation of why the OM group has been created, changed or deleted

Indicate how many registers there are in this group.

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

3.13 AMA/Billing information (AM)

3.13.1 New/changed AMA/billing information

List all billing formats effected by this feature.

BILLING FORMAT: Specify format, for example: BELLCORE, SMDR, Metering.
NEW/CHANGED: Indicate whether billing format is new or changed.
APPLICATION: Specify switch type(s) effected, for example: MDC, Toll.
STANDARDS: Specifications -- LSSGR, CCITT, NTI,

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

Table 7 New or modified AMA/billing information (Continued)

Billing format	NEW/CHANGED	Application	Standards

3.14 Software optionality control (SOC)

There are many ways of making a feature optional. Only complete this section if the optionality of your feature is controlled using the Software Optionality Controller (SOC). Otherwise delete this section.

A description of SOC with guidelines to its use is available in PLS FMDOC as module SOCGUIDE. If the feature places software under SOC control, you must ensure that:

1. all products using the software support the type of SOC control. For example, not all products support usage SOC.
2. existing functionality is activated over ONPs, regardless of the state of the SOC option.

Table 8 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

3.15 Glossary

To define any non-standard terms or acronyms to make this FN more easily understood, replace example text in the table template below. Standard terms are documented in the *DMS-100 Family Glossary Reference Manual* (NTP 297-1001-825) available on-line at http://47.214.163.96/users/laing/WebStuff/glossary.html.

Term	Description
New term	definition

3.16 References

List sources in the public domain only, NTP documents and related DDOCs. Do not list any NORTEL proprietary documentation.

2: Functional description (FN)

2.1 Feature name

LNP/NPASplit Interworking Enhancements.

2.2 Description

When an NPA in a given geographic area nears or reaches jeopardy conditions, the operating company may choose, or may be regulated, to implement an NPA Split to provide relief.

This feature addresses providing enhancements to the interworking between Call Processing and the Table Control components of Local Number Portability (LNP) and the DMS NPASplit capability.

The interworking between LNP and NPA Splits is focused in two main areas; correct recognition of a Location Routing Number (LRN) impacted by an NPA Split; and correct recognition of Ported Number Generic Address Parameter (GAP) digits affected by an NPA Split.

This feature allows proper LRN and GAP recognition, and hence enhances the interworking of LNP with NPA Splits, by addressing the data changes necessary in three primary LNP tables: LNPCODE, NPRESERV, and HOMELRN. These data changes are controlled by the LNP table created in a previous release for NPASplit interworking, NPDIGMAP.

Since operating company(s) can perform the ANI Conversion (Automatic Number Identification) at any time within the permissive dialing period, the software changes required for this feature take into account the conditions revolving around three specific time frames:

1. At the beginning of the permissive dialing period, and prior to the ANI conversion of the affected switch
2. At the point of ANI conversion of the affected switch
3. At the end of the permissive dialing period.

Within these three time frames, provisioning steps must be performed to successfully implement an NPA split where LNP interworking is involved. A

detailed description of the required provisioning steps is outlined in later sections.

2.2.1 Functionality Introduced by this Activity

This activity modifies two LNP tables, NPDIGMAP and HOMELRN, and provides the new functionality shown below.

1. Introduction of a new maintenance LRN option, MAINT_LRN, for table HOMELRN

Prior to ANI conversion, an LRN may contain either the old or new NPA, with only one of them being valid at any one time. Therefore, to allow for the proper termination of a call prior to ANI conversion, table HOMELRN must support LRNs containing either the old or new NPA. To allow this capability, an LRN tuple with the MAINT_LRN option must be added to table HOMELRN to reflect the new LRN digits. Prior to ANI Conversion, the MAINT_LRN option indicates that the LRN is a “temporary” LRN used to support incoming LRNs that contain the new NPA. If the NPE00005 SOC is inactive, the MAINT_LRN option must also be used at the point of ANI Conversion to support incoming LRNs that contain the old NPA. In both instances, it signifies that the NPA of the LRN does not need to exist in table SNPANAME and the NPANXX of the LRN does not need to exist in table TOFCNAME. The MAINT_LRN option cannot be specified with any other option (such as the SITE option). Also, during a One Night Process (ONP), any invalid LRNs in the table (ie. LRNs that neither have an NPA in table SNPANAME nor an NPANXX in table TOFCNAME) are forced to have the MAINT_LRN option to prevent the LRNs from falling out of the table.

A tuple with the MAINT_LRN option is shown below.

Figure 1 HOMELRN tuple with the MAINT_LRN option

```
AREACODE OFCCODE    STNCODE                                          OPTIONS
-------------------------------------------------------------------------------
     847     463          $                                  (MAINT_LRN )$
```

2. Creation of two new boolean fields, UPD4GAP and UPD4LRN, for table NPDIGMAP.

NPDIGMAP tuples of the table will appear similar to that depicted in “Figure 2 NPDIGMAP tuple structure”.

Figure 2 NPDIGMAP tuple structure

```
NPANXX   AREACODE   OFCCODE      UPD4GAP          UPD4LRN
-------------------------------------------------------
416525       847       525            Y                Y
```

The new boolean fields shown above provide two additional functionalities:

i. The mapping of LRN digits via table NPDIGMAP

Mapping of the GAP digits is the original functionality of table NPDIGMAP prior to this activity. However, as a result of this activity, table NPDIGMAP can also be used to map incoming LRN digits. Table NPDIGMAP is consulted when at least one of the tuples contains an UPD4LRN field set to YES. If a tuple contains such a field, table NPDIGMAP is consulted for any LRN which is determined not to be a Home LRN of the given switch. If a valid mapping tuple is found with the UPD4LRN boolean field set to YES, the NPANXX of the LRN is mapped to the digits in the AREACODE and OFCCODE fields of the tuple. If no mapping is found, the call will be tandemed as expected. Finally, if a mapping is found, but the mapped LRN is still determined to not be a Home LRN, the call will be tandemed using the original LRN, not the mapped LRN. This is a departure from the current NPDIGMAP functionality, whereby if a mapping is found for the GAP, the mapped digits are used for the remainder of the call, and the original GAP is lost.

ii. The automatic update of three LNP tables, (HOMELRN, NPRESERV, and LNPCODE), from the old NPA to the new NPA during the process of an NPA split.

Prior to this activity, the ability did not exist for automatically updating the LNP tables HOMELRN, NPRESERV, and LNPCODE at the time of ANI conversion. It is desirable to have the data automatically updated, such that it is not necessary to manually delete all data referencing the old NPA, or the old NPANXX, and replace that data with references to the new NPA or new NPANXX. To accomplish this goal, table NPDIGMAP, is used as a trigger.

If the UPD4GAP field is set to YES, this indicates tables NPRESERV and LNPCODE should be updated such that all data beginning with the digits corresponding to the NPANXX field of NPDIGMAP should be updated to instead begin with the new NPANXX digits contained in the AREACODE and OFCCODE fields of NPDIGMAP. Preferably, there should NOT be any data existing at the new NPANXX in any of the tables. However, if data already exists at the new NPANXX and this existing data conflicts with data desired to be transferred from the old NPANXX, the existing data at the new NPANXX is left untouched and the corresponding data at the old NPANXX remains in the table. During the automatic update process, the tables are updated as much

as possible, however, any existing data in the tables at the new NPANXX is not overwritten.

If the UPD4LRN field is set to YES, this indicates that the data in table HOMELRN should be updated in a similar fashion as for tables NPRESERV and LNPCODE, in that any tuples containing the old NPANXX are updated to instead begin with the new NPANXX. Conflicting tuples already existing at the new NPANXX are not overwritten UNLESS the tuple contains the MAINT_LRN option. If a conflicting tuple at the new NPANXX contains the MAINT_LRN option, the tuple is overwritten. However, if an existing tuple at the new NPANXX contains the SITE option or does not have an option, the tuple is left untouched during the automatic update process and the corresponding data at the old NPANXX remains in the table and is not transferred to the new NPANXX.

In summary, there are four components introduced by this activity:

1. A maintenance LRN option within table HOMELRN
2. Two new boolean fields, UPD4GAP and UPD4LRN, for table NPDIGMAP.
3. The ability to map LRN digits
4. The option of triggering the automatic update of the three LNP tables, HOMELRN, NPRESERV, and LNPCODE.

It is important to note that the two boolean fields within table NPDIGMAP can only be set if the NPE00005 SOC is active. Thus, if NPE00005 is idle, the abilities to map LRN digits and automatically update the three LNP tables are not present.

2.2.2 LNP-Specific Provisioning Steps for Performing an NPA Split

The following sections provide documentation with respect to the provisioning steps required to ensure the proper operation of LNP during and after an NPA split. It is provided for informational purposes and should be considered valid as of NA013.

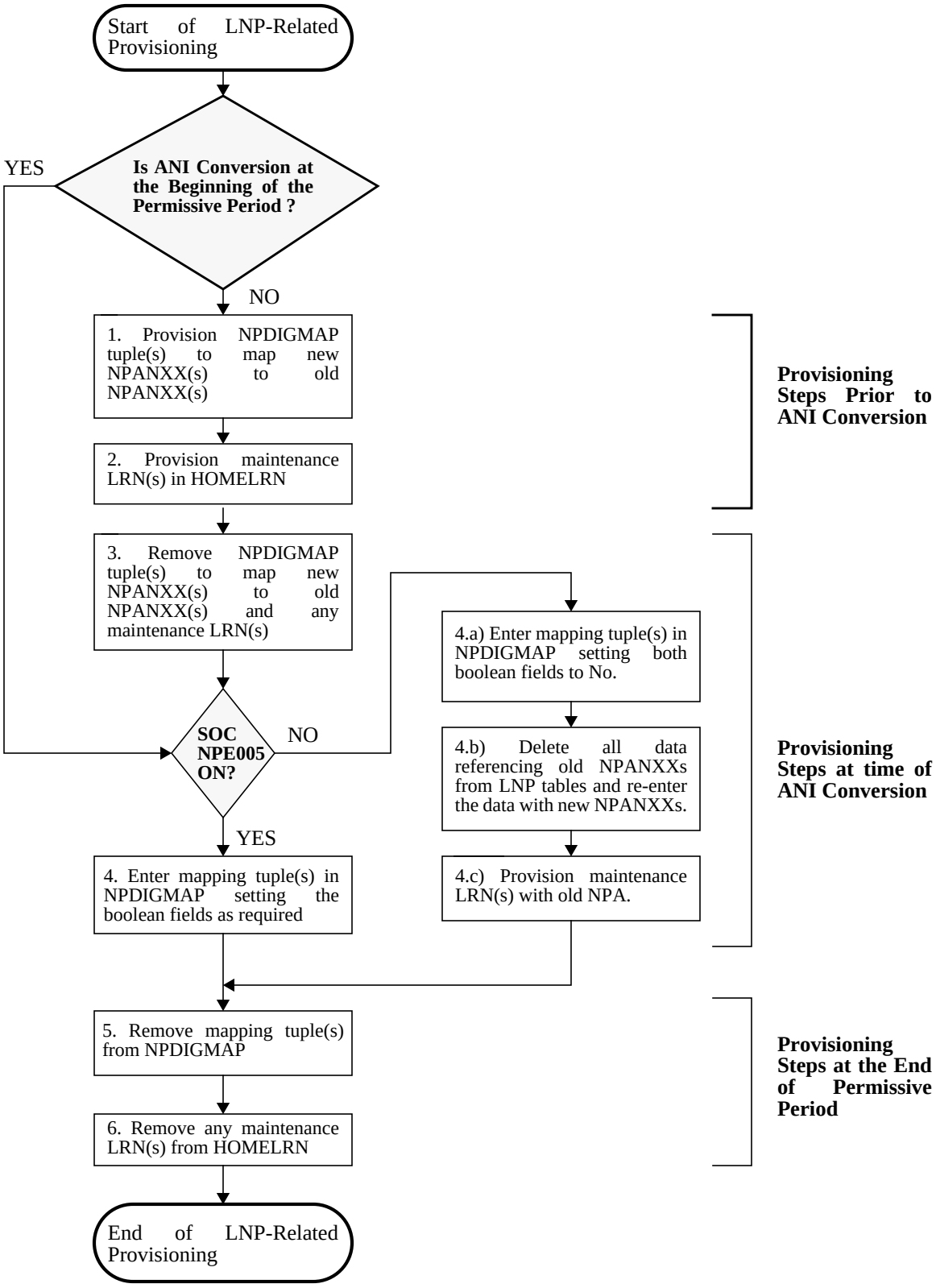
An NPA Split in a given geographic area may involve either or both of two processes, NPA Conversions, and true NPA Splits.

An NPA Conversion is the method of NPA Split by which, on each affected switch, all the NXX codes within the NPA being converted are moved to a new NPA. As an analogy, consider a major metropolitan area which undergoes a Geographic Split, where the downtown core of the area remains on the old NPA, and the surrounding suburbs are moved to the new NPA. Each switch serving the suburb areas must undergo the NPA Conversion.

In a true NPA Split, on the affected switch only some of the NXX codes in the affected NPA are migrated to the new NPA whereas some NXX codes remain in the old NPA. In keeping with the above analogy, this would be the case for a switch which serves both a portion of the downtown core of the area, and a portion of the suburbs of the area.

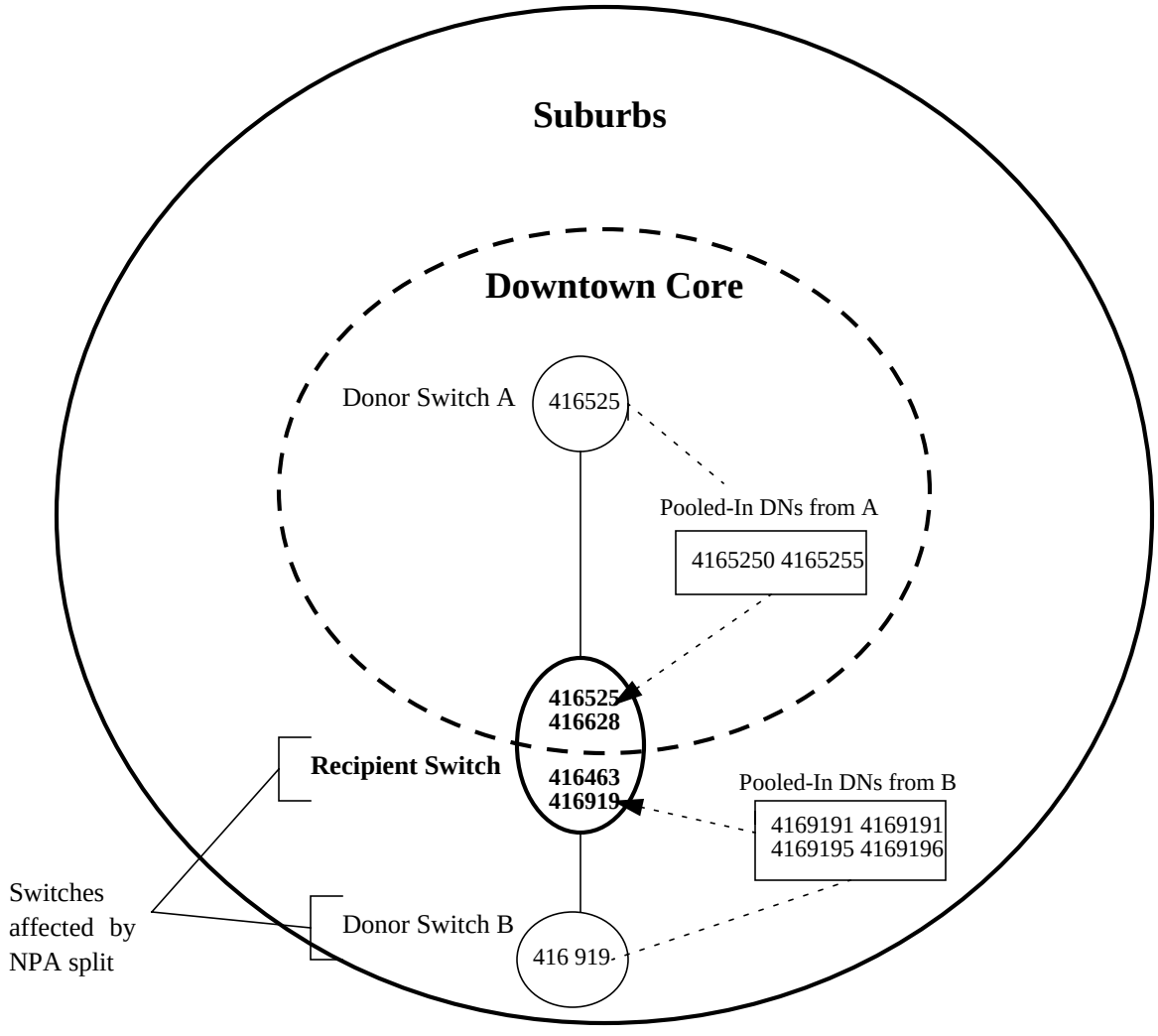
As mentioned earlier, the interworking between LNP and NPA splits is considered in three different time frames. Within each time frame, certain provisioning steps must be executed in order for LNP to operate during the process of an NPA split. The required steps are shown in the following “Figure 3 LNP-Related Provisioning Steps”. It is important to note that the ANI conversion can occur at any time within the permissive dialing period and the first three provisioning steps are executed only if the ANI conversion does not occur at the beginning of the permissive period, otherwise the steps may be excluded. Also, if NPE00005 is not active, there are certain alternate steps that need to be performed at the time of ANI conversion to compensate for the lost functionalities that would normally be present if the SOC were active.

Figure 3 LNP-Related Provisioning Steps


Start of LNP-Related Provisioning
Is ANI Conversion at the Beginning of the Permissive Period ?
YES
NO
1. Provision NPDIGMAP tuple(s) to map new NPANXX(s) to old NPANXX(s)
2. Provision maintenance LRN(s) in HOMELRN
3. Remove NPDIGMAP tuple(s) to map new NPANXX(s) to old NPANXX(s) and any maintenance LRN(s)
SOC NPE005 ON?
NO
YES
4.a) Enter mapping tuple(s) in NPDIGMAP setting both boolean fields to No.
4.b) Delete all data referencing old NPANXXs from LNP tables and re-enter the data with new NPANXXs.
4.c) Provision maintenance LRN(s) with old NPA.
4. Enter mapping tuple(s) in NPDIGMAP setting the boolean fields as required
5. Remove mapping tuple(s) from NPDIGMAP
6. Remove any maintenance LRN(s) from HOMELRN
End of LNP-Related Provisioning
Provisioning Steps Prior to ANI Conversion
Provisioning Steps at time of ANI Conversion
Provisioning Steps at the End of Permissive Period

To illustrate more clearly the NPA split procedure, a recipient switch within a given network and it's respective LNP tables is used as an example. The rest of this document focuses solely on how the NPA split procedure affects the recipient switch. Assume the switch is going through a true NPA Split in that only some of the NXX codes that the switch serves are migrated to the new NPA. In keeping with the previous analogy, the surrounding suburbs are moving to the new NPA and the recipient switch serves both a portion of the downtown core and a portion of the suburbs. The recipient switch and its subsidiary switches are shown in "Figure 4 Recipient Switch within Given Network and Geographical Area Prior to NPA Split Procedure".

Figure 4 Recipient Switch within Given Network and Geographical Area Prior to NPA Split Procedure

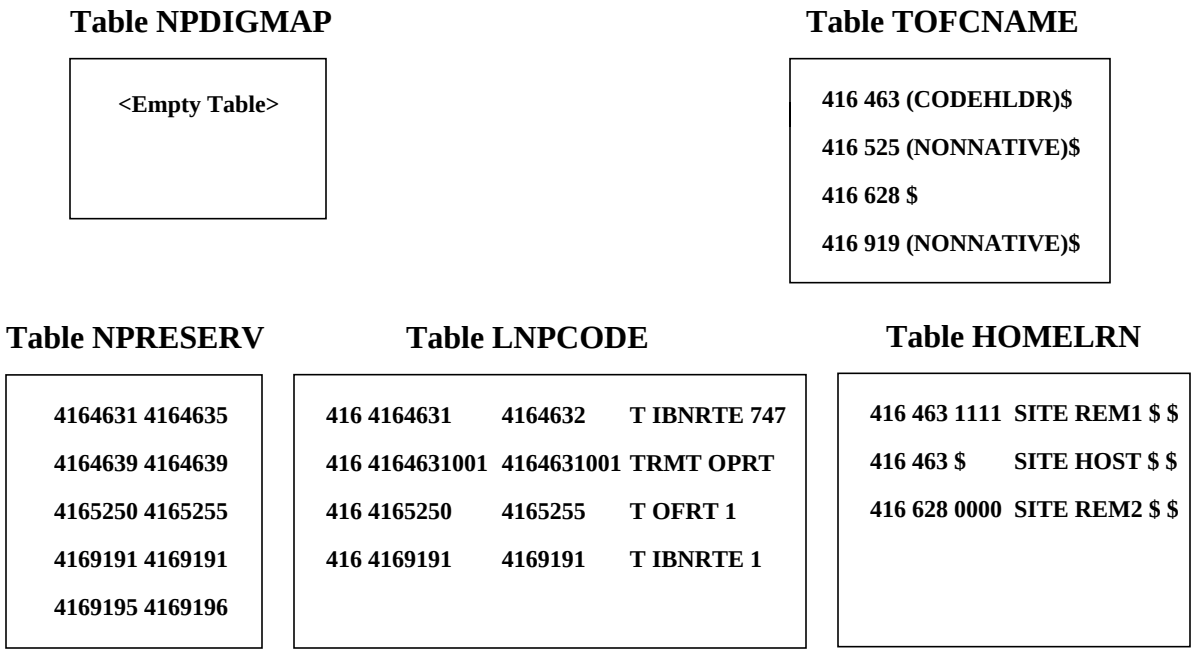


In the preceding figure, the recipient switch undergoing an NPA split serves four different NPANXXs: 416525, 416628, 416463, and 416919. Of these four, 416628 and 416463 are native to the switch and are deemed codeholders. In other words, throughout the network, translations has been set up so that calls containing NPANXXs 416628 and 416463 route to the given switch by default. The other two NPANXXs, 416525 and 416919, are not assigned to the switch by the North American Numbering Plan Administrator (NANPA) and are classified as non-native. Calls to numbers in the two non-native NPANXXs do not route by default to the recipient switch. However, a certain block of DNs that contain either NPANXX terminate at the switch if certain database queries are made and appropriate responses are received. In particular, DNs inside the ranges of 416 525 0000 to 416 525 5999, 416 919 1000 to 416 919 1999, and 416 919 5000 to 416 919 6999 terminate at the switch as pooled-in numbers.

In our example, of the four NPANXXs on the switch, one codeholder NPANXX, 416463, and one non-native NPANXX, 416919, are affected by the NPA split. Both NPANXXs are adopting 847 as their new NPA.

The required LNP provisioning steps and the time frames they fall in are described in the following sections, along with illustrations depicting how each step affects the LNP tables. “Figure 5 LNP Tables before Permissive Dialing Period” shows how the tables would look before any of the required table manipulation has been done to perform an NPA split.

Figure 5 LNP Tables before Permissive Dialing Period



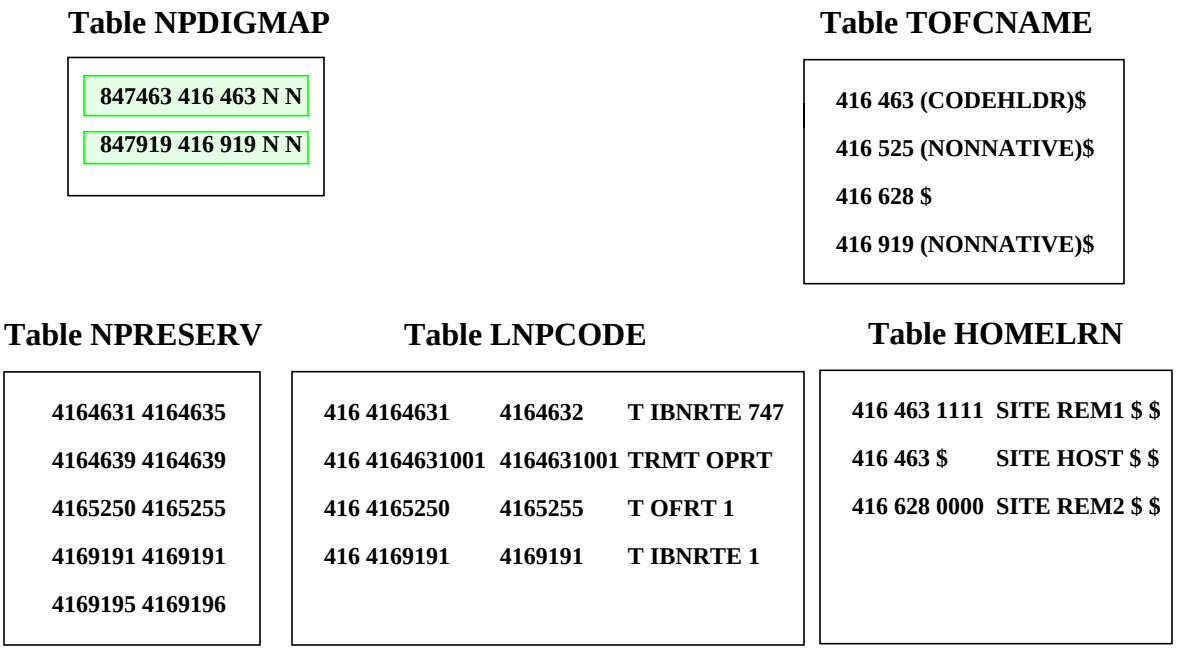
2.2.2.1 Provisioning Steps Prior to ANI Conversion

Since it is not necessary that the ANI Conversion occur at the beginning of the permissive period, it is possible for an end user to dial a ported subscriber whose DN is affected by the NPA Split, with either the new NPA or the old NPA. Also, in the case where the end user may be permitted to dial seven digits, switch data in adjacent nodes may append either the old or new NPA. Therefore, the recipient switch must be able to appropriately recognize the Ported Number GAP as referring to the ported terminator, regardless of whether the GAP contains either the old or new NPA. In this example, it is assumed that the ANI conversion is executed after the beginning of the permissive period and therefore the first two steps need to be performed.

1. Provision table NPDIGMAP tuple(s) to map the new NPANXX combination(s) to the old NPANXX combination(s) for LNP calls where the GAP may contain a DN affected by the NPA Split and which has the new NPA instead of the old NPA.

In this example, 847463 is mapped to 416463, and 847919 is mapped to 416919. These mappings are shown in “Figure 6 Mapping New NPANXXs to Old NPANXXs via Table NPDIGMAP”.

Figure 6 Mapping New NPANXXs to Old NPANXXs via Table NPDIGMAP



Similar to the possibility of receiving a Ported Number GAP with either the new or old NPA, an incoming LRN may also contain either the new or old NPA. Operating companies may choose to provision their databases such that an LRN response contains the new NPA if the original dialed number

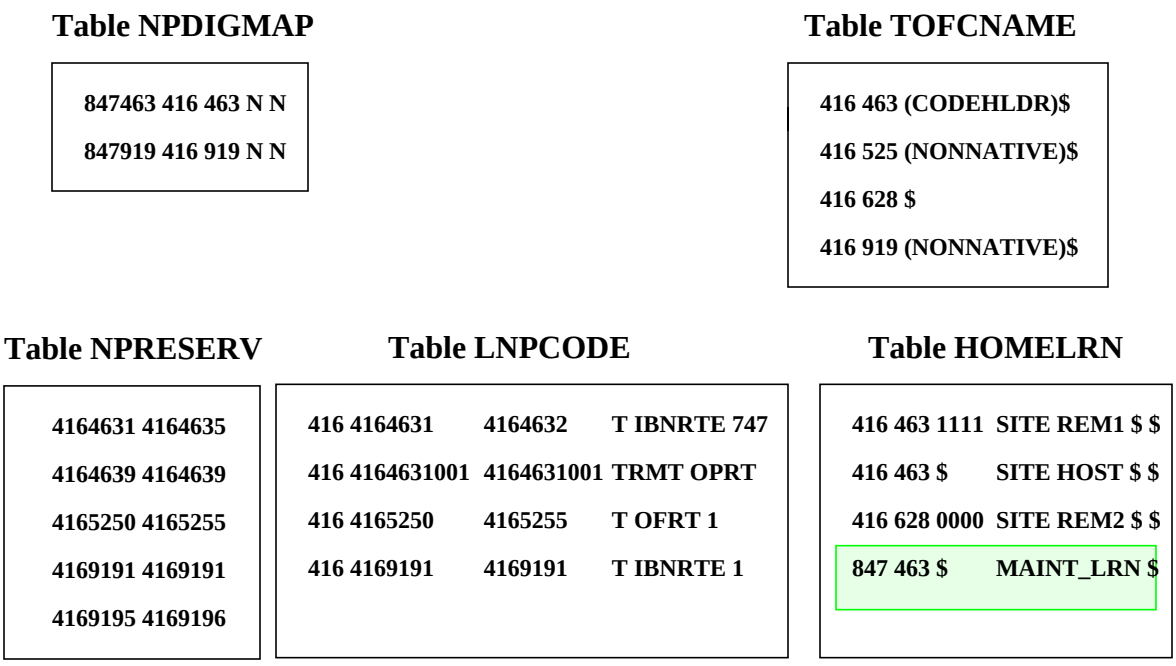
contained the new NPA, and the LRN response contains the old NPA if the original dialed number contained the old NPA. This scenario is only expected to occur when both the LRN and the GAP are affected by the NPA Split.

In this scenario, an end user may dial the new NPA for a portable customer, which will result in the Number Portability Database (NPDB) responding with an LRN containing the new NPA. Since ANI Conversion has not occurred on the affected switch, the HOMELRN data will correspond to the old version of the LRN. Thus, the LRN being used to route the call in question will not be recognized. The following provisioning step utilizes the MAINT_LRN option to take into account the fact that operating companies may set up their databases in the aforementioned manner.

2. Provision maintenance LRN(s) in table HOMELRN to allow termination of LRNs which have been affected by the NPA Split, and which are routed via the new NPA instead of the old NPA.

This maintenance LRN provisioning is shown in “Figure 7 Adding a Maintenance LRN”. In this particular example, maintenance LRN 847 463 has been added to guard against the possibility of an incoming LRN containing the new NPA.

Figure 7 Adding a Maintenance LRN



2.2.2.2 Provisioning Steps at time of ANI Conversion

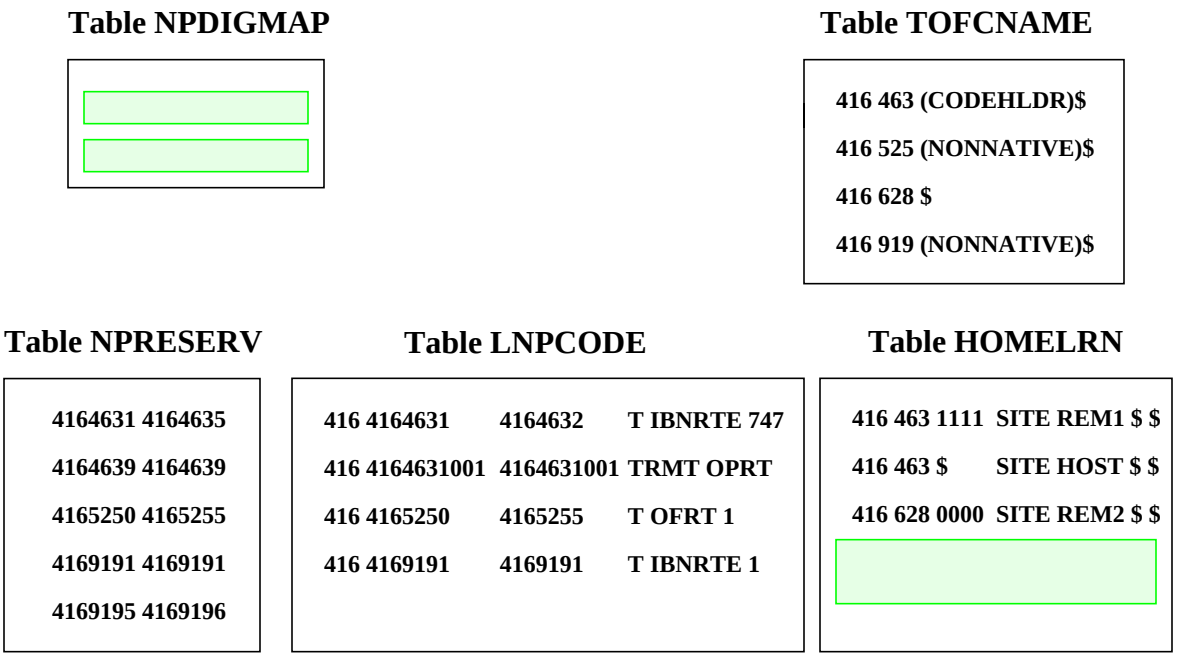
During the ANI Conversion of an affected switch, all references to the old DN format are removed, and replaced with references to the new DN format. The

next step should be done if the ANI conversion does not coincide with the beginning of the permissive period and hence the previous two steps were performed to provision mapping tuples and maintenance LRNs for the LNP tables.

3. Remove any NPDIGMAP tuples used to map the new NPANXXs to the old NPANXXs, and remove any maintenance LRNs from table HOMELRN used to allow LRNs routed using the new NPA to be recognized.

In this case, tuples 847463 and 847919 of table NPDIGMAP and the maintenance LRN 847 463 of table HOMELRN is removed. The result of this step is shown in “Figure 8 Removal of NPDIGMAP mapping tuples and maintenance LRN”.

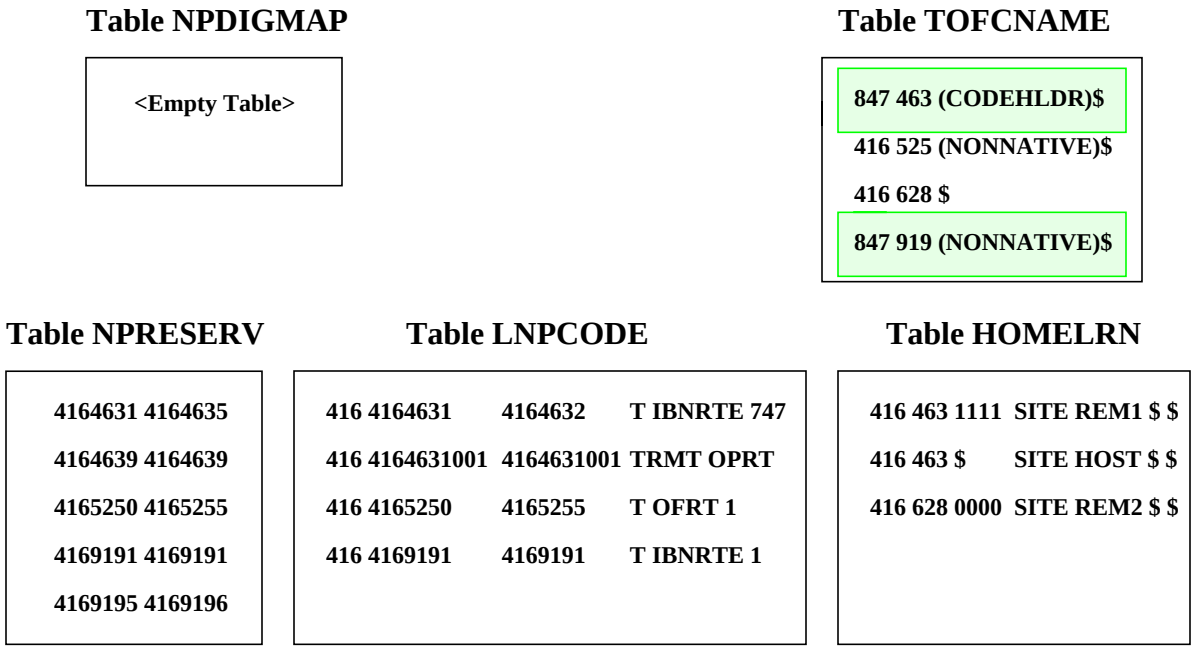
Figure 8 Removal of NPDIGMAP mapping tuples and maintenance LRN



At this point, the normal NPA Split data changes should be performed, however, all data in tables HOMELRN, NPRESERV, and LNPCODE should be left unchanged.

In this example, the given switch is undergoing a true NPA split. Therefore, the NPAs of the affected TOFCNAME tuples 416 463 and 416 919 are changed to the new NPA 847. The results of the NPA Split data changes for this example are shown in “Figure 9 Updating table TOFCNAME to reflect new NPA”.

Figure 9 Updating table TOFCNAME to reflect new NPA



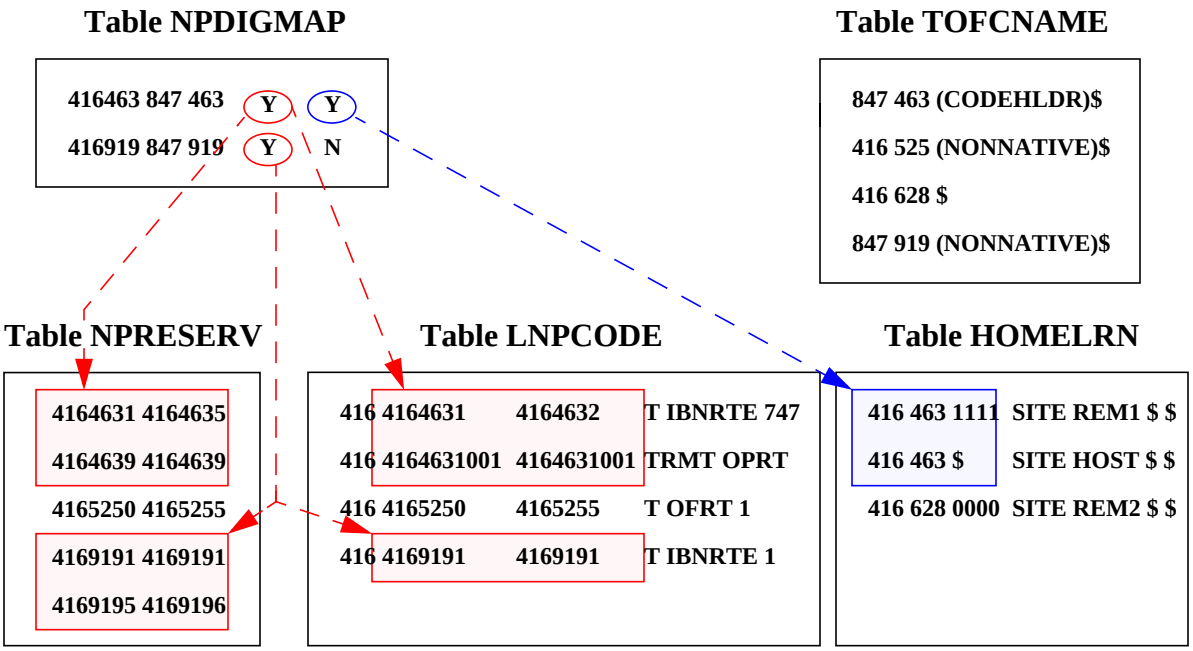
2.2.2.2.1 Provisioning Step with NPE00005 SOC Active

If the SOC is active, one other step must be done at the time of ANI conversion to provide GAP and LRN mapping as required, and supply a trigger for automatically updating the LNP tables.

4. Enter mapping tuple(s) in table NPDIGMAP, setting the UPD4GAP and UPD4LRN fields as required.

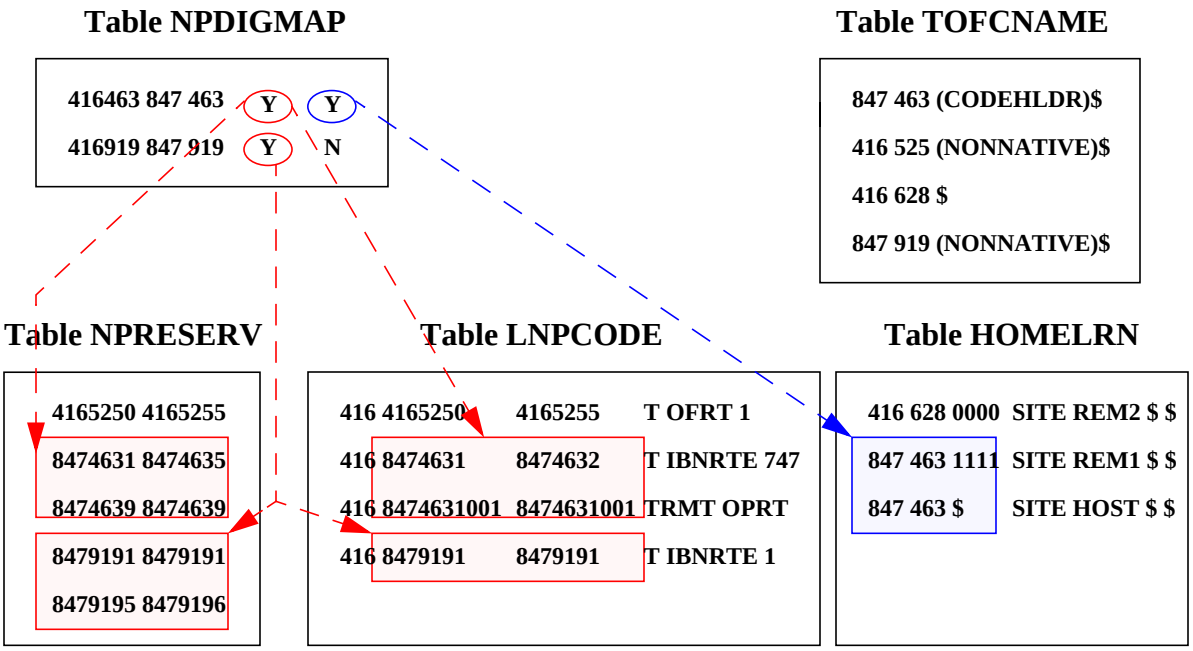
“Figure 10 LNP Tables Prior to Automatic Update” displays the LNP Tables with their affected tuples prior to the automatic update. Notice that both boolean fields UPD4GAP and UPD4LRN of the 416463 mapping tuple within NPDIGMAP are both set to YES. This indicates that it is desired all the tuples in tables HOMELRN, NPRESERV, and LNPCODE that contain the old NPANXX, 416463, be automatically updated to represent the new NPA. In contrast, the 416919 mapping tuple has only the UPD4GAP boolean set to YES indicating that only tables NPRESERV and LNPCODE should be updated. Also, since the UPD4LRN boolean is set for the 416463 tuple, NDIGMAP is used to map LRN digits containing the old NPA as required.

Figure 10 LNP Tables Prior to Automatic Update



"Figure 11 LNP Tables After Automatic Update" displays the updated LNP tables.

Figure 11 LNP Tables After Automatic Update



The data indicated by the shaded boxes matches the NPANXX field in the NPDIGMAP tuples, and is therefore replaced by the combined digits of the AREACODE and OFCCODE fields (in this case, 416463 is replaced by 847463, and 416919 with 847919). Note that the STS portion of table LNPCODE's key is not updated by the table NPDIGMAP process, since it is not an NPA field.

2.2.2.2.2 Provisioning Steps with NPE00005 SOC Inactive

If NPE00005 is inactive, the following alternate steps need to be performed to update the tables and allow proper handling of calls.

4.a) Enter mapping tuple(s) in NPDIGMAP setting both boolean fields to No.

In our example, two mapping tuples are needed to map GAP digits containing the old NPA to the new NPA. In particular, 416463 maps to 847463 and 416919 maps to 847919.

4.b) Delete all data referencing old NPANXXs from LNP tables and re-enter the data with new NPANXXs

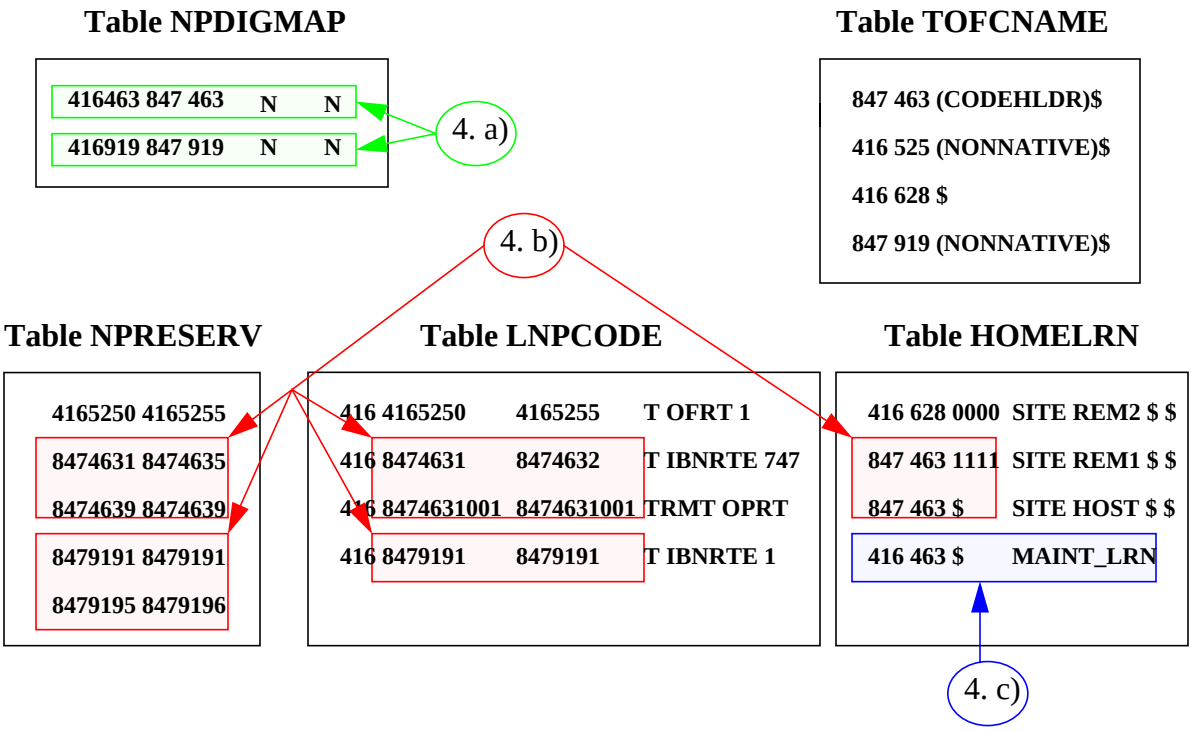
The three LNP tables, HOMELRN, NPRESERV, and LNPCODE must be manually updated to reflect the new NPA, 847.

4.c) Provision maintenance LRN(s) in HOMELRN.

Since LRN digits may still contain the old NPA at the time of ANI conversion, a maintenance LRN is needed to guard against incoming LRNs that contain the old NPA. In our example, this would mean provisioning 416 463 as a MAINT_LRN.

In our example, after the above three steps are performed, the LNP tables should look as in "Figure 12 LNP Tables After Required Steps with NPE00005 Inactive".

Figure 12 LNP Tables After Required Steps with NPE00005 Inactive



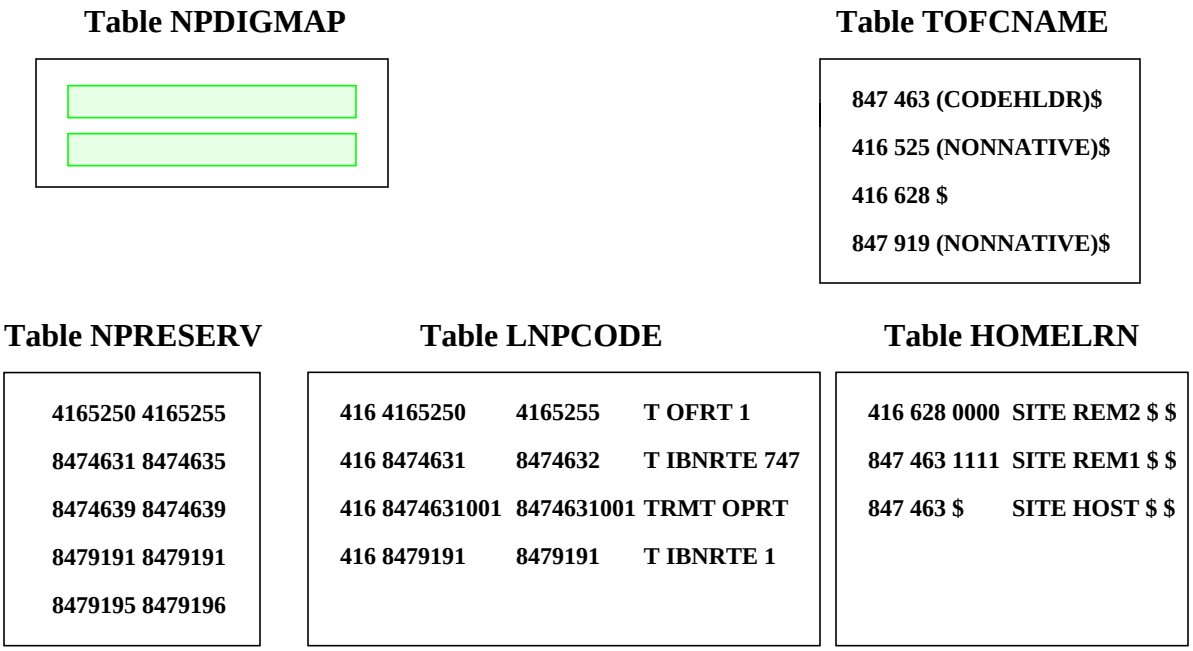
2.2.2.3 Provisioning Steps at the End of the Permissive Period

At the end of the permissive period, there are no steps related to the actual provisioning of the LNP tables. However, two LNP specific operations must be done. It should be noted that the following diagrams assume that NPE00005 is active and thus the LNP tables were automatically updated via an NPDIGMAP tuple. However, the next steps should be performed regardless of whether NPE00005 is active or not.

5. Remove any mapping tuple(s) from table NPDIGMAP

In this example, the tuples which map the old NPANXXs to the new NPANXXs and used for automatically updating the LNP tables, are removed. In this case, the mapping tuples 416463 and 416919 are taken out of NPDIGMAP. “Figure 13 Removal of Mapping Tuples used for Automatic Update” reflects the removal of any mapping tuples in NPDIGMAP.

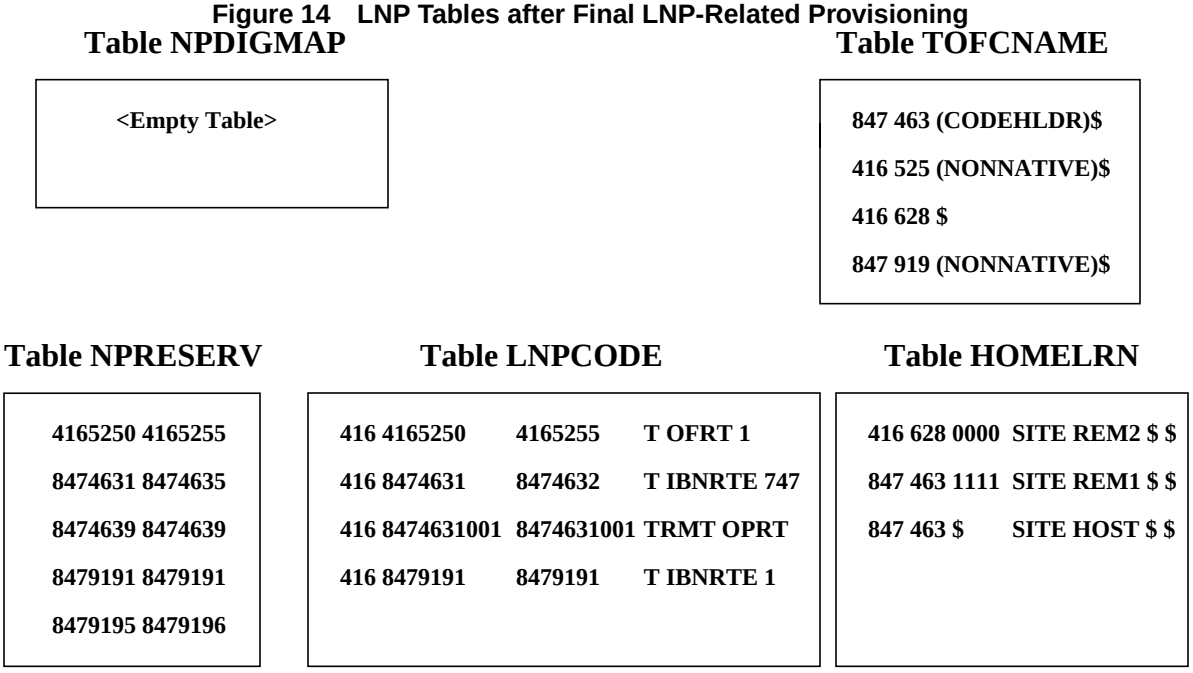
Figure 13 Removal of Mapping Tuples in NPDIGMAP



6. Remove any maintenance LRN(s) from table HOMELRN

To avoid the potential misrouting of LNP calls, any maintenance LRNs should be removed. In our example, all maintenance LRNs have been already removed and therefore the LNP tables look the same as after the previous step. “Figure 14 LNP Tables after Final LNP-Related Provisioning” lays out the structure of the LNP tables after the final LNP-Related provisioning has been performed for a true NPA split.

Figure 14 LNP Tables after Final LNP-Related Provisioning



2.3 Hardware requirements

None.

2.4 Limitations and restrictions

None.

2.5 Interactions

None.

2.6 Logs (LG)

Not applicable.

2.7 Data schema (DS)

2.7.1 New/modified tables

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
HOMELRN	Changed	NEW: A new MAINT_LRN option created for indicating temporary LRNs used for the NPA split procedure
NPDIGMAP	Changed	NEW: New boolean fields, UPD4GAP and UPD4LRN, created that are used for triggering the automatic update of LNP tables and for correct GAP and LRN termination

2.8 Office parameters (OP)

Not Applicable.

2.9 Service orders (SO)

Not Applicable.

2.10 Alarms (AL)

Not Applicable.

2.11 Command interface (CI)

Not Applicable.

2.12 Operational measurements (OM)

Not Applicable.

2.13 AMA/Billing information (AM)

Not Applicable.

2.14 Software optionality control (SOC)

Figure 15 SOC NPE00005

SOC option name:	NPE00005
SOC option title:	
SOC option control type:	state

New SOC option?	Yes
SOC option order code	<order code>
Option defined in DRU:	CNA
Affected products:	NA100

2.15 Glossary

Term	Description
ANI	Automatic Number Identification
DN	Directory Number
GAP	Generic Address Parameter
LNP	Local Number Portability
LRN	Location Routing Number
NANPA	North American Number Plan Administrator
NPA	Numbering Plan Area
NPDB	Number Portability Database
ONP	One Night Process

2.16 References

None.

2: Functional description (FN)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This mandatory section is one of the earliest documents received by other organizations that pertains to the specific software functionality. This section helps Customer Information Development (CID) writers determine the customer documentation requirements for the functionality. This section provides Nortel system engineering, customer engineering, customer service, customer information development, and others with advance information about forthcoming software functionalities. Other functionality design teams may reference this section when they are documenting their functionalities.

Instructions: FN should be reviewed by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.The following sections go to the customer: FN, DS, OP, LG, AL,CI, OM, SO, and AM. Do not refer to any other sections. Preliminary estimates for system recovery and real time are to be entered in the real time (RT) template in the same timeframe as the FN.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

2.1 Feature name

Use the title given in the DDOC ID section expanding out all acronyms.

2.2 Description

Give a high-level description of this feature's purpose and main function(s). This description should provide the reader with an understanding of the structure and operation of the software from a customer perspective.

Specify system behavior under all conditions, including errors and exceptions. Include diagrams or flow charts to support the text. Give a detailed step-and-response procedure describing how a person (subscriber) activates or deactivates this functionality.

Use appropriate techniques to describe the feature operation such as examples, block diagrams, state diagrams, or any other functional diagrams.

2.3 Hardware requirements

Describe any new customer hardware dependencies introduced in this feature. Provide functional hardware block diagrams where applicable. Identify various hardware configurations and/or settings available to customer. For example, different trunk types or transmission level settings. Include PEC (Product Engineering Code) numbers tthat will be used to market the product.

Note: Do not include packaging information. Do not refer to sections that are not seen by the customer, such as the EI section.

2.4 Limitations and restrictions

Include only those that are visible to the user. Describe the incompatibilities, limitations and restrictions imposed by this feature that may affect the customer. For example, call waiting is not compatible with call forwarding busy. Put non-visible limitations and restrictions in the DD section.

2.5 Interactions

Describe the interactions between this feature and existing features as seen by the customer. Describe the impact of these changes, where applicable. For example, describe the effect a conference call has on call waiting, call forwarding, and so forth.

DDOC section summaries

The following sections are executive summaries of the DDOC to identify to the customer if they need to read the other sections.

Complete summary section for all of the effected DDOC sections, otherwise indicate if not applicable.

Summarize the effects of the feature (for example, list the DS, LOGs, OPs, OMs, and commands that are being introduced, changed, or deleted) on the components of DMS listed below. The FN is a summary format presented to

the customer. The details of the changes to the components must be described in the appropriate DDOC section. Do not use customer names.

2.6 Logs (LG)

List ALL log reports effected by this feature.

2.6.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

2.7.1 New/modified tables

Table names must not exceed 8 characters; no special characters; alphanumeric only. For example, do not use'$', '_', '®'.
Example: Table Control: OLD -- table size is fixed; NEW -- table size is dynamically allocated.

> ***Note:*** If you are making changes to tables that will effect the RES Environment (e.g. adding a new line option), please see PLS DIS document LTRESCHK. Refer to the PLS home page (http://47.80.12.39:31462/pls). DS section entries should be specifically numbered 0 to 32 000, which is the default entry, and any customer restrictions should be highlighted.

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

If the office parameter has been relocated, specify the old table name.
Make office parameter names as simple as possible.

PARM table names should be in the format “OFC... “ (for example, OFCENG, OFCstd, OFCVAR, etc.).

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

Summarize Service Order impacts of this feature. Also, identify other limiting conditions that may apply to the line class code (LCC) or option.

IDENTIFY any NEW LCC introduced by this feature:

IDENTIFY any NEW OPTIONS introduced by this feature:

LIST options NOT compatible with new options introduced:

FOR EACH OPTION, list other options that must be assigned.

2.10 Alarms (AL)

List any alarms created or changed by this feature.

2.10.1 New/modified directories

List all the directories affected by this feature.

Directory names cannot exceed 15 characters. Commands that can be entered directly from the CI environment belong to one of the two base directories which are automatically attached to the user's symbol table at logon: PROGDIR or SYSDIR.

TARGET: Indicate if SUPERNODE, BRISC, BOTH or OTHER. If OTHER, specify.

Indicate if directory is RESident or NONRESident in the load.

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

2.11.1 New/modified commands

List all the commands effected by this feature. Command names must not exceed 12 characters.

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

List all OM GROUPS effected by this feature. Group Name acronym must not exceed 8 characters. Provide a brief explanation of why the OM group has been created, changed or deleted

Indicate how many registers there are in this group.

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

List all billing formats effected by this feature.

BILLING FORMAT: Specify format, for example: BELLCORE, SMDR, Metering.
NEW/CHANGED: Indicate whether billing format is new or changed.
APPLICATION: Specify switch type(s) effected, for example: MDC, Toll.
STANDARDS: Specifications -- LSSGR, CCITT, NTI,

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

Table 7 New or modified AMA/billing information (Continued)

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

There are many ways of making a feature optional. Only complete this section if the optionality of your feature is controlled using the Software Optionality Controller (SOC). Otherwise delete this section.

A description of SOC with guidelines to its use is available in PLS FMDOC as module SOCGUIDE. If the feature places software under SOC control, you must ensure that:

1. all products using the software support the type of SOC control. For example, not all products support usage SOC.
2. existing functionality is activated over ONPs, regardless of the state of the SOC option.

Table 8 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.15 Glossary

To define any non-standard terms or acronyms to make this FN more easily understood, replace example text in the table template below. Standard terms are documented in the *DMS-100 Family Glossary Reference Manual* (NTP 297-1001-825) available on-line at http://47.214.163.96/users/laing/WebStuff/glossary.html.

Term	Description
New term	definition

2.16 References

List sources in the public domain only, NTP documents and related DDOCs. Do not list any NORTEL proprietary documentation.

3: Functional description (FN)

3.1 Feature name

CLOCK SYNC; STM-1 LOOP TIMING (OC-3 EQUIVALENCE)

3.2 Feature synopsis

This feature provides the Synchronous Transport Mode Level 1 (STM-1) Spectrum Peripheral Module (SPM) with support of loop-timing mode where the synchronization is derived from the active STM-1 signal coming into the SPM.

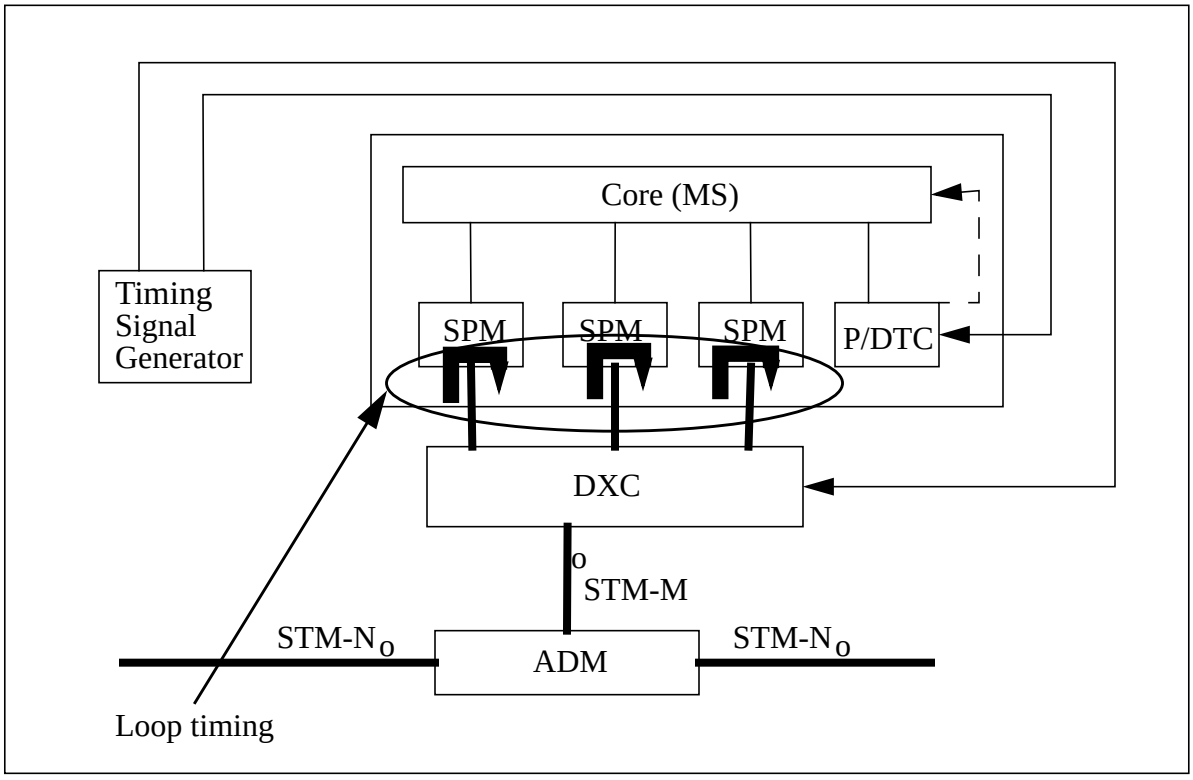
3.3 Background information

The Digital Multiplex Switch (DMS) in slave mode switch typically receives its synchronization reference from PCM-30 Digital trunk Controller (PDTC) in international market. The PDTC measures the phase difference between the received reference and the Message Switch (MS) clock, and sends the difference to the MS to adjust the MS clock. The resolution of the phase comparator and the rate at which phase samples are sent to the MS result in a phase error between the reference and the MS, thus putting the DMS outside the Synchronous Digital Hierarchy (SDH) synchronization specification.

Derivation of synchronization from the MS clocked externally is also insufficient accuracy to meet SDH specification.

Introduction of the SPM to the European market raised the need to meet the SDH specification, which is much more stringent and precise. There is no chance for the DMS to meet with its existing software infrastructure because the DMS was never designed to meet such synchronization standards. The solution was called loop timing. Loop timing means the timing on the Transmit fiber (STM-1 carrier) is derived from the timing on the Receive fiber (STM-1 carrier). The next figure shows the loop-timing configuration.

Figure 1 Loop-timed SPM office



In North America, OC-3 loop timing is developed to meet the SONET standards. For international market, STM-1 loop timing will be developed to meet the SDH quality synchronization.

3.4 Description

This feature provides synchronization capability for a new application of the Spectrum Peripheral Module (SPM) in the European and International markets. A new SPM Resource Module (RM) is being developed specifically for these markets that will support high speed access to the DMS at the Synchronous Transport Mode 1 (STM-1) transport rate.

This feature will develop the SPM synchronization software to be able to use STM-1 as the synchronization source for the SPM. STM-1 loop timing involves the support and control of STM-1 synchronization information.

This work is divided into the following sections:

- Maintenance and Administrative Position (MAP)
  - — Display STM-1 RM on the SPM when SPM is posted
  - — STM1 as a choice of SELECT command
  - — Synchronization reference information display

- Logs
- Synchronization Status Message (SSM)
- Datafill
- Alarms

3.4.1 Maintenance and Administrative Position (MAP)

MAP provides the various information such as synchronization reference information and state of resources.

3.4.1.1 Synchronization reference display in CEM level

There is synchronization source information to be displayed when CEM is posted at MAP. STM will be shown when the SPM is synchronized to STM1 RM.

For more detail, refer to CI section of this document.

3.4.2 Logs

Logs are enhanced to be more informative and restructured for easier understanding. For more details, refer to the Logs section of this document.

3.4.3 Synchronization Status Message (SSM)

SPM nodes can produce and terminate synchronization status messages on the STM-1 carriers. This feature has limited functionality. Incoming synchronization messages are not recognized and they are ignored. Outgoing synchronization status messages are set to “Do not use” (Quality Level - DNU = 1111).

These settings cannot be altered for this release.

3.4.4 Datafill

STM-1 RM is datafilled in Table MNCKTPAK. Its CPKTYPE field will be datafilled with ‘STM’.

Existing DMS datafill mechanism supports STM-1 loop-timing mode. For an example datafill, refer to “Appendix” on page 85.

For more details, refer to the DS section of this document.

3.4.5 Alarms

Existing DMS alarms support STM-1 loop-timing synchronization. Fore more information, refer to “Appendix” on page 85.

3.5 Hardware requirements

Not Applicable.

3.6 Limitations and restrictions

In order for loop timing to work within SDH specification, the Message Switch and Digital Cross Connect (DXC) to which the SPM is loop times, must derive their timing from the same source.

As a synchronization source, STM-1 is displayed as “STM” in MAP and logs.

3.7 Interactions

Not applicable.

3.8 Logs (LG)

In order for the SPM logs to work globally, it is necessary to be enhanced.

As a part of global change, the SPM related synchronization logs are restructured to be more user-friendly and some of the log reasons are enhanced to support STM-1. The list of affected logs are listed below and brief descriptions follow.

3.8.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)
SPM	301	Deleted	SOS
SPM	332	Deleted	SOS
SPM	334	Modified	SOS
SPM	336	New	SOS
SPM	337	New	SOS
SPM	338	New	SOS
SPM	339	New	SOS
SPM	510	New	SOS
SPM	637	New	SOS
SPM	638	New	SOS

- SPM301 log is to inform if the clock source is within 70%/90% tuning range. This log is replaced by the new SPM339 and SPM336 logs.
- SPM332 log is replaced by the new SPM510 log.
- SPM334 log text is modified to be more informative.
- SPM336 is a new log which replaces SPM301. This log monitors the clock source within a 90% tuning range.
- SPM337 is a new log generated when the SPM enters HOLDOVER mode, which was covered by SPM334 log previously.
- SPM338 log is a new log generated when the SPM stays HOLDOVER state longer than 24 hours, which was covered by SPM334 previously.
- SPM339 is a new log which replaces SPM301. This log monitors the clock source within a 70% tuning range.
- SPM510 is a new and replacement of SPM332 to capture clock reference switch.
- SPM637 is a new log to address recovery from HOLDOVER.
- SPM638 is a new log to address recovery from HOLDOVER longer than 24 hours.

For more information, refer to LG section of A59013804.

3.9 Glossary

Term	Description
ADM	Add/Drop Multiplexer
CEM	Common Equipment Module
DMS	Digital Multiplex Switch
DTC	Digital Trunk Controller
DXC	Digital Signal Cross-Connect
IMC	Inter-Machine Communication
ITU-T	Telecommunication Standardization Sector of International Telecommunication Union
MAP	Maintenance and Administrative Position
MS	Message Switch
OC-3	Optical Carrier level 3
PDTC	PCM-30 Digital Trunk Controller
RM	Resource Module
SDH	Synchronous Digital Hierarchy
SONET	Synchronous Optical Network
SPM	Spectrum Peripheral Module
STM-1/STM1	Synchronous Transport Mode Level 1
VCXO	Voltage-Controlled Crystal Oscillator

3.10 References

REF #	Description of Reference
1	Spectrum Product Specification volume 8: SPM STM-1 Trunking for DMS-100 MMP - Draft, Issue 0.01, October 1998.
2	ITU-T G.825 (03/93)

3	ITU-T G.813 (08/96)
4	ITU-T G.823 (03/93)
5	Phase 1 SPM Synchronization Software HLD - Issue 1.1 Jan 1996
6	GSM Synchronization HLD - Dec 1998
7	Synchronization 101 - Dec 1997
8	Sparing and Crossover - Draft, Issue 1.0
9	ITU-T G.781 (06/99)
10	ITU-T G.783 (03/94)
11	ITU-T G.803 (03/93)
12	ITU-T G.810 (08/96)
13	NTP 297-1771-130 (General - synchronization)
14	NTP 297-1771-543 (alarms)
15	NTP 297-1771-840 (logs)
16	NTP 297-1771-819 (CI)

3.11 Appendix

3.11.1 Datafill to activate loop timing

Once the STM-1 SPM is datafilled properly and configured correctly, loop timing can be activated by the following datafill.

- Table MNNODE - set the SPM with LOOP in CLKREF field.

```
>Table MNNODE

> SPM 11          0D     1     SYNC   LOOP 15
          (COT 60) (DTMF 60) (ECAN 60) (TONESYN 60) (MF 60) $
          (SYSB CR RPT) (MANB MJ RPT) (ISTB MN RPT) (SYSBNA CR RPT)
          (MANBNA MJ RPT) (COTLOW MN RPT) (DTMFLOW MN RPT)
          (ECANLOW MN RPT) (TONESLOW MN RPT) (MFLOW MN RPT) $
                                  (       ABTRK  SPMEX)$
```

3.11.2 Alarms

There are no new alarms introduced for synchronization by this activity. The possible existing alarms are:

- HOLDOVR - the SPM is in HOLDOVER state (Node alarm)
- HLDOVR24 - the SPM is in HOLDOVER state more than 24 hours (Node alarm)
- VCXO70 - VCXO has reached to 70% point of its dynamic range. (CEM alarm)
- VCXO90 - VCXO has reached to 90% point of its dynamic range. (CEM alarm)
- CLKOOS - The CEM is not meeting any synchronization performance criteria. (Node alarm)

For more details, refer to NTP 297-1771-543.

2: Functional description (FN)

2.1 Feature name

Call Screening, Monitoring and Intercept Enhancement - Stub Message Deletion.

2.2 Description

The existing Call Screening, Monitoring and Intercept (CSMI) feature provides subscribers of a Network Based Answering Service (NBAS) with a means of monitoring and intercepting calls that are being handled by the NBAS.[1] The goal of this feature is to bring the functionality of an NBAS closer to the functionality that is provided by a Telephone Answering Device (TAD).

This activity (AT.59013873) provides an enhancement to the current capabilities of the CSMI feature, which helps to bring CSMI even closer to the functionality that is currently provided with a TAD. At present, when a call is intercepted by the CSMI subscriber, a stub message[2] is left on the NBAS. This stub message remains on the NBAS until the subscriber goes to the trouble of deleting it themselves. With this CSMI enhancement, there will now be an option to delete the stub message. If the office parameter, *csmi_delete_stub_vm* is set to 'Y' when the subscriber intercepts a call, a series of delete tones will simultaneously be sent to the NBAS deleting the stub message.

2.2.1 Functional Overview of Existing CSMI

The existing CSMI feature is comprised of several components:

- a Tracking portion which is initiated when the CSMI subscriber's line is forwarded to the NBAS. Upon the NBAS answering, a ring splash is applied to the line to notify the CSMI subscriber that the call is being handled by the NBAS.
- a Monitoring portion which is initiated when the CSMI subscriber goes off-hook before the end of the CSMI screening period. For monitoring, a one-way connection is established via a conference circuit between the

[1]The NBAS can be any party reachable via call forwarding (i.e. an electronic answering service or a live attendant).

[2]Partial message left on NBAS due to an interception of a call.

CSMI subscriber and both channels of the two-way connection between the caller and the NBAS. This allows the subscriber to hear the caller and NBAS but neither one is aware that the CSMI subscriber is listening.

- an Interception portion which occurs when the CSMI subscriber hook-flashes during a monitored call[1]. This results in a 2-way connection being established between the CSMI subscriber and caller. The NBAS is sent an alert tone which tells it to disconnect from the call.

For more detailed information on the operation of CSMI refer to section 1.4.2 in the AQ1439FN document in the PLS DOC library.

2.2.2 Functional Overview of CSMI Enhancement

After a 2-way connection is established a stub message is left on the NBAS. The consequence of the current functionality of CSMI is that after the call, the subscriber must dial into the NBAS and delete the stub message themselves.

This enhancement will add the option to have the stub message deleted from the NBAS upon interception of the call. In order to make this enhancement optional, a new office parameter will be added to the table OFCENG. This office parameter, *csmi_delete_stub_vm,* includes two values to be datafilled. The first value is a boolean which tells whether the enhancement is turned on or off. The second value is a alphanumeric code that should coincide with the delete series needed by the NBAS. This office parameter will be defaulted to (N $) in order to keep CSMI's functionality defaulted to its current functionality which does not include this enhancement.

When *csmi_delete_stub_vm* is set to N, the existing functionalities of CSMI will be used. When this parameter is set to Y, the following portion will be added to the current functionality of CSMI:

- a Deletion portion which deletes the stub message left on the NBAS. Simultaneous with the moment that the subscriber intercepts the call, a series of delete tones[2] will be sent to the NBAS deleting the stub message left by the caller.

When the office parameter is set to Y, the second value must be datafilled to the delete series needed by the NBAS. This value can be anywhere from one to five digits. Each digit can have a value between 1 and the alphanumeric 'c'.

[1]An EBS end-user invokes the functionality of CSMI in a different manner. For more information on Centrex EBS end-users refer to section 2.2.4 below.
[2]See Figure 3

Figure 1 Forwarded Call (CFDA) Available for Monitoring

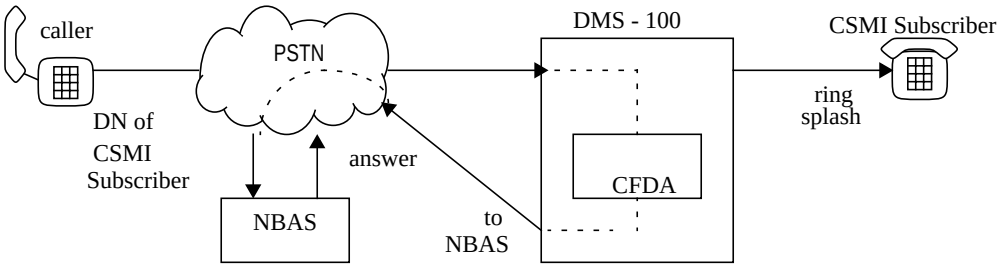


Figure 2 CSMI Subscriber Monitoring a Call

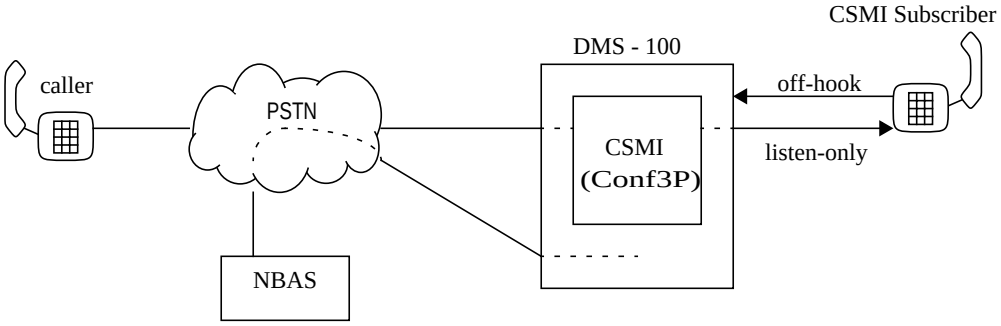
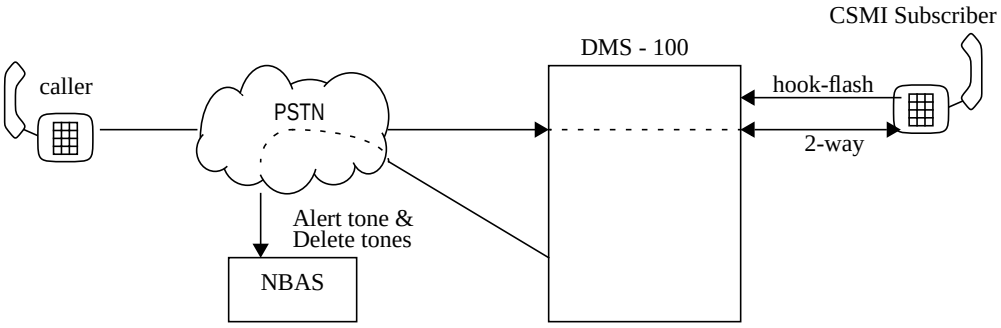


Figure 3 CSMI Subscriber Intercepting a Call



2.2.3 Feature Availability

This enhancement will not change the current feature availability of CSMI in any way. The existing CSMI feature and this enhancement are available to customers with Residential Enhanced Services (RES)[1] or Centrex lines who subscribe to both an NBAS and a call forwarding feature that is able to direct calls to the NBAS. An explanation of the feature availability is given below:

[1]RES lines are those with a line class code (LCC) of RES or POTS lines that have been converted to RES (1FR and 1MR) through RES SERVORD simplification.

CSMI is offered to RES customers in three forms:

- Usage Sensitive CSMI (UCSMI) is an office option that is billed on a pay-per-use basis (An AMA billing record will be generated each time this form of CSMI is used). It is available to Call Forward Don't Answer (CFDA) and Call Forward Busy Line (CFBL) subscribers that also subscribe to Message Waiting (MWT). UCSMI is only available on a line when no other form of CSMI is assigned (i.e. an assigned CSMI line or customer group option takes precedence over UCSMI).
- Subscription Based CSMI (SCSMI) is a line option that is billed on a monthly flat rate basis.
- CSMI Pay-Per-Use (CSMIPPU) is a line option that is billed on a pay-per-use basis (An AMA billing record will be generated each time this form of CSMI is used). It differs from UCSMI in that it can be used with any variation of call forwarding (i.e. not just CFDA and CFBL).

CSMI is offered to Centrex customers in two forms:

- CSMI line option that is billed on a monthly flat rate basis.
- CSMI customer group option that is billed on a monthly flat rate basis. This option is not available to Electronic Business Set (EBS) end-users[1].

This enhancement will not change the current feature availability of CSMI. For more detailed information on the feature availability of CSMI refer to section 1.4.1 in the AQ1439FN document located in the PLS DOC library.

2.2.4 CSMI for Centrex EBS end-users

As described above in section 2.2.1, a CSMI subscriber with a RES line only has to go off-hook to monitor a call and hook-flash to intercept that same call. The operation of CSMI on an EBS differs in the manner in which the user invokes the functionality. To implement CSMI on an EBS, a CSMI key is defined. The purpose of this key is to allow the CSMI subscriber to invoke CSMI functionality when the key is pressed.

For call screening once a call has been forwarded to the NBAS[2] and the NBAS answers, the CSMI EBS subscriber receives a ring splash[3], in the form of an electronic buzz of 0.5 seconds, and the lamp adjacent to the CSMI key starts to flash. The flashing of the lamp continues for the duration of the screening period or until the CSMI subscriber monitors the forwarded call. If the screening period expires without initiating monitoring, the lamp of the CSMI key is cleared.

[1]CSMI is only available to Centrex EBS users on a line option basis as a CSMI key must be defined when adding the option to the phone set.
[2]CSMI is available only on calls forwarded from the Primary Directory Number (PDN) of the EBS.
[3]No ring splash is provided if the office parameter EBS_BUZZ_SPLASH_ON is set to 'N'.

Once there is a call to monitor, pressing the PDN key of the set followed by the CSMI key starts the monitoring of the forwarded call by CSMI. The lamp adjacent to the CSMI key is not steady. To intercept the forwarded call, the CSMI key is pressed a second time. Upon interception, the CSMI key's lamp is cleared. For more information on how CSMI interacts with an EBS refer to section 1.4.2.2 in the document AQ1439FN in the PLS DOC library.

2.3 Hardware requirements

This feature enhancement requires a 3X68xx DTMF senders equipped in an MTM peripheral. Refer to the EI section of the DDOC for further details.

2.4 Limitations and restrictions

The first limitation associated with this enhancement is that this activity only works if the DMS it is being applied to has one NBAS. This activity is unable to datafill more than one delete sequence, therefore, only one NBAS can exist on the DMS in order for this enhancement to work properly. As stated in the requirements section of the HLD of this DDOC, the designers of this enhancement were told by PLM that there is currently only one NBAS on each DMS.

The second limitation associated with this enhancement exists with the Telco properly informing the end-user. If the Telco decides to set the office parameter, csmi_delete_stub_vm to 'Y', then the subscribers of CSMI must be properly notified. If the CSMI subscriber is not properly notified of the enhancement and expects the stub message to be retained by the NBAS, then vital information will be deleted by the enhancement.

The final limitation involves datafilling the second value of the office parameter. The second value is the delete sequence needed by the NBAS to delete the stub message. This enhancement will not allow the delete sequence to be any longer than 5 digits. If the delete sequence for the NBAS is longer than 5 digits, this enhancement will not work properly. This limitation is stated as part of the requirements section in the HLD of this DDOC.

2.5 Interactions

This CSMI enhancement does not modify the current interaction of CSMI with existing features. For information on how CSMI interacts with various features refer to section 1.7 in AQ1439FN in the PLS DOC library.

2.6 Logs (LG)

Not Applicable.

2.7 Data schema (DS)

For this enhancement, datafill is required in table SVRCKT.

Refer to the DS section of this DDOC for further details.

2.8 Office parameters (OP)

The existing office parameters for CSMI are described in the section titiled “Office Parameters” in the document AQ1439DS in the PLS DOC library.

This enhancement will introduce a new office parameter to CSMI. This office parameter will be named CSMI_DELETE_STUB_VM and will be found with the other CSMI office parameters in the table OFCENG. For more information on this parameter, see the OP section of this DDOC.

2.9 Service orders (SO)

Not Applicable.

2.10 Alarms (AL)

Not Applicable.

2.11 Command interface (CI)

Not Applicable.

2.12 Operational measurements (OM)

Not Applicable.

2.13 AMA/Billing information (AM)

Not Applicable.

2.14 Software optionality control (SOC)

There is no SOC functionality associated with this activity. The existing SOC options for CSMI (RES00047 & RES00053) will not be changed. For more information on these two SOC options refer to section 1.4.5 in AQ1439FN in the PLS DOC library.

2.15 Glossary

Term	Description
CFBL	Call Forward Busy Line
CFDA	Call Forward Don’t Answer
CSMI	Call Screening, Monitoring and Intercept
CSMIPPU	CSMI Pay-Per-Use
EBS	Electronic Business Set
MWT	Message WaiTing
NBAS	Network Based Answering Service
PDN	Primary Directory Number
PSTN	Public Switch Telephone Network
RES	Residential Enhanced Services
SCSMI	Subscription-based CSMI
SOC	Software Optionality Control
TAD	Telephone Answering Device
UCSMI	Usage sensitive CSMI

2.16 References

REF #	Description of Reference
A59013873 HLD	Call Screening, Monitoring and Intercept Enhancement - Stub Message Deletion HLD
AQ1439FN	Call Screening, Monitoring and Intercept Functional Description
AQ1439DS	Call Screening, Monitoring and Intercept Data Schema changes
AQ1439SO	Call Screening, Monitoring and Intercept Service Orders

2: Functional description (FN)

2.1 Feature name

OC-3 Line-Timing for DMS SuperNode

2.2 Feature requirements

The functionality for this feature is based on the requirements documented in **Version 0.7** of the OC-3 Line-Timing For DMS SuperNode Feature Specification Document (FSD ID #: FSD-99-182).

2.3 Feature synopsis

This feature is being implemented in the release 13, under the following activities :

- ACT_ID 59013912 for DMSSHR(13) and CSP(13)
- ACT_ID 59013906 for SPM(13)

Traditionally, Digital Signal - Level 1 (DS-1) timing links connected to Digital Trunk Controllers (DTC) have been used as a synchronization source for the DMS slave office timing configuration.

This feature provides the DMS family of SuperNode digital exchanges an optionality to support synchronization from a Spectrum Peripheral Module (SPM) Optical Carrier - Level 3 (OC-3) line timed input. This input timing information is used by the DMS to synchronize it’s MS internal clocks and distribute the timing signals to all peripherals on the switch.

The intent of this new functionality is to exploit the high phase resolution and sampling frequency provided by the SPM, to improve synchronization performance and meet the Synchronous Optical Network (SONET) synchronization standards on the SPM’s OC-3 output.

The OC-3 line-timing feature is an alternative to the current loop-timing implementation used by SPMs to meet SONET synchronization standards.

This feature is applicable to only SuperNode digital exchanges equipped with an internal Stratum 3 clock and having at least two SPMs with OC-3 carriers. This feature is also applicable to XA-CORE.

This feature is not applicable to the following:

- NT40 based DMS-100 Family of exchanges,
- DMS-STP and
- SNSE platform.

The feature requirements are captured in the feature specification OC-3 Line-Timing For DMS SuperNode Feature Specification Document (FSD ID #: FSD-99-182).

2.4 Background information

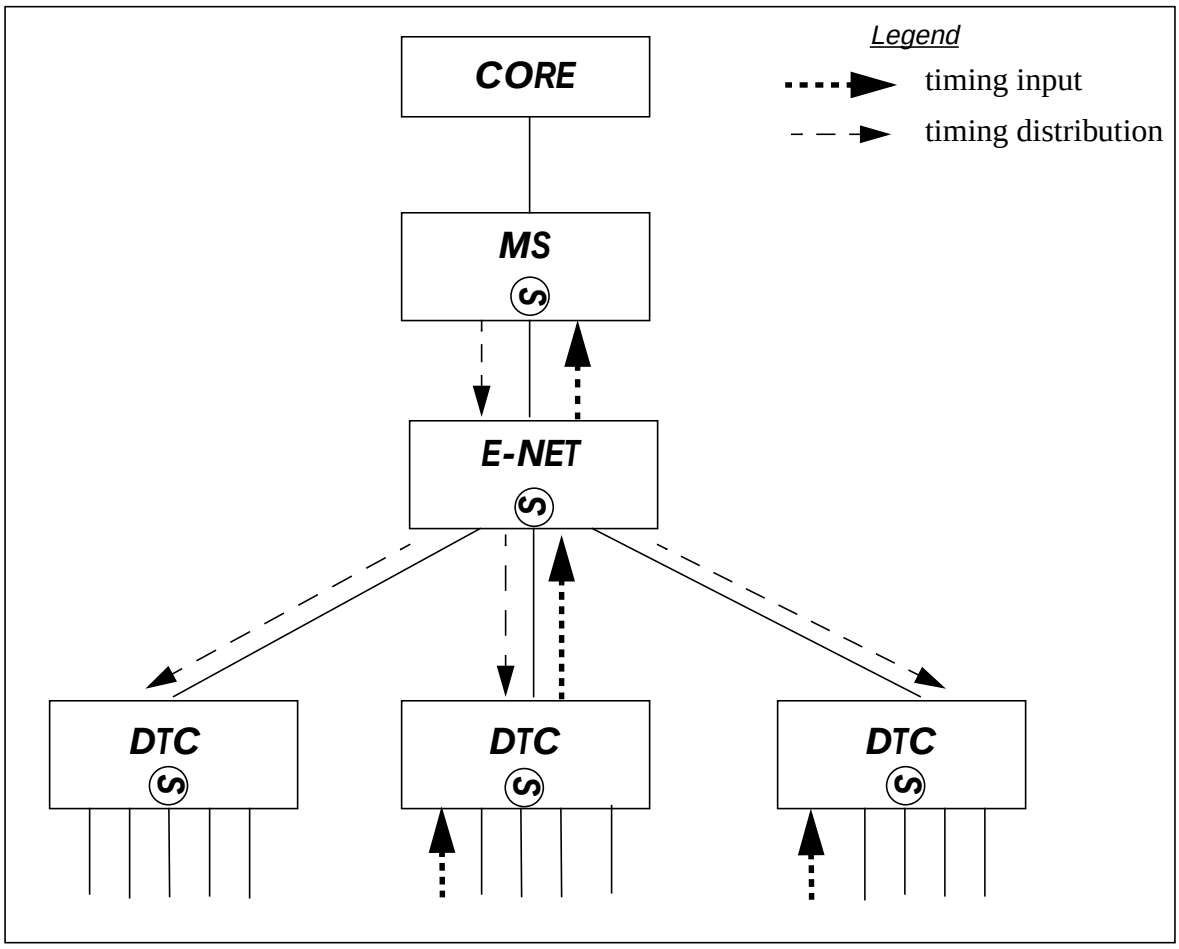
In a Digital Network, synchronization is required in order to provide accurate timing between digital offices and ensure reliable transmission of the digital bit stream. This is very important for stable voice/data transmission.

DMS supports the following three synchronization office configurations :

- Master-Internal Configuration : The free-running stratum 3 oscillator on one of the MSes is used to synchronize the office.
- Master-External Configuration : The office is synchronized to an external analog or composite clock signal originating at a BITS.
- Slave Configuration : The timing reference used to synchronize the office is received from XPM/PM based DS-1s. The DMS is then said to be in MS Line-Timing mode. Refer to Figure 1 on page 47 for an illustration of the existing DMS line-timing configuration.

  Note: Figures 1, 2, and 3 depict two timing inputs for the reference timing sources (DTC/SPM). All three diagrams show only the active timing path from the reference source. The inactive timing path has not been included for clarity purposes.

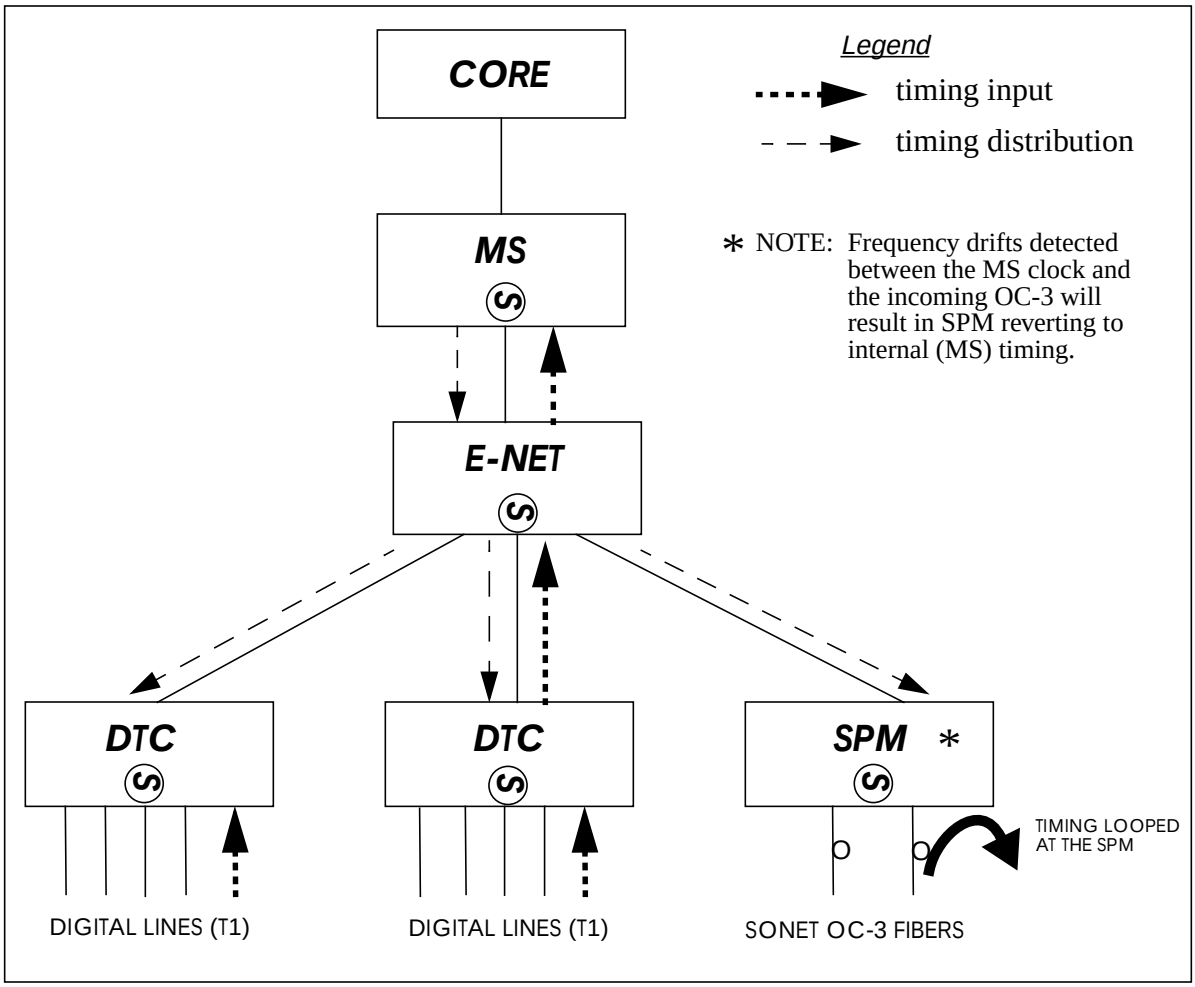
Figure 1 Existing DMS Line-Timing Configuration



With the introduction of SPM on DMS, the synchronization reference quality requirements became higher, and SONET standards could not be met with the office configured in existing MS line-timing mode.

To comply to the SONET standards, the current implementation has the SPM configured in Loop-Timing mode where the timing signals on an SPM are derived from the Receive fiber and fed to the Transmit fiber. Refer to Figure 2 on page 48 for an illustration of the existing DMS office configuration with the SPM in loop-timing mode.

Figure 2 DMS Office Configuration with SPM in Loop-Timing Mode

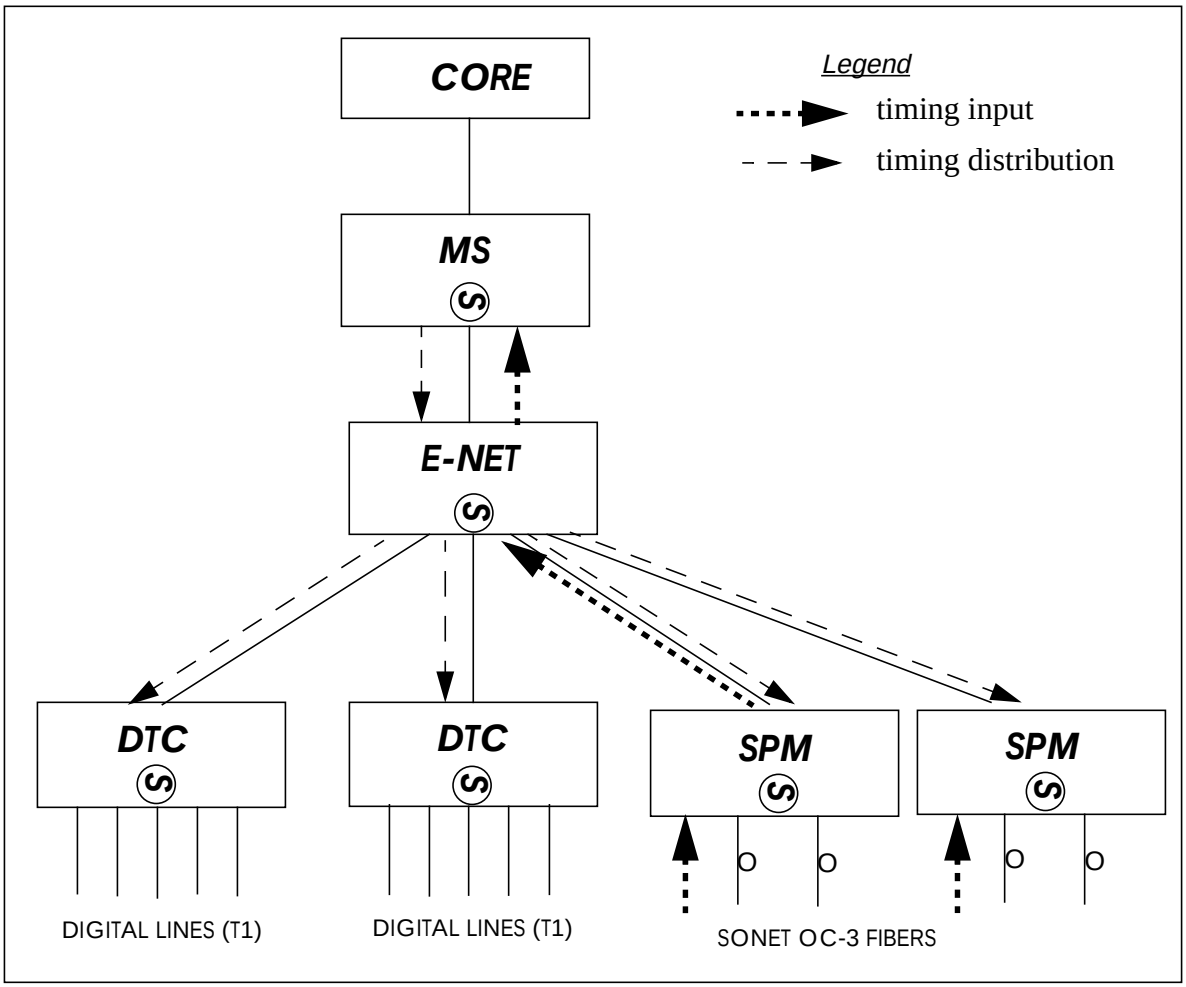


But SPM Loop-Timing imposes engineering rules, such as the requirement of having each SPM's OC-3 and the MS clock traceable to a common clock source. It further requires a Network Element(NE) capable of providing sync on OC-3 to the SPM.

2.5 Feature Description

The OC-3 Line-Timing feature is a variant of the existing MS Line Timing mode. This allows the SPM to be the timing source for the MS clock so that the entire DMS (in slave configuration) gets SONET quality MS-based clock synchronization distribution. Refer to Figure 3 on page 49 for an illustration of the DMS office configured in OC-3 Line-Timing Mode.

Figure 3 DMS Office Configuration in OC-3 Line-Timing Mode



The OC-3 Line Timing feature is provisioned by changing the datafill in table SYNCLK. This provisioning requires two SPMs, one as the active reference source and other as the standby reference source. Both these SPMs must be equipped with OC-3 Resource Modules (RM) and setup in “INTERNAL” sync mode. The steps needed to provision this feature are detailed in section “2.11 Method Of Procedure (MOP)” . The SPMs thus provisioned extract synchronization signals from the Synchronous Transport Signal Level-3 (STS-3) carrier, present in their OC-3 RM as part of the incoming OC-3 carrier.

These signals from the active reference source i.e the active STS-3 on the active SPM (the active link) are provided to the master MS clock. Thus the complete office including all SPMs in “INTERNAL” mode become synchronized with the active link.

2.5.1 Reference Switching

The two reference sources provide redundancy in terms of the timing source to the switch. At any point of time, only one of the reference sources will be active. Initially, upon system startup, the first datafilled reference source is chosen as the active link with the second reference source assigned as the standby link. Afterwards, a switch of the active reference source may become necessary to accommodate any failures or faults on the active source.

For OC-3 line-timing, synchronization information for each reference source is derived from the STS-3 carrier present on the incoming working OC-3 carrier of the active reference SPM. Hence, for the purpose of this document, a reference switch is, a switch from the working STS-3 carrier on the active SPM source to the working STS-3 carrier on the standby SPM source.

2.5.1.1 Conditions Resulting In A Reference Switch.

- Active reference SPM failure (due to a manual or system busy etc., conditions on the SPM)
- Both OC-3 RMs on the active reference SPM receive a degraded timing signal causing the reference SPM to stop sampling.
- A reference switch forced by a manual command.

2.5.1.2 Revertive / Non-revertive Reference Switching

When a reference switch occurs, timing information is provided by the standby reference (which is now the active reference source). In non-revertive reference switching, the active reference continues to be the active source, even after the condition that caused the switch has been cleared. The GR253 requires the switch to be capable of provisioning reference switching as revertive or non-revertive, with non-revertive being the default. If a SONET NE is provisioned as revertive, automatic restoration from standby to active must occur within two seconds of clearing of the active reference failure.

This feature only supports non-revertive reference switching.

2.5.2 Automatic Protection Switch (APS)

An APS refers to the capability of an SPM to automatically switch between the working and protected OC-3 RMs (without operator intervention) upon detection of a service affecting condition at the carrier level.

Currently, an APS is triggered by a change in carrier states (i.e from Insv to SysB) possibly due to carrier degradation or carrier failure. Based on this state change, the system will respond with the appropriate actions.This feature will not implement any new triggers for APS from the clock synchronization subsystem.

2.5.3 Frame Slips

A frame slip occurs when the slip buffer in an NE either overflows or underflows due to differences between the read and write rates of the terminating NE and the incoming digital signal.

In the case of DTC based DS-1 carriers, a count of the frame slips is maintained and displayed on each carrier. When the DMS is configured in Slave configuration with DTC based DS-1 timing links, any loss of frame which is regarded as a degradation of signal, results in a switch of reference.

In the case of SPM based High Speed (HS) carriers (OC-3 and STS-3), a loss of frame results in the generation of a carrier log and an APS. No count of frame slips per carrier is maintained. When OC-3 line-timing is active, the field of slip count displays “NA” referring to Not Available.

The carrier subsystem log CARR310 is generated upon a loss of frame in the STS-3 carrier, a description of which could be found in the NTP : 297-1771-840, DMS-Spectrum Peripheral Module, Logs Reference Manual, version.

2.5.4 Synchronization Status Messaging (SSM) Support

This feature does not make any changes to the SSM functionality. The system will not respond to changes in SSM and will not dynamically select the timing reference based on SSM status. The “Do Not Use For Sync” message will be at the output of all OC-3 carriers for this release.

Note that the OC-3 output on the SPM configured in loop-timing mode, will also continue to carry the "Do Not Use For Sync" message on all carriers.

2.5.5 MS Holdover Alarm Provisioning

In this feature, when both timing links become unavailable, the MS will enter into Holdover mode. A “Major” MS clock alarm will be raised and displayed along the top alarm banner of the MAP display. The “Clock” alarm is placed fifth in severity out of the total (30) MS alarms. This alarm condition will remain until the MS exits Holdover mode or if the alarm is manually suppressed via the MAPCI command “CLKALMFREE”. The only MS alarm categorized as “Critical” is the “MSPair” alarm which is the most severe of all MS alarms. This alarm is raised when both MSes are busy (ie. manual or system).

Presently, the severity (minor, major, critical) of MS clock alarms cannot be provisioned. This feature will not provide the capability to provision the severities of the MS clock alarms.

2.6 Hardware requirements

There are no special hardware requirements imposed by this feature.

2.7 Logs (LG)

The SYNC subsystem logs are re-used by this feature with some modifications. The field “Slip Count” in the SYNC subsystem logs will display “Not Available” for OC-3 line-timing feature. Please refer to section “2.5.3 Frame Slips” for an explanation on slip count. The modified logs are listed, and the changes described further, in the section “12: Log changes (LG)” on page 161.

2.8 Data schema (DS)

2.8.1 New/modified Table : SYNCLK

Table SYNCLK is modified to enable datafill of SPM OC-3 as sync source.

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
SYNCLK	CHANGED	CHANGED

The Link Information fields as part of OFFCDATA, is refined in case of SPM to only accept:

- LK_PTYP
- LK_PNUM
- LK_RMTYP

The new field “LK_RMTYP” identifies the type of Resource Module (RM) on the SPM providing synchronization to the DMS. For this feature only OC-3 RM support is provided. The Synchronous Transport Signal Level-3 (STS-3) carrier on the active OC-3 RM, providing the timing signals to the DMS, is identified in table MNHSCARR by a Circuit Number (CCTNO) unique per SPM. Thus the field “LK_CCT” is not part of the datafill in the case of an SPM but decided internally by the SPM based on the RM Type datafilled and the present active unit. This circuit number is then displayed on the MAP at the clock level as field CCT.

The modifications in the table structure and changes in the table control are detailed in the DS section.

2.8.2 New/modified Table : MNNODE

Table control in table MNNODE is modified to disallow change in CLKREF mode from INTERNAL to LOOP if the particular SPM is datafilled in table SYNCLK as a sync source.

2.8.3 New/modified Table : MNCKTPAK

The physical entity datafilled as a sync source in table SYNCLK, in case of an SPM, is a Circuit Pack. This entity is datafilled through table MNCKTPAK. This creates a dependency between table SYNCLK and table MNCKTPAK, which must ensure that a Circuit Pack cannot be deleted as long as it is in use by table SYNCLK.

2.9 Command interface(CI)

This feature introduces the SPM as a timing link source. The Clock level Map display (MAPCI;MTC;MS;CLOCK) provides timing link related information. In the case of SPM, timing signals are derived presently from the STS-3 carrier on the OC-3 RM. For the purpose of unique identification of each of the SPM timing links the following information is displayed :

- PM type
- PM number
- RM Type
- Circuit number

The changes in the MAP display along with explanation of the new field is detailed in the CI section.

Warning messages are issued when the user tries to busy the active OC-3 RM, CEM and STS-3 carrier. Each of these maintenance actions require confirmation via a YES/NO prompt. The messages are:

- At the OC-3 RM level of a timing reference SPM, when the inactive OC-3 RM is busy and the user tries to busy the active OC-3 RM the following warning is issued.:
  " WARNING: This RM is an office timing reference".
- At the CEM level of a timing reference SPM, when the inactive CEM is busy and the user tries to busy the active CEM the following warning is issued:
  "WARNING: This SPM is an office timing reference".

- At the STS-3 Carrier level of a timing reference SPM, when the user tries to busy an active STS-3 carrier the following warning message is issued:
  "WARNING: This carrier is an office timing reference.

The changes in the MAP display along with explanation of the new field is detailed in the CI section.

2.10 Limitations and Restrictions

This feature has the following limitations & restrictions:

1. GR-253 SONET performance requirements can only be met with the NT9X53AD MS Clock Card. The NT9X53AC is not supported for OC-3 Line Timing and GR-253 SONET performance is not expected with the NT9X53AC.

2. This feature does not support revertive reference switching (please refer to section "2.5.1.2 Revertive / Non-revertive Reference Switching" for further details).

3. This feature does not completely support SSM in this release. Only the "Do Not Use For Sync" message is output from the SPM OC-3 under all circumstances.

4. For OC-3 Line-Timing, the carriers providing timing cannot be distinguished from other carriers at the MAPCI Carrier Level.

5. SPMs support only Locked VT1.5 mode.

6. High speed carriers must be datafilled in table MNHSCARR prior to enabling OC-3 line timing. Table control does not enforce this requirement in CSP13.

Restrictions imposed by table control :

7. There is a requirement for atleast two SPMs to be equipped with OC-3 RMs, in the DMS office to activate the OC-3 line-timing feature.

8. The choice of the two timing sources datafillable in table SYNCLK cannot be a combination of SPM and other peripherals like DTC.

9. This feature does not provide support for Remote Oscillator Shelf (ROS). Hence, the STRAT2P5 and STRAT2 options in table SYNCLK are not supported with OC-3 Line-Timing feature.

10. Only SPMs datafilled as "INTERNAL" in table MNNODE can be used to datafill table SYNCLK.

11. Table control in table MNNODE is modified to disallow change in CLKREF mode from INTERNAL to LOOP if the particular SPM is datafilled in table SYNCLK as a sync source.

12. Circuit Packs chosen as sync source through table SYNCLK cannot be deleted from table MNCKTPAK, before removing them from SYNCLK table.

13. Only the NT9X53AD MS clock cards is supported with this feature. The NT9X53AD is required to meet GR-253 SONET clock synchronization performance, but table control does not disallow NT9X53AC.

2.11 Method Of Procedure (MOP)

The following sections describe the procedure for a non-service affecting upgrade of the DMS from

- Slave Office configuration or
- Master External configuration or
- Master Internal configuration

to OC-3 Line-Timing mode.

The DMS office to be upgraded and the SPMs providing the OC-3 timing input must all be loaded with images containing the OC-3 Line-Timing feature. This MOP requires at least two SPMs in the office equipped with OC-3 RM and datafilled as “INTERNAL” in table MNNODE.

The relevant OC-3 carriers must be datafilled (table MNHSCARR) prior to changing table SYNCLK as described in this MOP. SYNCLK table control software does not automatically check or enforce MNHSCARR datafill in the CSP13 release.

A minimum of a CSP13 based PCL and SP13 have to be loaded prior to proceeding with the MOP.

It is recommended that the MOP be performed during regular maintenance periods to minimize any potential impact on the office.

The MOP for all three upgrades follow these basic steps:

1. Drop synchronization on the MS-Clock if starting from Master-External or Slave Configurations.
2. Make configuration changes in table SYNCLK (described separately for each upgrade).
3. To activate the new clock configuration, in the case of upgrade from Master-External or Master-Internal, perform manual Busy and Return To Service (without OOBAND option) for both MS on the switch.
4. Initiate synchronization on the MS-Clock.

All these steps are detailed in the following section.

Note 1: In the sections below each step title describes the action needed and it is followed by the actual steps to be executed at the CI prompt. This uses SPM 32 and SPM 33 as an example.

Note 2: Commands to be executed are shown in **bold** and the responses are in normal font. Notes are provided in *italics.*

2.11.1 MOP steps

2.11.1.1 Drop synchronization on MS-Clock

This step needed only if starting from Master-External or Slave Configurations.

CI:
>**MAPCI;MTC;MS;CLOCK;DPSYNC**
This action will degrade SPM OC-3 SYNC performance.
Do you wish to continue?
>**Y**
Request to Drop Synchronization on Clock 1: Submitted
Request to Drop Synchronization on Clock 1: Passed

The SYNC202 info log would be generated with "Drop Sync" text and the master MS Clock would display "Fr" state at the Clock MAP level (MAPCI;MTC;MS;CLOCK)

2.11.1.2 Change office configuration data in table SYNCLK

2.11.1.2.1 To Upgrade from Slave to OC-3 Line-Timing mode.

CI:
>**TABLE SYNCLK;FORMAT PACK;LIST**
TABLE: SYNCLK
<line length>: 76 columns can be output per line.
<pack mode>: Pack mode is ON.
<indent column>: Indented lines will begin in column 1.
<first column>: The first column of output is column 1.
TOP
CLKKEY CLKDATA OFFCDATA
----
0 STRAT3 SLAVE DTC 0 0 0 DTC 1 0 0
>**CHA**
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>**Y**
CLKTYPE: STRAT3
>
OFFCONF: SLAVE
>
LK0_PTYP: DTC
>**SPM**
LK0_PNUM:
>**32**
LK0_RMTYP:
>**OC3**
LK1_PTYP: DTC
>**SPM**
LK1_PNUM:
>**33**
LK1_RMTYP:
>**OC3**
TUPLE TO BE CHANGED:
0 STRAT3 SLAVE SPM 32 OC3 SPM 33 OC3
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>**Y**
TUPLE CHANGED

2.11.1.2.2 To Upgrade from Master-External to OC-3 Line-Timing mode.

CI:
>**TABLE SYNCLK;FORMAT PACK;LIST**
TABLE: SYNCLK
<line length>: 76 columns can be output per line.
<pack mode>: Pack mode is ON.
<indent column>: Indented lines will begin in column 1.
<first column>: The first column of output is column 1.
TOP
CLKKEY CLKDATA OFFCDATA
---
0 STRAT3 MASTEXT F1000 ANALOG T50 OFF
>**CHA**
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>**Y**
CLKTYPE: STRAT3
>
OFFCONF: MASTEXT
>**SLAVE**
LK0_PTYP:
>**SPM**
LK0_PNUM:
>**32**
LK0_RMTYP:
>**OC3**
LK1_PTYP:
>**SPM**
LK1_PNUM:
>**33**
LK1_RMTYP:
>**OC3**
Perform a BUSY (BSYMS) and RTS (RTSMS) without OOBAND option
on each MS to setup the new clock configuration.
TUPLE TO BE CHANGED:
0 STRAT3 SLAVE SPM 32 OC3 SPM 33 OC3
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>**Y**
TUPLE CHANGED

2.11.1.2.3 To Upgrade from Master-Internal to OC-3 Line-Timing mode.

CI:
>**TABLE SYNCLK;FORMAT PACK;LIST**
TABLE: SYNCLK
<line length>: 76 columns can be output per line.
<pack mode>: Pack mode is ON.
<indent column>: Indented lines will begin in column 1.
<first column>: The first column of output is column 1.
TOP
CLKKEY CLKDATA OFFCDATA
---
0 STRAT3 MASTINT
>**CHA**

ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>**Y**
CLKTYPE: STRAT3
>
OFFCONF: MASTINT
>**SLAVE**
LK0_PTYP:
>**SPM**
LK0_PNUM:
>**32**
LK0_RMTYP:
>**OC3**
LK1_PTYP:
>**SPM**
LK1_PNUM:
>**33**
LK1_RMTYP:
>**OC3**
Perform a BUSY (BSYMS) and RTS (RTSMS) without OOBAND option
on each MS to setup the new clock configuration.
TUPLE TO BE CHANGED:
0 STRAT3 SLAVE SPM 32 OC3 SPM 33 OC3
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>**Y**
TUPLE CHANGED

On successful completion of this step, the MAP display at the clock level will reflect the changed sync source "SPM 32" and "SPM 33" . In the event of failure to complete Step 2 successfully, there will not be any changes reflected on the MAP display, and the Step 4 described in section 2.10.1.4 needs to be executed to return the switch into pre-MOP condition.

2.11.1.3 To activate the new clock configuration in case of upgrade from Master-External or Master-Internal configuration, perform manual Busy and Return To Service (without OOBAND option) for both MS on the switch.

Determine the Slave MS (MS0 or MS1) from the MS MAP level and perform BSY & RTS on it first. The steps below assume MS1 to be the Slave MS at the beginning of this procedure.

CI:
>**MAPCI;MTC;MS;BSY 1**
Request to MAN BUSY MS: 1 submitted.
Request to MAN BUSY MS: 1 passed.
>**RTS 1**
Request to RTS MS: 1 submitted.
Request to RTS MS: 1 passed.
>**SWMAST**
>**BSY 0**
Request to MAN BUSY MS: 0 submitted.
>**RTS 0**
Request to RTS MS: 0 submitted.
Request to RTS MS: 0 passed.

2.11.1.4 Initiate synchronization on the MS-Clock.

CI:
>**MAPCI;MTC;MS;CLOCK;SYNC**
Request to Synchronize Clock 1: Submitted

Request to Synchronize Clock 1: Passed
Clock synchronization started ...

A SYNC202 info log would be generated with text “Clock Sync Started” and the master MS Clock would display “sync” state at the clock MAP level within a duration of 5 minutes.

2.12 Glossary

Term	Description
DMS	Digital Multiplex Switch
DS-1	Digital Signalling - Level 1
DTC	Digital Trunk Controller
ENET	Enhanced Network
MAP	Maintenance and Administrative Position
MS	Message Switch
OC-3	Optical Carrier - Level 3
STS-3	Synchronous Transport Signal - Level 3
SONET	Synchronized Optical Network
SNE	Synchronous Network Element
SPM	Spectrum Peripheral Module
SSM	Synchronization Status Message

2.13 References

1. Feature Specification OC-3 Line-Timing For DMS SuperNode Feature Specification Document (FSD ID #: FSD-99-182)
2. NTP 297-1001-130 : Synchronous Clock System Description.
3. NTP 297-8021-840 : North American DMS-100 Log Report Reference Manual.
4. NTP 297-1771-840 : DMS - Spectrum Peripheral Module Logs Reference Manual.
5. GR-253-CORE : Synchronous Optical Network (SONET) Transport Systems: Common Generic Criteria rev 2.0 Jan 1999.

2: Functional description (FN)

2.1 Feature name

ANSI Support for MLIU

2.2 Description

2.2.1 Feature Overview

The MLIU (Multiple Link Interface Unit) is a new PM that was introduced in CSP12 supporting four low speed SS7 links. In CSP12 the MLIU was supported for ITU networks only. This CSP13 feature adds ANSI support for the MLIU.

2.2.2 Background

The MLIU is an SS7 peripheral that has the capacity to terminate four signaling links at a maximum of .4 erlang each, as opposed to the pre-existing link interface unit (LIU7) which can only terminate a single SS7 signaling link. The MLIU supports only channelized access requiring an NIU and PDTC connection to the network. An LPP can house 30 MLIU's which equals 120 SS7 signaling links. FLIS and SNSE LIS platforms can house 10 MLIUs each, supporting up to 40 SS7 signaling links.

In CSP12 the MLIU was supported only for ITU networks and only for PDTC connections to the network operating at a link data rate of 64kbps. This feature adds support for ANSI networks and for link data rates of 56kbps.

For complete information on the MLIU project please see the CSP12 MLIU umbrella feature: 59010264.

2.2.3 Market Drivers

The MLIU is initially being targeted for the European market where the ITU protocol is predominantly used. However, ANSI backbones are currently used for Network Centrex/ACD in most networks and for loop arounds where ITU interworking is not available. Therefore ANSI support is also required.

For complete information on the MLIU project's market drivers please see the FN section of A59010264: MLIU Umbrella feature.

2.3 Hardware requirements

There are no new hardware requirements for this feature. For information on all new hardware associated with the MLIU please see feature 59010264.

2.4 Limitations and restrictions

This feature relaxes the MLIU restrictions of the initial CSP12 release. The new MLIU restrictions are:

- Only currently supported for DMS100E product.
- Only supported for the ITU and ANSI protocols.
- SSP offices are the only supported office types.

  Note: If the office is running an INODE load, it must be in a straight SSP configuration. (STPE0300 SOC state must be IDLE).
- Only supported at link rates of 56kb/s and 64kb/s.
- Only supported via PDTC, DTC0 and DTC02.
- Only channelized access connections via NIUs is supported.

2.5 Interactions

2.6 Logs (LG)

No logs are affected by this feature.

2.6.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

2.7.1 New/modified tables

Table LIUINV is affected by this feature. No new fields are added by this feature, however, the restriction on the data rate field has been relaxed. Now MLIUs can be datafilled with a rate of 56kb/s.

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
LIUINV	CHANGED	

2.8 Office parameters (OP)

No office parameters are being affected by this feature.

2.8.1 New/modified office parameters

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

N/A

2.10 Alarms (AL)

No alarms are being affected by this feature.

2.10.1 New/modified directories

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

No CIs are being affected by this feature.

2.11.1 New/modified commands

e None.

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.12 Operational measurements (OM)

No OMS are being affected by this feature.

2.12.1 New/modified OM groups

None.

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.13 AMA/Billing information (AM)

N/A

2.13.1 New/changed AMA/billing information

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

N/A

Table 8 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.15 Glossary

Term	Description
ANSI	American National Standards Institute
CSP	Communication Services Platform
DMS	Digital Multiplex System
DTCO	Digital Trunk Controller Offshore
DTCO2	Digital Trunk Controller
FLIS	Fiberized Link Interface Shelf
ITU	International Telecommunication Union
LIU7	Link Interface Unit
LIS	Link Interface Shelf
LPP	Link Peripheral Processor
MLIU	Multiple Link Interface Unit
NIU	Network Interface Unit
PDTC	PCM-30 Digital Trunk Controller
SNSE	SuperNode Size Enhanced
SOC	Software Optionality Control
SS7	Signaling System #7

2.16 References

MLIUREQ.aa03 MLIU Requirements Document

A59010264.aa06 MLIU Documentation Umbrella

2: Functional description (FN)

2.1 Feature name

Module: A59014046 Section:pcnfn

2.2 Description

This document describes activity development that is necessary to display the S/DMS AccessNode line location for all kinds of RDT: RFT, TR-303 RDT's, UE9000, etc.

This development activity is being undertaken to resolve the customer's concerns about the lack of remote line termination location available to a craftsperson at the MAPCI display.

2.3 Hardware requirements

N/A

2.4 Limitations and restrictions

The lineCircuitAddress attribute will be queried for the following line terminations:

for FWP (RFT):

- loopStRes-line-termination
- coin-line-termination
- ebs-line-termination
- isdn-u-line-termination
- loop-ground-business line terminations

for GR303:

- analogLineTermination
- isdnLineTermination

- ebsLineTermination

2.5 Interactions

Currently the LTP level of the S/DMS SuperNode contains the CktLoc command to display the circuit location of a line. Please refer to “Figure 1&2 Current and new RDT line location display at the LTP MAPCI level” on page 32-33.

There is a tool RFTLOC that prints the line location by calculating it from the current AN architecture and from the CM information. This tool does not send message to the RDT but calculates it by itself. This tool does not support GR303 , AccessNode express and UE9000.

2.6 Logs (LG)

2.6.1 New/modified logs

none.

2.7 Data schema (DS)

2.7.1 New/modified tables

None.

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

None.

2.9 Service orders (SO)

None.

2.10 Alarms (AL)

None

2.10.1 New/modified directories

None.

2.11 Command interface (CI)

2.11.1 New/modified commands

CKtLoc from mapci LTP level.

Table 1 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN
CKtLoc	CHANGED		mapci;lns;ltp	menu

Figure 1 Current RDT line location display at the LTP MAPCI level

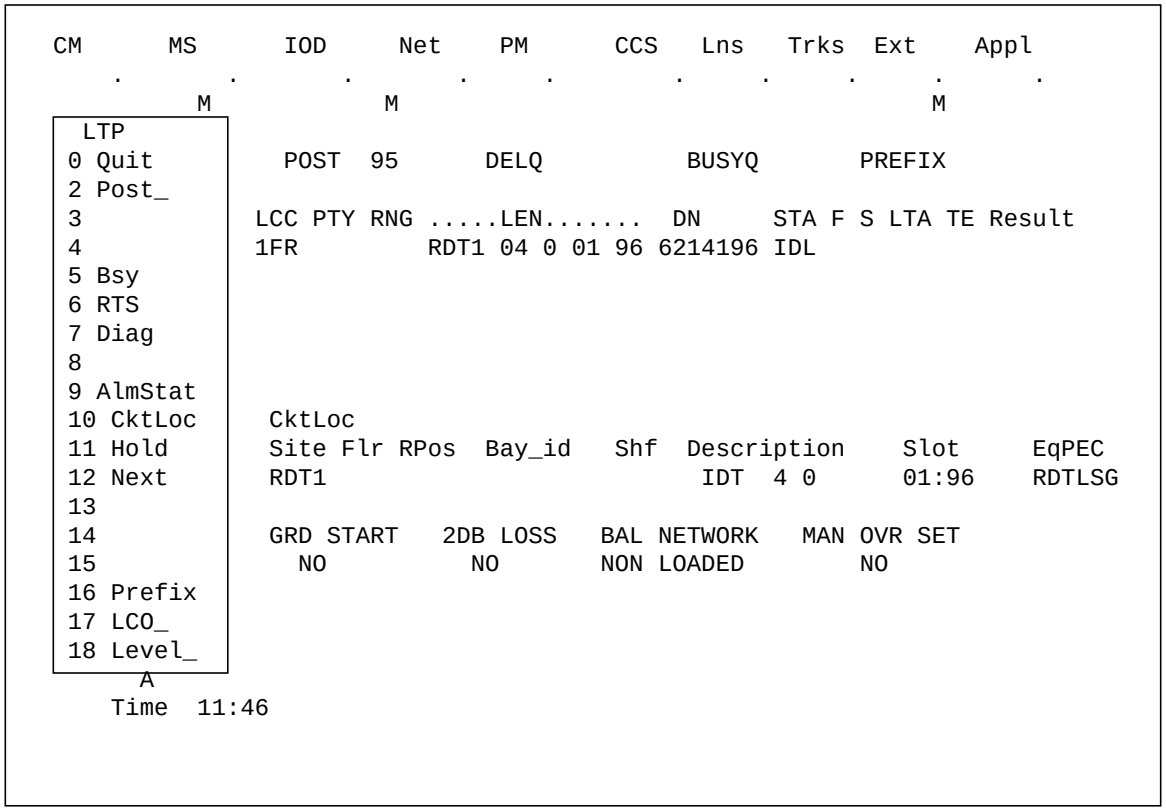
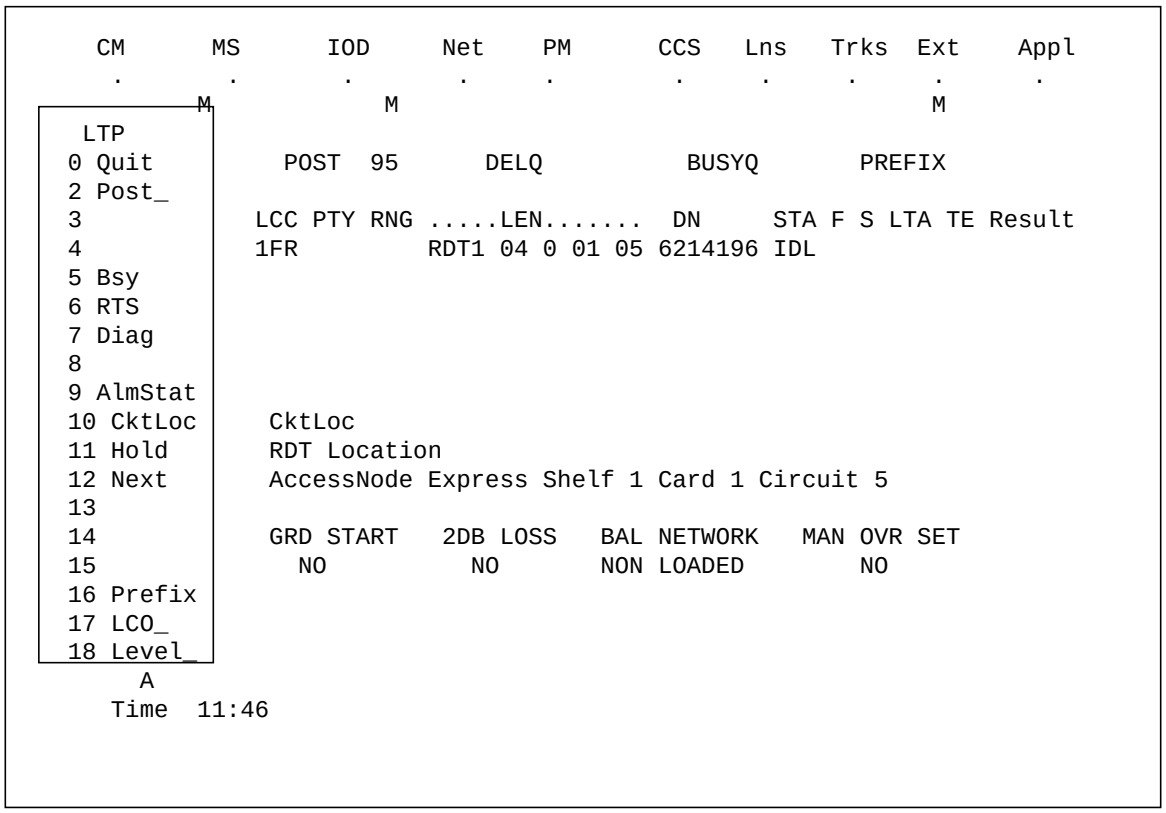


Figure 2 New RDT line location display at the LTP MAPCI level



2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

None.

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

None.

2.14 Glossary

AN	AccessNode
CI	Command Interpreter
CM	Compute Module
FWP	FiberWorld Product

LEN	Line Equipment Number
LTP	Line Test Position
MAP	Maintenance and Administration Position
RDT	Remote Digital Terminal
SMA	Subscriber Carrier Module Access

2.15 References

List sources in the public domain only, NTP documents and related DDOCs. Do not list any NORTEL proprietary documentation.

2: Functional description (FN)

2.1 Feature name

SPM 8BIT SLS SUPPORT FOR EXTERNAL AND INTERNAL ROUTING AND INTERNAL ROUTING FOR IEC

2.2 Description

2.2.1 Feature synopsis

The intent of the present feature is:

(1) To enhance SLS generation in SPM for ANSI to 8-bit. This will enable DMS offices equipped with a mix of DTC and SPM, and DMS offices which are pure-SPM to select 8-bit External Routing as an alternative to existing 5-bit External Routing.

(2) To enhance the SPM Internal Router to 8-bit SLS load balancing for ANSI, from the existing 5-bit SLS load balancing. This enhancement will enable offices which are pure-SPM to have 8-bit Internal Routing for ANSI, at no extra requirement in SPM memory and no change in real-time as compared to 5-bit Internal Routing.

(3) To ensure that components of the SPM Internal Router which are common to all markets are repackaged so as to be accessible to loadbuild for the IEC market.

(4) To test the complete SPM Internal Router for IEC market, covering all subsystems, all functionality and all routing configuration plus basic test for DMS 500.

8-bit SLS load balancing is available only to ANSI network. This enhancement of SPM Internal Router to 8-bit load balancing for ANSI will not affect the current ITU appplication of the SPM Internal Router.

2.2.2 Background

Activity AT39005427 ‘MTP Internal Router for SPM’ implemented an Internal Router on SPM for routing outgoing C7 messages. The design was intended for Europe market. The load balancing method used was based on 5-bit SLS.

This original design was subsequently adapted for North American LEC market by the activity AT59013504 ‘SPM Internal Router (LEC)’.

The above features allow a DMS office equipped with SPM to offer Internal Routing as an alternative to External Routing. The CI command C7RTR allows the office to switch back and forth between Internal and External routing. However, in offices equipped with SPM both routing options are restricted prior to this feature to 5 bit SLS.

Note that as an alternative to 5 bit SLS, 8 bit SLS capability had been previously added to STP by activity AR1406 ‘8 bit SLS for STP’, and also added to DTC by activity AR3066 ‘8 bit SLS for SSP’. The CI command SLS8BIT allows an office to select between 5 bit or 8 bit SLS. However, 8 bit SLS can only be used for ANSI network.

SUMMARY OF EXTERNAL/INTERNAL AND 5BIT/8BIT AVAILABILITY:

Prior to this feature, a DMS office which is pure-DTC (that is, with no SPM) is allowed to the following operating modes regarding C7 message routing:
(1) 5-bit External routing
(2) 5-bit Internal routing
(3) 8-bit External routing (for ANSI only)
(4) 8-bit Internal routing (for ANSI only)
(Note: neither 8-bit External routing nor 8-bit Internal routing is available in offices equipped with a PDTC)

Prior to this feature, DMS offices which have a mix of DTC and SPM, and DMS offices which are pure-SPM are allowed only to the following operating modes:
(1) 5-bit External routing

Once this feature implemented the situation for an office which is pure-DTC will remain unchanged.

However, an office which is mixed DTC/SPM or pure SPM will be improved to the following operating modes:
(1) 5-bit External routing
(2) 5-bit Internal routing <-- **NEW!!!**
(3) 8-bit External routing (for ANSI only) <-- **NEW!!!**
(4) 8-bit Internal routing (for ANSI only) <-- **NEW!!!**
(Note: neither 8-bit External routing nor 8-bit Internal routing is available in offices equipped with a PDTC)

2.3 Hardware requirements

This activity requires an SPM and LPP equipped with LIU7.

2.4 Limitations and restrictions

The following restrictions and limitations apply to this feature:

- 8 bit SLS is available only for ANSI network type.
- Neither 8-bit External routing nor 8-bit Internal routing is available in offices equipped with a PDTC)

2.5 Interactions

No impact on C7 message format and protocol.

2.6 Logs (LG)

2.6.1 New/modified logs

This feature does not modify or introduce any logs.

2.7 Data schema (DS)

2.7.1 New/modified tables

This feature does not modify or introduce any tables.

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

This feature does not modify or introduce any office parameters.

2.9 Service orders (SO)

This feature does not modify or introduce any service orders.

2.10 Alarms (AL)

2.10.1 New/modified directories

This feature does not modify or introduce any alarms.

2.11 Command interface (CI)

2.11.1 New/modified commands

This feature does not modify or introduce any commands.

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

This feature does not modify or introduce any operational measurement groups.

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

This feature does not modify or introduce any AMA billing information.

2.14 Software optionality control (SOC)

This feature is not subject to SOC control.

2.15 Glossary

Term	Description
AMA	Automatic Message Accounting
ANSI	American National Standards Institute

CCS7 (C7)	Common Channel Signalling 7
DMS	Digital Multiplexer System
DTC	Digital Trunk Controller of DMS
IEC	InterExchange Carrier
ITU	International Telecommunication Union
PLS	Program Library System
SLS	Signalling Link Selector
SPM	Spectrum Peripheral Module
STP	Signalling Transfer Point (a node in CCS7 network)

2.16 References

Spectrum FSD: SP13 Platform Content, Issue 2.1
AR0929 -- SLS load balance in CCS7 network -- in PLS DOC
AR1406 -- 8 bit SLS for STP -- in PLS DOC
AR1622 -- 8 bit XPM Enhancement -- in PLS DOC
AR1764 -- 8 bit SLS propagation -- in PLS DOC
AR3066 -- 8 bit SLS for SSP -- in PLS DOC
AT39005427 -- SPM Internal Router (Europe) -- in PLS FMDOC
AT59013504 -- SPM Internal Router (LEC) -- in Clearcase

2: Functional description (FN)

2.1 Feature name

SPM isolation checks

2.2 Description

SPM isolation feature addresses the potential SPM CEM isolation problems caused by ENET maintenance action. This feature implements a complete SPM CEM isolation check when the following ENET maintenance actions are done manually
1) plane busy
2) shelf busy
3) card busy
4) p-side link busy

Prior to BSYing a plane, shelf, card or link, isolation checks are initiated to guard against isolation of a node. There are already some checks for series 1 and 2 peripheral (DTC, LIU ...) isolation protection. This feature adds a second layer of checks. If existing checks pass then functionality implemented in this feature is invoked. A warning message is displayed for the craftsperson indicating the PM (Peripheral Module) will be isolated as result of BSYing a plane, shelf, card or link. The craftsperson is thus warned if this action is going to isolate a node.

This feature supports both, the single shelf and the dual shelf ENET configurations.

2.2.1 Background information

Prior to this feature in SP13, an SPM CEM can be isolated by a maintenance action when there is pre-existing fault on other links. For example, in the double shelf ENET configuration with straight messaging links, when one ENET shelf or 9X40DA card is already out of service. If the Craftsperson BSY out a 9X40DA card in the second ENET shelf, the CEM will be isolated. If it happens to be the Active CEM, an uncontrolled SWACT will occur. There is no warning to the Craftsperson that a SWACT will occur.

Some of the above maintenance actions will not isolate SPM CEM when the SPM is configured with crossover messaging link (XOVER) available in SP12. However in the case of crossover messaging channels, isolation and uncontrolled SWACT can still occur. The reason is that the existing ENET check on the corresponding shelf on the other plane does not take into account the state of the SPM messaging channels (Ports on the MS) which pass through that shelf.

This feature provides safeguards against possible isolation of an SPM during execution of a MANUAL BSY command on shelf, plane, card and link level.

2.3 Functional description

Following scenarios are addressed by this feature.

2.3.1 Plane BSY action

Currently following warning is displayed when a BSY command is issued.

WARNING: This action will cause NETWORK BLOCKAGE. Please confirm (“YES”, “Y”, “NO”, or “N”):

In this feature checks are made to ensure that BSYing an ENET plane does not isolate SPM. If existing checks pass then functionality implemented in this feature is invoked. If there is indication that isolation can happen, following warning is issued to craftsperson, indicating that BSY-ing that particular plane will cause a node to be isolated from CM.

WARNING: OPERATION WILL ISOLATE ONE OR MORE NODES FROM THE CM

WARNING: BSYing this link may cause loss of service Please confirm (“YES”, “Y”, “NO”, or “N”):

2.3.2 Shelf BSY action

Currently(prior to SP13) following warning is issued when a shelf is BSYed.

WARNING: This action will be performed on ALL links in ENET Plane:x that are MBSY, INSV, OFFL, SBSY, CBSY, or PBSY. Please confirm (“YES”, “Y”, “NO”, or “N”):

if reply is Yes, following warning is issued.

WARNING: This action will cause NETWORK BLOCKAGE. Please confirm (“YES”, “Y”, “NO”, or “N”):

In this feature checks are made to ensure that BSYing a shelf does not isolate SPM. If existing checks pass then functionality implemented in this feature is invoked. If there is indication that isolation can happen, following warning is issued to craftsperson, indicating that BSYing that particular shelf will cause a node to be isolated from CM.

WARNING: OPERATION WILL ISOLATE ONE OR MORE NODES FROM THE CM

WARNING: BSYing this link may cause loss of service Please confirm ("YES", "Y", "NO", or "N"):

2.3.3 CARD BSY action

Prior to this feature in SP13, following warning is already displayed when a BSY command is issued at card level.

WARNING: This action will cause NETWORK BLOCKAGE. Please confirm ("YES", "Y", "NO", or "N"):

This feature adds safeguard against possible isolation of SPM in case of card BSY action. In this feature checks are made to ensure that BSYing a card does not isolate SPM. If existing checks pass then functionality implemented in this feature is invoked. If there is indication that isolation can happen, following warning is issued to craftsperson, indicating that BSY-ing that particular card will cause a node to be isolated from CM.

WARNING: OPERATION WILL ISOLATE ONE OR MORE NODES FROM THE CM

WARNING: BSYing this link may cause loss of service Please confirm ("YES", "Y", "NO", or "N"):

2.3.4 Link BSY action

Currently following warning is already displayed if a link is BSYed.

WARNING: OPERATION WILL ISOLATE ONE OR MORE NODES FROM THE CM

WARNING: BSYing this link may cause loss of service Please confirm ("YES", "Y", "NO", or "N"):

Link level SPM isolation checks using IDF are already available. This feature keeps the same checks.

2.4 Hardware requirements

None, this feature addresses both single shelf and dual shelf configuration.

2.5 Limitations and restrictions

1.This feature checks for SPM isolation, only when a BSY command is issued manually for a plane, shelf, card or a link on ENET level of MAP.

2.The BSY <plane no> all command issued at MATRIX and SYSTEM level with dual-shelf ENET and without SPM messaging channel crossover configuration is not able to detect the SPM isolation.

2.6 Interactions

This feature does not affect existing automated ENET upgrades of PANTHER tool. However this feature adds one test case to verify the SPM isolation check incorporated in PANTHER tool.

2.7 Logs (LG)

No new logs are added or modified in this feature, however existing logs for example, ENET 700, ENET (command warning ignored) will be generated if craftspersons ignores any warning and enters YES to proceed with the action

2.7.1 New/modified logs

Not applicable

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.8 Data schema (DS)

Not applicable

2.8.1 New/modified tables

Not applicable

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

2.9 Office parameters (OP)

Not applicable

2.9.1 New/modified office parameters

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

Not applicable

2.10 Service orders (SO)

Not applicable

2.11 Alarms (AL)

Not applicable

2.11.1 New/modified directories

Not applicable

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.12 Command interface (CI)

No new command or warning is added in this feature, however a warning as described in section 2.3 is issued if there is a possibility that BSY action on plane, shelf, card or link level can isolate an SPM.

2.12.1 New/modified commands

Not applicable

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

Not applicable

2.13 Operational measurements (OM)

Not applicable

2.13.1 New/modified OM groups

Not applicable

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.14 AMA/Billing information (AM)

Not applicable

2.14.1 New/changed AMA/billing information

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.15 Software optionality control (SOC)

Not applicable

Table 8 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.16 Glossary

Term	Description
BSY	BuSY (short for busy)
CEM	Common Equipment Module
ENET	Enhanced NETwork
IDF	Isolation Detection Feature
ILM	Integrated Link maintenance
INM	Integrated Node Maintenance
IMC	Inter-Machine Communications
MS	Message Switch
OOS	Out Of Service
REX	Routine EXercise
SPM	Spectral peripheral Module
SWACT	SWitch of ACTivity

2.17 References

1)Spectrum Feature Specification Document (SP13FSD), SP13 platform contents, issue 1.0, section 6.1.1.

2) Feature 59008910: Spectrum messaging channel Crossover, Found in PLS FMDOC under A59008910

3) Feature 59011371: ENET REX Objection for SPM, Found in PLS FMDOC under A59011371

2: Functional description (FN)

2.1 Feature name

Channelized Access for SPM OC-3 TDM

2.2 Description

This activity provides The Channelized Access CCS7 capability on SPM when using OC-3 TDM on P-Side of SPM and NIU on LPP shelf.

2.2.1 Background

This section provides some background information on NIU-based Channelized Access (CA) on the DMS switch. For more information see “AL1929 - C7Link Support for Channelized Access (PLS OLDOC3)”.

2.2.1.1 CCS7 Channelized Access path

Channelized Access allows the CCS7 transmission link to terminate on a selected XPM interworking with NIU on the LPP. The main benefits of the C7 CA path via NIU interworking are as follows:

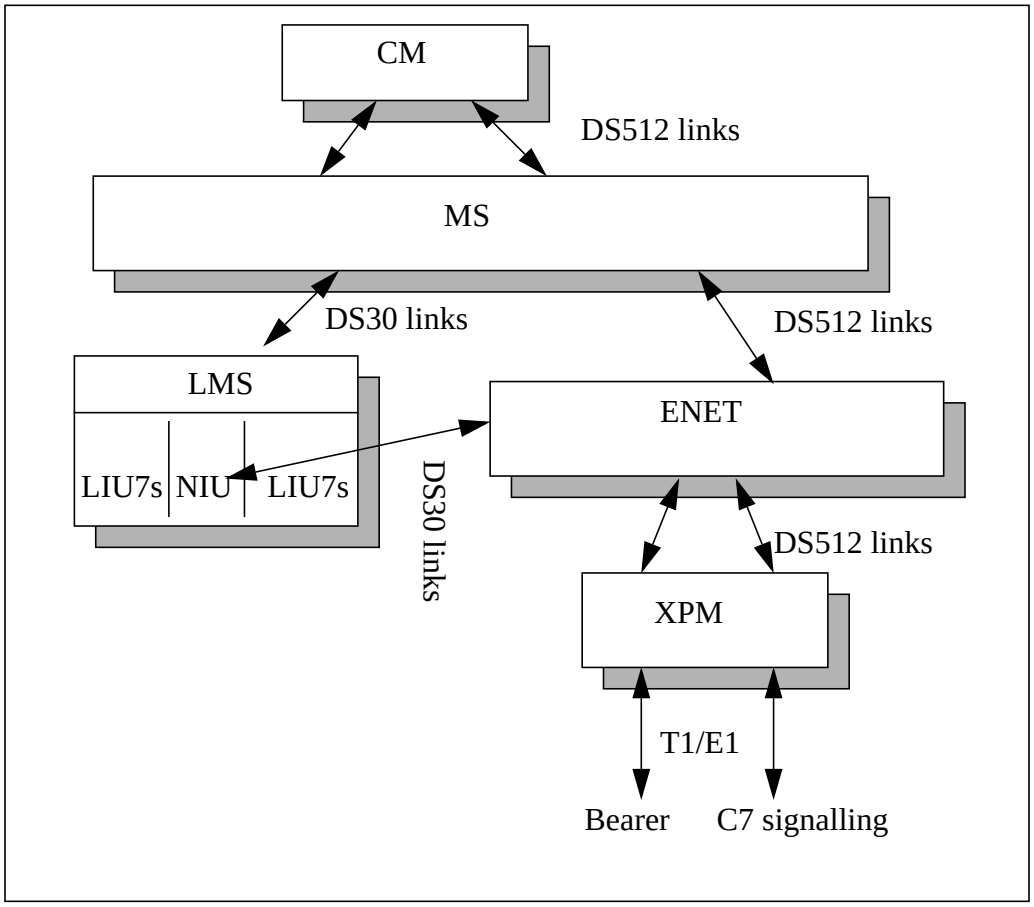
— NIU is fully-integrated into the DMS maintenance architecture.

— Connections between a channelized NIU and a DS0 are provisionable via datafill.

— No separate DS0 clock is required (for MUX or channel bank when signalling link is hosted off of the LIU7).

Please refer to “Figure 1 CCS7 Channelized Access via NIU” on page 46.

Figure 1 CCS7 Channelized Access via NIU



The advantages of using CA include increased flexibility in the use of the LIU7s. Any LIU7 on a shelf equipped with an NIU can terminate a particular transmission link. This allows the flexibility of changing the LIU7 assigned to a transmission link without having to make a physical hardware change, i.e. through table control (mainly table C7LINK).

2.2.2 Scope

This feature builds on the CA for SPM STM-1 functionality to provide the CA CCS7 capability on SPM when using OC-3 TDM on P-side of SPM and NIU on LPP shelf. This feature ensures that CA functionality can also coexist with PTS trunk types on the same SPM. The OC-3 TDM interface is capable of 2016 64 kbps DS0s or 84 T1s.

Channelized Access path consists of the following components:

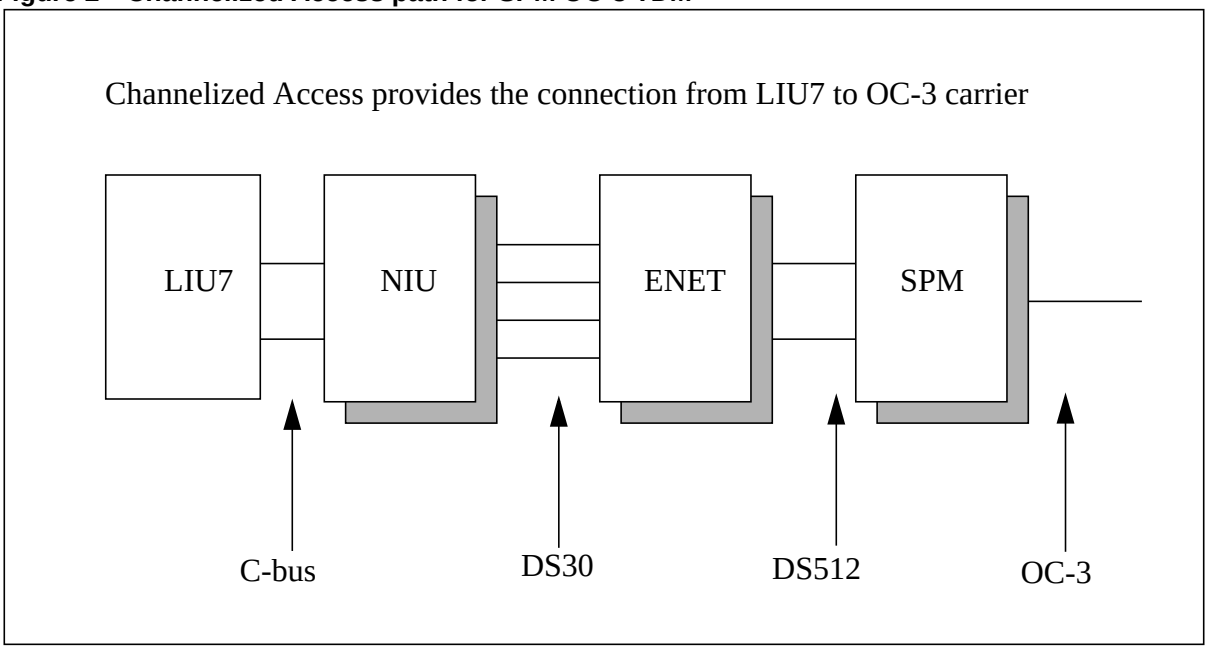
— transmission link from the peripheral through the network to the NIU

— dynamically allocated NIU channel on the C-bus to the LIU7

The connection path between the OC-3 and SPM-ENET interface is 56 or 64 kbps (depending on datafill in table LIUINV) ABI. From the LIU7 through the NIU to the ENET the connection path is 56 or 64 kbps clear data. These connection path rates are supported today by SPM (no feature work is required by this activity to support any conversions).

Please refer to "Figure 2 Channelized Access path for SPM OC-3 TDM" on page 47.

Figure 2 Channelized Access path for SPM OC-3 TDM



This feature provides the following functionality for NIU-based Channelized Access:

- provisioning of the transmission link on OC-3 TDM.
- connection support for the path between the transmission link on OC-3 TDM and the LIU7.

Note: This Channelized Access functionality provided on OC-3 will have no impact on the existing PTS trunks and no impact to current DTC Channelized Access functionality.

2.2.2.1 Provisioning

This feature provides the capability to datafill a 64 kbit/s DS0 channel from an OC-3 carrier for NIU-based, CCS7, Channelized access signalling.

The existing table control for CA listed in Table 1, "Tables required for Channelized access," on page 48 will be used.

Table 1 Tables required for Channelized access

Table name	Datafill purpose
CLLI	Define the name for the TRKGRP
MNHSCARR	Define the C7 carrier
TRKGRP	Define the C7 trunk group
TRKSGRP	Define the TRKGRP as digital
TRKMEM	Define the location of the trunk
LIUINV	Define the Channelized LIU7s
C7LKSET	Define the Channelized linksets
C7LINK	Associate a link on a specified LIU7 with a transmission link from table TRKMEM

Note 1: For SPM, table MNHSCARR is used to datafill carriers, in the case of the XPM, carriers are datafilled in table CARRMTC.

Note 2: The selected LIU7 in table LIUINV needs to datafill paddleboard bit inversion with “ABI” for the card specific information.

2.2.2.2 Connection support

The connection support for CA involves the capability to establish the path between the channelized LIU7 and the individual carrier and channel.

2.3 Hardware requirements

This feature requires the following hardware:

- SPM with an OC-3 interface
- A LIU7 provisioned with the C-bus Interface paddleboard (at least NTEX26AA) and datafilled for 56 or 64kbps ABI.
- A NIU (equipped as part of the LIM)

2.4 Limitations and restrictions

The following restrictions and limitations apply to this feature:

- This feature provides support for NIU-based CA only.
- C7BERT test utility is not supported by this feature.

- This feature provides support for CA trunks co-existing with PTS trunks on SPM. This feature should not impact any current XPM functionality.
- The connection path between the LIU7 and the OC-3 supports 64 kbit/s ABI data.
- This feature support DMS-250 and DMS-500 markets.
- Table MNHSCARR field DS1ZCS must be datafilled as “OFF” so that ZCS is off for the DS1 hosting our channelized access signalling links. If it is not turned off, it will corrupt the CCS7 signalling information transmitted on the link.

2.5 Interactions

This feature requires the following features:

- SPM STM-1 Channelized Access (activities 59006639 for SPD12, 59011970 for SPD13).

2.6 Logs (LG)

2.6.1 New/modified logs

This feature does not introduce/modify any logs.

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

2.7.1 New/modified tables

This feature does not introduce/modify any tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

N/A

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

N/A

2.10 Alarms (AL)

2.10.1 New/modified directories

N/A

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

2.11.1 New/modified commands

N/A

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

No OM groups are introduced/modified by this feature.

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

This feature does not impact billing.

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

This feature does not use SOC.

Table 2 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.15 Glossary

Term	Description
ABI	All Bit Inversion
AMA	Automatic Message Accounting
CA	Channelized Access
CCS7	Common Channel Signalling Number 7
CM	Computing Module
DMS	Digital Multiplexing Switch
DS0	Digital Signalling level 0
ENET	Enhanced Network

LIM	Link Interface Module
LIU7	Link Interface Unit for CCS7
LMS	Local Message Switch
MS	Message Switch
NIU	Network Interface Unit
OC	Optical Carrier
OM	Operational Measurements
XPM	Extended Peripheral Module
RTS	Return To Service
SOC	Software Optionality Control
SPM	Spectrum Peripheral Module
TL	Transmission Link
ZCS	Zero Code Suppression

2.16 References

1. FSD - Spectrum Feature Specification Document for SP13 Platform Content. Issue 1.0
2. AL1929 - C7Link Support for Channelized Access (PLS OLDOC3)
3. AT59006639 - Channelized Access for SPM STM-1 SPD12 (PLS FMDOC)
4. AT59011970 - Channelized Access for SPM STM-1 SPD13 (PLS FMDOC)

2: Functional description (FN)

2.1 PX TRUNK SUPPORT ON SPM

2.2 Description

This feature allows DAL and PX FX trunks to function on the same SPM for DMS500 switches. Since DALs and PX FX trunks use the same terminal type yet different exec lineups prior to NCS13, the DMS500 could not be datafilled to provision DAL and PX FX trunks on the same SPM.

The focus for this feature is to create a new terminal type and exec lineup. The new terminal type (ABSPX) for PX FX trunks is created to allow this terminal type to be provisioned on the same SPM along with DAL trunks. The new exec lineup(PXSPMX) is created for PX FX trunks thus providing equivalent exec functionality as the currently used PX FX exec lineup (PXDTCX) on SPMs.

This feature pertains to PXFX trunks only.

PXFX Trunks are supported for the following terminating agents:

- IBN
- RES
- BRI
- UCDGRP
- PXFX (GS & LS)
- ISUP trunks
- PRI Trunks

Note: Currently PXFX trunks use AB250 with PXDTCX for XPM’s and SPM’s. Therefore no PXFX functionality is changed by this feature. This feature creates an equivalent exec lineup for the PXFX trunks. Thus the result for this feature is that DALS and PXFX trunks may now co-exist and function on the same SPM for DMS500 switches.

2.3 Hardware requirements

None (no new hardware dependencies).

2.4 Limitations and restrictions

PX trunks using FX signaling is supported by this feature.

2.5 Interactions

No changes/impact to existing PX(FX) trunk interactions and DMS500 supported features are introduced by this feature.

2.6 Logs (LG)

N/A.

2.7 Data schema (DS)

2.7.1 New/modified tables

Please refer to DS section for more information.

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
MNNODE	CHANGED	UNCHANGED

2.8 Office parameters (OP)

N/A.

2.9 Service orders (SO)

N/A

2.10 Alarms (AL)

N/A.

2.11 Command interface (CI)

N/A

2.12 Operational measurements (OM)

N/A.

2.13 AMA/Billing information (AM)

N/A

2.14 Software optionality control (SOC)

N/A

2.15 Glossary

Term	Description
DAL	Direct Access Line
FX	Foreign Exchange
PX	Private Exchange
SPM	Spectrum Peripheral Module

2.16 References

AF6653 - SPM PTS Trunk Maintenance and Provisioning

AF7613 - NA100 PTS Primitives and Execs

AX0151 - UCS RTS and supervision support for SPM

2: Functional description (FN)

2.1 Feature name

RM PATCHING - IDM SUPPORT

2.2 Description

Spectrum Peripheral Module (SPM) Patching is a large, multi-phased, multi-component project that fully implements a Digital Multiplex System (DMS) style patching solution for SPM peripherals. Functional phases for this project are as follows:

- Phase I (CSP12/SP12) - Common Equipment Module (CEM) Patching.
- Phase IIa (CSP12) - Resource Module (RM) Patching, CM side.
- Phase IIb (SP13) - RM patching, SPM side.
- Phase IIc (CSP13) - RM patching, IDM integration.

Proposed future phases of the SPM Patching project include Imaging After Patching, Patching After Loading (PAL), Standalone SPM Patching, Pre-Patched SPM Loads (PPSLs), and Broadcast or Parallel Patching.

This feature is responsible for phase IIc of the overall SPM patching project: the interworking with the IDM maintenance system. The role of this feature is to define RM patching as a maintenance request understood by the IDM maintenance system, and to coordinate RM patching requests with other RM maintenance activities controlled through IDM.

RM patching requests will be submitted via the PRSM CI, using the same PRSM commands that are used for all other destination types. The PRSM system will interact with the IDM system to coordinate the patching request with any other maintenance actions on the same RM (e.g. ManBsy, LoadMod or RTS requests). Once IDM schedules the request and patching has started, a progress message (e.g. “/Patching”) will be sent to the MAP window to indicate that patching is in progress on the posted device.

Users will be able to abort the in-progress patching request through the MAP, using the ABTK command like they would to abort other maintenance actions. However, some patching operations (e.g. APPLY and REMOVE) may prohibit aborting during certain critical phases of their execution. During these critical parts of these patching activities, ABTK commands will be rejected by IDM.

2.3 Hardware requirements

No new customer hardware dependencies are introduced by this feature.

2.4 Limitations and restrictions

This phase of the RM patching project only supports the patching of one RM at a time. If multiple RMs on the same SPM are to receive the same patch, it must be done as separate operations (internally they must be serialized, externally they can still be grouped by the PRSM user interface).

2.5 Interactions

This feature builds upon existing SPM patching infrastructure which was provided in the following features:

- 59005655 - PRSM SPM PATCH FILE SUPPORT & SERVICES
- 59005661 - PRSM SPM RULES & RETURN CODES
- 59005673 - PRSM SPM DATABASE SUPPORT
- 59005684 - SPM DESTINATION INTERFACE & ABORT MANAGEMENT
- 59005697 - SPM PATCHING MESSAGING SYSTEM
- 59005709 - SPM PATCHING STATE MACHINE

This feature is being developed in parallel with the following related features:

- 59013647 - SPM RM PATCH MESSAGE HANDLER SUPPORT
- 59014583 - RM PATCHING - MESSAGE HANDLER ENHANCEMENTS
- 59014578 - RM PATCHING - CEM/RM REQUEST ROUTER

2.6 Logs (LG)

No logs are created or modified by this feature.

2.7 Data schema (DS)

No tables are created or modified by this feature.

2.8 Office parameters (OP)

No office parameters are created or modified by this feature.

2.9 Service orders (SO)

No service orders are created or modified by this feature.

2.10 Alarms (AL)

No alarms are created or modified by this feature.

2.10.1 New/modified directories

No directories are created or modifies by this feature.

2.11 Command interface (CI)

No CI commands are created or modified by this feature.

2.12 Operational measurements (OM)

No OM groups are created or modified by this feature.

2.13 AMA/Billing information (AM)

No billing formats are created or modified by this feature.

2.14 Glossary

Term	Description
CEM	Common Equipment Module
CI	Command Increment
CM	Computing Module, generic reference to DMS front-end
CSP	Communications System Platform
DMS	Digital Multiplex System
IDM	Integrated Device Maintenance
MAP	Maintenance, Administration & Provisioning
NTP	Northern Telecom Practice
PRSM	Port Release Software Manager
RM	Resource Module
SPM	Spectrum Peripheral Module

2.15 References

REF #	Description of Reference
[1]	PRSM customer documentation is available in: NTP 297-8991-540, "*DMS-100 Family Post-Release Software Manager (PRSM) Reference Guide*", BASE10, Standard 06.01, February 1998.
[2]	An overview of IDM is available in PLS DOC in: AD8913FN.AA: "*IDM/INM SPM Mtc for DMS-Core (Phase I)*".

a59014614 FN section content last updated in a59014614.aa04

2: Functional description (FN)

2.1 Feature name

SS7 TRANSPORT OVER ATM NETWORKS

2.2 Description

Two parameters must be configurable in order to setup a unique path for each High Speed Link across the ATM network.

This feature enables the functionality of the Virtual Path Identifier and Virtual Channel Identifier in table C7LINK. These parameters provide the ability to provision high speed links over an ATM network.

SS7 Transport over ATM networks in CSP 13 allows SS7 network elements to route SS7 traffic over ATM networks, using the High Speed Link peripheral. In the CSP 12 release the C7LINK table was changed to include two new fields for High Speed Links, Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI). The default values are VPI=0 and VCI=5. In CSP 13 the restriction on the values allowed to be Datafilled will be removed.

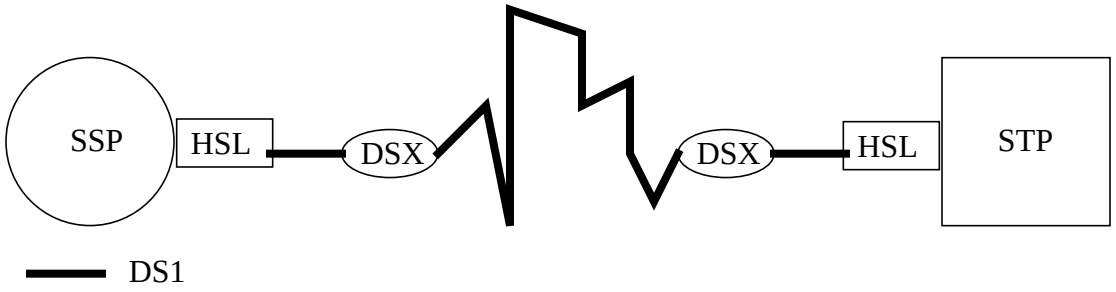
This new ability for the High Speed Link will be beneficial in the fact that an existing ATM network can be utilized to carry the SS7 signalling, instead of commissioning new DS1 connections between switches.

2.2.1 Traditional SS7 Link Connection

Traditionally, for each new High Speed link, a DS1 carrier had to be installed for each new peripheral end to end, the DS1 would have to be tested for quality using Bit Error Rate Testing, and the routes of each link would have to be analyzed for diversity.

Figure 1 Traditional HSl connection

Traditional Connection, requiring installation of long spans of DS1 between each DSX



2.2.2 ATM Permanent Virtual Circuit (PVC)

This feature will allow High Speed Links to be provisioned via a Permanent Virtual Circuit through an ATM network.

On the DMS side, the only additional work required to provision a High Speed Link for an ATM network is the selection and datafill of a unique VPI/VCI combination. This is done by changing two entries in the C7LINK table. The High Speed Link would then use a short span of DS1 to connect to the ATM DSX Panel.

Table C7LINK datafill example:

LINKNAME LINKDATA CLASDATA Q707 LINKOPT

The following is an example of a low speed link datafill:

LN201002000 0 LIUBASIC LIU7 22 MTP2 0 0 $

The following is a high speed link datafill before csp12(tel12):

HSLNEW 0 LIUBASIC HSLR 1 SAAL 0 0 DEFAULT 0 $

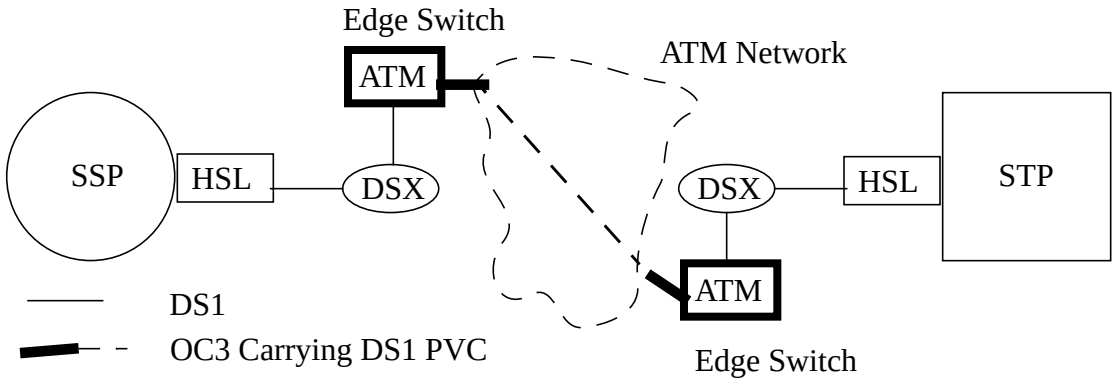
The following is a high speed link datafill for csp12(tel12) and csp13(tel13):

HSLNEW 0 LIUBASIC HSLR 1 SAAL 0 0 DEFAULT ***0 5*** 0 $
Where 0 is the VPI and 5 the VCI.

On the ATM side, a DS1 Permanent Virtual Circuit would have to be provisioned from the edge switch to the far end, using the VPI/VCI combination. Once the PVC has been provisioned, the link can be brought into service.

Figure 2

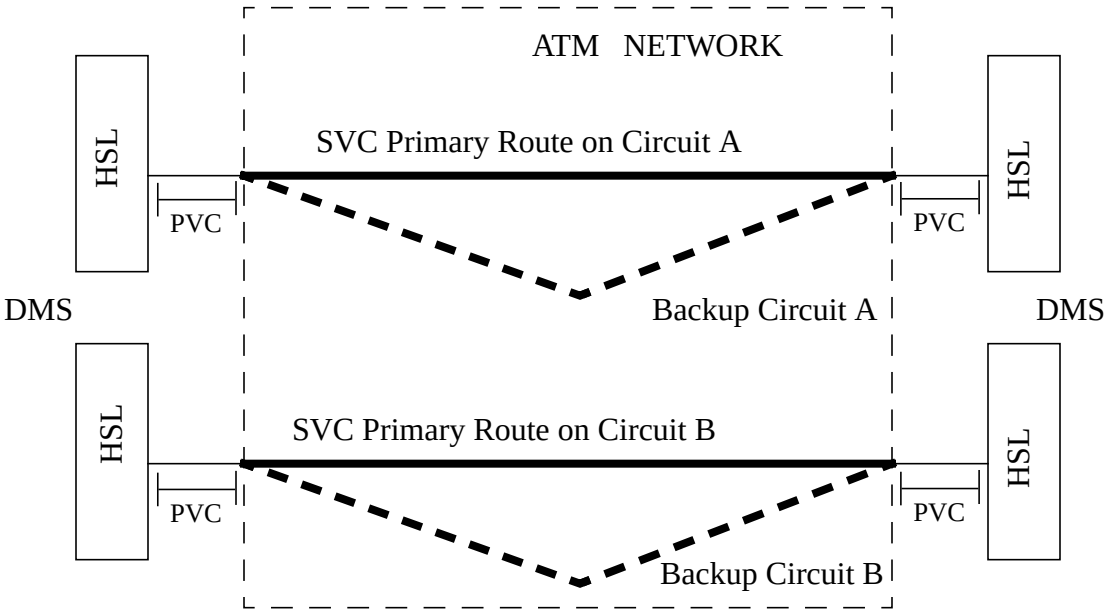
ATM Connection, requiring only short spans of DS1 to each DSX panel



2.2.3 ATM Soft Permanent Virtual Circuit(SPVC)

This feature also allows High Speed Links to be provisioned via a Soft PVC (SPVC). A Soft PVC consists of a PVC connection from the DMS to the edge ATM Switch, and Switched Virtual Circuit (SVC) across the ATM network. This configuration allows for dynamic rerouting when a connection fault occurs across the ATM network. The SPVC concept is captured in figure 3 below.

Figure 3 SPVC Concept



Self Healing Link concept

1. Primary Route A and B are running SS7 traffic
2. Primary Route A loses connectivity and all traffic changes over to Primary Route B
3. Circuit A switches to the Backup Circuit A, establishing connectivity
4. High Speed Links on Circuit A return to service
5. SS7 traffic changes back to Circuit A

2.3 Hardware requirements

There is no new hardware required to connect High Speed Links to an ATM network.

2.4 Limitations and restrictions

In CSP13, VPI will have a range of 0 to 255, VCI will have a range of 0 to 65535, as per GR-2878-CORE, section 4.2.3.2.1. (Generic Requirements for CCS Nodes Supporting ATM High-Speed Signalling Links, Issue 3, November 1998).

In this feature no actual ATM layer processing occurs.

2.5 Interactions

Not Applicable.

2.6 DDOC Section Summaries

2.7 Logs (LG)

2.7.1 New/modified logs

No new logs.

2.7.2 New/modified tables

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
C7LINK		Changed

The fields VPI and VCI, which will uniquely identify each High Speed Link in the ATM network will now be able to have a different value than the default.

VPI will have a range of 0 to 255, VCI will have a range of 0 to 65535, as per GT-2878-CORE, section 4.2.3.2.1. (Generic Requirements for CCS Nodes Supporting ATM High-Speed Signalling Links, Issue 3, November 1998)

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

Not Applicable

2.9 Service orders (SO)

Not Applicable

2.10 Alarms (AL)

2.10.1 New/modified directories

Not Applicable

2.11 Command interface (CI)

2.11.1 New/modified commands

Not Applicable

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

Not Applicable

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

Not Applicable

2.14 Software optionality control (SOC)

Tracked under tel13 similar to HSL. It has the same order code.

2.15 Glossary

Term	Description
HSL	High Speed Link
PVC	Permanent Virtual CIrcuit
SPVC	Soft Permanent Virtual Circuit
SVC	Switched Virtual Circuit
VCI	Virtual Channel Identifier
VPI	Virtual Path Identifier

2.16 References

GR-2878-CORE Issue 3, November 1998. Generic Requirements for CCS Nodes Supporting ATM High Speed Links.

AR1997FN. Nortel High Speed Link documentation.

AU3460FN. Nortel SSP documentation.

2: Functional description (FN)

2.1 Feature name

A59014625 - Spectrum Large System Enhancements - Support for 56 SPMs

2.2 Description

The Spectrum Large System Enhancements feature is being developed to improve the performance and robustness of a Large System Office containing eighteen or more Spectrum Peripherals.

This feature increases the robustness and performance of such offices as follows:

- Office recovery time is decreased by recovering only one unit of each Spectrum at a time. The second unit will be recover once all SPMs have at least one unit active.
- Maintenance system resources will be verified and controlled to make sure that optimum usage is maintained.
- Single Initiate Maintenance commands have been enhanced to allow for operations to be queued if system resources are not available. Currently a script is used to change the state of all the SPMs in a large office. This enhancement will allow for script to be ran once, and the scheduler will allow execution of the operations as system resources become available.

2.3 Hardware requirements

Not applicable.

2.4 Limitations and restrictions

The limitations and restrictions of this feature are as follows:

- Only Common Equipment Module (CEM) state changes are impacted (RTS, ManB, OffL). Resource Modules (RMs) state changes commands are NOT modified by this feature.

- Single Maintenance Operations queued using this feature cannot be individually removed from the queue. A new command will be provided to remove all the queued operations if required.

2.5 Interactions

This feature interacts with the existing Spectrum CEM level CI commands by adding a new optional parameter to a few selected commands at that level.

This feature does not interact with any call processing features.

2.6 Logs (LG)

Not applicable.

2.7 Data schema (DS)

Not applicable.

2.8 Office parameters (OP)

Not applicable.

2.9 Service orders (SO)

Not applicable.

2.10 Alarms (AL)

Not applicable.

2.11 Command interface (CI)

This feature enhances the Single Maintenance Operation commands to allow CEM state changes to be queued whenever the system resources are not available to perform such an operation.

Table 1 below lists three state change commands that have been impacted by the addition of an optional parameter to their syntax. The fourth command, a new command, has been introduced to the CEM level.

2.11.1 New/modified commands

Table 1 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN
RTS	CHANGED		CEM level	Menu
Bsy	CHANGED		CEM level	Menu
OffL	CHANGED		CEM level	Menu
Purge	NEW		CEM level	Hidden

2.12 Operational measurements (OM)

Not applicable.

2.13 AMA/Billing information (AM)

Not applicable.

2.14 Software optionality control (SOC)

Not applicable.

2.15 Glossary

Term	Description
CI	Command Interpreter
CEM	Common Equipment Module
MAP	Maintenance Administration Position
RTS	Return to Service (CEM level command)
Offl	Offline node (CEM level command)
Bsy	Manually Busy node (CEM level command)
Tst	Test node (CEM level command)

2.16 References

AL1115 - MAP For CM-Based Resource Processors

2: Functional description (FN)

2.1 Feature name

IOM DAT (DIGITAL AUDIO TAPE) TAPE DRIVE (BYTE REVERSAL)

2.2 Description

The IOM DAT (digital audio tape) for all IOM FIRMWARE loads defaults to recording data in the LITTLE ENDIAN format. This feature allows the customer to choose between BIG ENDIAN and LITTLE ENDIAN format for IOM DAT tape drives, assuming that the IOM firmware is post release IOMRAW01. If the firmware is not post release IOMRAW01, then the ENDIAN cannot be set to BIG, and will default to LITTLE for IOM DAT tape drives.

Note that there is another type of tape drive on the IOC and IOM called the ‘nine track tape drive’ or the ‘pertec tape drive’. These two names refer to the same type of tape drive. These are the big open reel tape drives, typically made by Hewlett Packard or Cook. The format for these will always be BIG and can not be changed. This feature is for new functionality on IOM DAT drives only.

To set the format, table MTD now has a new field, called ENDIAN. If this is an IOM DAT, then this field can be set to BIG or LITTLE. If this tape drive is not an IOM DAT (the only other tape drive it could be is a nine track tape drive) then it can only be set to BIG. Nine track tape drives can only be BIG ENDIAN. If the user attempts to change this field to LITTLE for a nine track tape drive, the following error message will be displayed ‘ONLY BIG ENDIAN IS AVAILABLE FOR NINE TRACK TAPE DRIVES.’.

Once the MTD table is datafilled, the IOM DAT tape drive’s format is not set at this point. It is necessary to RTS, TST or MOUNT the tape drive before the format is set. To determine if the format is set, the operator can use the new CHKTAPE command to determine what the format of the tape drive is. Once the format is set, it does not have to be set again. The format is maintained over all restarts and ONP’s. The new command, CHKTAPE, is at the card level for

IOC's (example-mapci;mtc;iod;ioc x;card y) and at the port level for IOM's (example-mapci;mtc;iod;ioc x;port y). Thus, it can be said that the new CHKTAPE command is at the MTD (magnetic tape drive device) level.

The CHKTAPE command will give the format for whichever MTD level of menu the user is at. For nine track tape drives, the format will always be BIG. For IOM DAT tape drives, the format can be BIG or LITTLE.

Note that if the IOM FIRMWARE load is IOMRAW01 or PRE IOMRAW01, then the IOM DAT will default to LITTLE ENDIAN and cannot be changed. If the user attempts to set it to BIG, then the use of the CHKTAPE command will verify that the system was not able to set it to BIG. Also, various logs and error messages will be output to the user warning that the ENDIAN is not BIG.

If the user attempts to set the ENDIAN to BIG, by datafilling the MTD table with ENDIAN of BIG and then doing a TST, RTS or MOUNT on this DAT DRIVE, and the firmware load is IOMRAW01 or PRE IOMRAW01, then a log will be produced stating that the ENDIAN could not be set. An example of this log is:'COMG_LAB IOD206 JUN17 15:53:21 9200 INFO MTD: 7; ENDIAN FAIL'. Also the operation will fail. An additional message will be output to the user, which is
'This operation failed most likely because a more
updated IOM firmware load is required. In order to set
the ENDIAN to BIG the IOM FIRMWARE load must be post
IOMRAW01. The ENDIAN setting is datafilled in table
MTD.'

If the user attempts to mount an IOM DAT TAPE drive and the mount fails, and the firmware version is IOMRAW01 or PRE IOMRAW01 and the endian in table MTD is set to LITTLE, or the firmware version is POST IOMRAW01 and the endian setting in table MTD is BIG or LITTLE, then the following error message will be displayed, in addition to the failure error message:
'The mount failed, possibly because an attempt was made
to read a tape which was created with a different ENDIAN
setting. The ENDIAN setting is datafilled in table MTD.'

Hardware requirements

This feature will be applied to all sites, however the new functionality will only work on IOM's equipped with DAT tape drives, and the IOM must have firmware release POST IOMRAW01. If the site does not have an IOM with a DAT tape drive, or the IOM firmware release is not post IOMRAW01, then the new functionality will not be implemented, however the presence of the feature will not cause any adverse affects.

2.3 Limitations and restrictions

This new functionality of this feature is only possible on IOM's with DAT tape drives equipped with a firmware load of post IOMRAW01. The new functionality is not available on nine track tape drives on IOC's or IOM's.

2.4 Interactions

There is no interaction between this feature and existing features.

2.5 Logs (LG)

2.5.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)
IOD	206	MOD	SOS

2.6 Data schema (DS)

2.6.1 New/modified tables

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
MTD	CHANGED	NEW FIELD-ENDIAN-RANGE IS BIG, LITTLE

2.7 Office parameters (OP)

2.7.1 New/modified office parameters

No change.

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.8 Service orders (SO)

No change.

2.9 Alarms (AL)

No change.

2.9.1 New/modified directories

No change.

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.10 Command interface (CI)

2.10.1 New/modified commands

e

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN
CHKTAPE	NEW		MAPCI/MTC/ IOD/IOC #/CARD #or MAPCI/MTC/ IOD/IOC #/PORT #	MENU

2.11 Operational measurements (OM)

2.11.1 New/modified OM groups

No change.

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.12 AMA/Billing information (AM)

2.12.1 New/changed AMA/billing information

No change.

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.13 Software optionality control (SOC)

No change.

Table 8 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.14 Glossary

No new terms.

Term	Description

2.15 References

No references.

2: Functional description (FN)

2.1 Feature name

TCAPTRID removal feature.

2.2 Description

In CSP 13, this feature removes all references to table TCAPTRID.

2.2.1 Background

Transaction IDs enable a node to communicate with an application located on another node via the TCAP part of the SS7 message. They are located in a central pool, allowing each application access. This feature was created to eliminate the central pool, managed by table TCAPTRID, and migrate each application to IDPOOLs as a method of obtaining transaction IDs.

IDPOOLs allow each application to allocate their own resources, reducing the chance of contention for transaction IDs between applications.

Table TCAPTRID will still exist. However, during the ONP, the value for transaction and component identifiers in the table is set to zero, and the IDPLUSER bool is set to true. The applications then get their Transaction IDs from IDPOOLs.

Table control changes are no longer allowed on table TCAPTRID as of CSP 13. Tuples from this table can no longer be added or changed. However, they still can be deleted. It is recommended that all tuples from table TCAPTRID be deleted after an ONP to CSP 13 has occurred. There will be no impact, and the deletion of these tuples may avoid confusion in the future. It will also help in the eventual removal of the table.

2.2.2 Functional Overview

This feature obsoletes the use of table TCAPTRID as a method of obtaining transaction IDs on DMS switches for all markets.

All applications relying on transaction IDs will convert to the use of IDPOOLs in CSP 13.

Appropriate error messages are displayed to the operator on the following condition:

1. The operator tries to add or modify a tuple in table TCAPTRID.

2.3 Hardware requirements

N/A

2.4 Limitations and restrictions

N/A

2.5 Interactions

N/A

2.6 Logs (LG)

N/A

2.7 Data schema (DS)

2.7.1 New/modified tables

Table Name	NEW, CHANGED, OR DELETED	TABLE CONTROL (NEW/ OLD/UNCHANGED)
TCAPTRID	CHANGED	NEW

The following error text is shown when trying to add or change any datafill in table TCAPTRID:

Applications no longer engineer TCAP transaction and component Ids in table TCAPTRID. They are dynamically allocated by Identifier Pool software.

Note: There is a parameter called max_no_of_trans_id that was used to identify the maximum value of Transaction IDs. This value is no longer used, however it will not be removed. This will have no impact on any functionality.

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

N/A

2.9 Service orders (SO)

N/A

2.10 Alarms (AL)

2.10.1 New/modified directories

N/A

2.11 Command interface (CI)

2.11.1 New/modified commands

N/A

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

N/A

2.13 AMA/Billing information (AM)

2.13.1 New/changed AMA/billing information

N/A

2.14 Software optionality control (SOC)

N/A

2.15 Glossary

Term	Description
TCAPTRID	Transaction CApabilities Part TRansaction IDentification number
CSP	Communication Service Platform
IDPOOL	IDentification POOL - A resource for the management of transaction identification numbers.
SS7	Signalling System Number 7
ONP	One Night Process

DMS	Digital Multiplexing Switch
TABXFR	Table transfer

2.16 References

IDPOOL Feature - au2379 in fmdoc

IDPOOL User guide - IDPLUG in fmdoc99

TCAPTRID Conversion guide - TRIDCONV in fmdoc99

2: Functional description (FN)

2.1 Feature name

Distributed Data Manager (DDM)/Transactors Robustness.

2.2 Description

This is a robustness feature and from a customer perspective, this feature would not change any structure or operation of the existing software. This feature will improve the interaction the DDM and the Integrated Link Maintenance (ILM) on the local side during a dynamic updating.

2.3 Hardware requirements

No new hardware dependencies are introduced.

2.4 Limitations and restrictions

None.

2.5 Interactions

Not applicable.

DDOC section summaries

2.6 Logs (LG)

Not applicable.

2.6.1 New/modified logs

Table 1 New or modified logs

Log name	Log number	NEW/MOD/ DELETED	System (SOS/UNIX)

2.7 Data schema (DS)

2.7.1 New/modified tables

Not applicable.

Table 2 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

Not applicable.

Table 3 New or modified commands

Parm table	Parameter name	NEW/CHANGED/ DELETED/RELOCATED

2.9 Service orders (SO)

Not applicable.

2.10 Alarms (AL)

Not applicable.

2.10.1 New/modified directories

Table 4 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

Not applicable

2.11.1 New/modified commands

Table 5 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN

2.12 Operational measurements (OM)

Not applicable.

2.12.1 New/modified OM groups

Table 6 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.13 AMA/Billing information (AM)

Not applicable.

2.13.1 New/changed AMA/billing information

Table 7 New or modified AMA/billing information

Billing format	NEW/CHANGED	Application	Standards

2.14 Software optionality control (SOC)

Not applicable.

Table 8 SOC

SOC option name:	
SOC option title:	
SOC option control type:	<state/usage/combined>
New SOC option?	<Yes/No>
SOC option order code	<order code>
Option defined in DRU:	<DRU>
Affected products:	<PCL(s)>

2.15 Glossary

Term	Description
DDM	Distributed Data Manager
ILM	Integrated Link Maintenance

2.16 References

2: Functional description (FN)

2.1 Feature name

Centrex IP Capacity Enhancement

2.2 Description

This feature expands the number of Centrex IP LENs that can be provisioned against each Gateway in the XPM13 DRU. Prior to this feature, each Gateway can support up to 128 LENs according to the definition of a Centrex IP LEN:

<Name> <Frame 0..511> <Unit 0..9> <Line Subgroup 0..3> <Circuit 0..31>

e.g. **`GWIP 10 1 0 9`**, where GWIP 10 1 describes the Gateway node. This gives each node a capacity of 4 x 32, or 128 LENs.

Since there is at most one Centrex IP Client per LEN, each Gateway node only supports 128 Clients. On an LTCi, which is the only XPM peripheral type that supports Centrex IP, there is a further restriction of 658 ISDN LENs per LTCi, giving each XPM the capacity of at most 658 Clients.

This feature expands the number of Centrex IP LENs that can be provisioned on each Gateway to **512 LENs** by expanding the definition of *line subgroup* and *circuit*:

<Name> <Frame 0..511> <Unit 0..9> **<Line Subgroup *0..15*> <Circuit *0..31*>**

This gives Centrex IP a capacity of **4096** Clients per XPM with 8 active Gateways, which satisfies the minimum requirement of **8:1** client to voice channel concentration ratio defined as follows:

$$8 \frac{\text{Clients}}{\text{PCM voice channel}} \times 60 \frac{\text{PCM voice channel}}{\text{Gateway}} \times 8 \frac{\text{Gateway}}{\text{XPM}} = 3840 \frac{\text{Clients}}{\text{XPM}}$$

2.3 Hardware requirements

The only hardware dependency arising out of this feature is the requirement of LTCi being equipped with the new SX05 processor type due to the memory requirements of the expanded capacity. This does not require special attention since in XPM13, the MX77 processor is no longer supported.

2.4 Limitations and restrictions

Although Centrex IP LENs are provisioned as standard ISDN BRI LENs, the capacity expansion implemented by this feature only impacts Centrex IP provisioning. It does not change any existing engineering guideline or capacity limitations of standard ISDN BRI and Meridian Digital Centrex products.

Furthermore, this activity does not address any call-based capacity issues such as maximum number of simultaneous calls or call attempts per second. It only affects capacity from a provisioning point of view.

Finally, this activity only expands the Centrex IP capacity from the XPM and Gateway's perspective. It does not address any capacity limitation of other components such as the Gatekeeper.

2.5 Interactions

This feature does not introduce any new interaction nor does it impact any existing interaction between functionalities.

2.6 Logs (LG)

No impact.

2.7 Data schema (DS)

No impact.

2.8 Office parameters (OP)

Although there's no modification to how office parm **MAX_BRA_LINES** in table OFCOPT works, it is necessary to increase the value of this paramter accordingly to accomodate the number of provisionable ISDN and CentrexIP BRI lines.

The office parameter MAX_BRA_LINES defaults to 10, and it is in units of 100, which gives an initial limit of 1000 lines. For Centrex IP, each ISDN BRI line supports one Client; therefore, the initial value of MAX_BRA_LINES allows provisioning of up to1000 Centrex IP Clients. Change this number accordingly to accomodate each office's configuration. It is recommended that for each XPM equipped for Centrex IP, increase the MAX_BRA_LINES value by 50 (or 5000 lines).

2.9 Service orders (SO)

No impact.

2.10 Alarms (AL)

No impact.

2.11 Command interface (CI)

No impact.

2.12 Operational measurements (OM)

No impact.

2.13 AMA/Billing information (AM)

No impact.

2.14 Software optionality control (SOC)

No impact.

2.15 Glossary

Term	Description
IP	Internet Protocol
LEN	Line Equipment Number
ISDN	Integrated Service Digital Network
BRI	Basic Rate Interface
XPM	eXtended Peripheral Module
LTCi	Line Trunk Controller - ISDN
PCM	Pulse Code Modulation

2.16 References

1: Functional description (FN)

Note:
The content of this FN document is mostly the same as Document AF7334FN (NA009) and AF7778FN (NA011). The previous features addressed the ADO and DEO redundancy problem. For more information, please refer to the AF7334 and AF7778 HLD/DD in the PLS DOC library.

1.1 Feature name

Redundant Feature Enhancement.

1.2 Description

1.2.1 Feature Synopsis

The NA014 redundant feature is an continuation to the work done in NA009 (AF7334), NA010 & NA011 (AF7778). This feature discusses the CHF redundancy problem. This feature further extends the list of options/features supported in NA009, NA010 and NA011 to support the Call Forward flavours for ADO, DEO, CHF redundancy problem. This feature covers the Service Order (Servord) flow-through requirement of allowing ADO, DEO & CHF redundancy.

Presently the service order is rejected by the DMS 100 when

- An attempt is made to reassign a feature(s)/option(s)***** that is already assigned on a line by using the ADO command.
- While trying to remove a non-existing feature(s)/option(s)***** by using the DEO command.
- An attempt is made to change parameters of a feature(s)/option(s) that is non-existing on a line by using the CHF command.

****** except for the options (given below in this section) that are supported for redundant feature in the previous releases (NA009, NA010 and NA011).*

This feature will change the behavior of ADO, DEO & CHF commands so that service order will not get rejected for above conditions.

Disclaimer: *Except for boolean options, journal update would be performed for all the options/ features while performing a change operation by redundant ADO command.*

The list of Call forward flavours supported for ADO, DEO & CHF commands in this feature are:

CFB, CFBL, CFD, CFDA, CFDVT, CFE, CFF, CFGD, CFGDA, CFI, CFIND, CFK, CFMDN, CFO, CFRA, CFS, CFTANN, CFTB, CFTD, CFTOD, CFU, CFW, CFWN, CFX, CFXDNCT, CFXVAL, CUSD, SCF, IECFB, IECFD, CBU, CDU, CBI, CBE, CDI, CDE.

The list of the options supported for ADO & DEO commands in the NA009, NA010 & NA011 releases is given below:

ACB, AIOD, AR, CDT, CNDB, CTD, COT, DSCWID, FCTDNTRA, FRO, FRS, LPIC, PIC, INTPIC, SC1, SC2, SC3, CCW, CWT, DENYU3WC, 3WC, XFER, MWT, SCRJ, DRCW, ACRJ, DGT, CND, CNAMD, LVM, ADSI, DCF, CUSD, DISCTO, FGA, GLTC, LCDR, PPL, PRK, VMEADENY, WUCR.

Note: *These options are supported for CHF in this feature release.*

This feature will reduce the service order fallout significantly & will save the administration work-time.

1.2.2 Functional Overview

This feature suggests the solution for the above mentioned problem as follows:

- The ServOrd ADO command will allow options/features to be changed using ADO command when the option or feature is already assigned to a line. This is referred to as the “ADO Redundancy problem” later in this document.
- The DEO command will be accepted while trying to remove a non-existing feature/option on the DN by prompting a warning message This is referred to as the “DEO Redundancy problem” later in this document.
- The CHF command will be accepted while trying to change the feature/ option when it is non existing on a line. This is referred to as the “CHF Redundancy problem” later in this document.
- For Boolean options supported by Redundant Feature, ADO / CHF will not do any journal update and the commands will not be rejected.

However, not all customers want this feature/behavior so capability is provided to enable/disable this feature using office parameters SO_ALLOW_REDUNDANT_FEATURE (for ADO & DEO) and *SO_ALLOW_REDUNDANT_FEATURE_CHF* (for CHF) in table OFCVAR. Section 2.8 explains the functions and use of these office parameters.

1.2.3 Functional Description

The following sections provide the details for each functional description of each requirement.

The requirements are divided into three sections:

1. ADO redundancy problem

2. DEO redundancy problem

3. CHF redundancy problem

1.2.3.1 ADO redundancy problem

The ServOrd ADO command will fail when the options/features to be added is already assigned on the line.

When redundancy is set the behaviour of ADO command will change. The intent of the changes is not to reject an ADO command

In addition to accepting the ADO command the system will print an explanatory warning message.

This feature is being implemented for POTS, IBN & KSET lines. For examples on Redundant Feature., please refer to section 13.3.1 of the SO document.

1.2.3.2 DEO redundancy problem

The ServOrd DEO command will fail when the options/features to be deleted is not assigned on the line.

When redundancy is set the behaviour of DEO command will change. The intent of the changes is not to reject an DEO command

In addition to accepting the DEO command the system will print an explanatory warning message.

This feature is being implemented for POTS, IBN & KSET lines. For examples on Redundant Feature., please refer to section 13.3.2 of the SO document.

1.2.3.3 CHF redundancy problem

When an attempt is made to change a feature/option when it is not existing on the line by using CHF command fails.

When redundancy is set the behaviour of CHF will change. The intent of the changes is not to reject the CHF command. In addition to accepting the CHF command the system will print an explanatory warning message.

This feature is being implemented for POTS, IBN & KSET lines. For examples on Redundant Feature., please refer to section 13.3.3 of the SO document.

This feature will reduce the service order fallout significantly and will save the administrative work time.

1.2.4 Message Protocols

Not Applicable

1.3 Hardware requirements

1.3.1 Engineering hardware information

Not Applicable

1.4 Limitations and restrictions

None

1.5 Interactions

All changes will be made in Command Check and Update procedures. Additional code will be added to supported Option Check and Update procs.Therefore there are no potential problems at this point.

1.6 Logs (LG)

1.6.1 New/modified logs

None.

1.7 Data schema (DS)

1.7.1 New/modified tables

None

1.8 Office parameters (OP)

To activate or deactivate redundancy, two office parameters SO_ALLOW_REDUNDANT_FEATURE (for ADO/DEO command) and SO_ALLOW_REDUNDANT_FEATURE_CHF (for CHF command) are available in table OFCVAR. These parameters are used to enable/disable ADO/DEO/CHF redundancy entirely.

For more details refer OP document.

1.9 Service orders (SO)

The SERVORD commands affected are ADO, DEO & CHF.

For more details refer to SO document.

1.10 Alarms (AL)

None.

1.11 Command interface (CI)

None.

1.12 Operational measurements (OM)

None.

1.13 AMA/Billing information (AM)

None.

1.14 Software optionality control (SOC)

None.

1.15 Glossary

1.15.1 Definitions & abbreviations

SR #	Acronym	Name
1	CFB	CALL FORWARD BUSY
2	CFBL	CALL FORWARDING BUSY LINE
3	CFD	CALL FORWARD DON’T ANSWER
4	CFDA	CALL FORWARDING DONT’ ANSWER
5	CFDVT	CALL FORWARD DON’T ANSWER VARIABLE TIMER
6	CFE	CALL FORWARD EXEMPT
7	CFF	IBN CALL FORWARDING FIXED
8	CFGD	CALL FORWARDING DON’T GROUP ANSWER FOR MDC HUNT
9	CFGDA	CALL FORWARDING DON’T GROUP ANSWER FOR POTS HUNTGRPS.
10	CFI	CALL FORWARD INTRAGROUP
11	CFIND	CALL FORWARD INDICATION
12	CFK	CALL FORWARD UNIV. PER KEY
13	CFMDN	CALL FORWARD FOR SECONDARY MADN MEMBER.
14	CFO	CALL FORWARDING To Operator
15	CFRA	CALL FORWARDING REMOTE ACCESS
16	CFS	IBN CALL FORWARDING SIMULTANEOUS/ SCREENING
17	CFTANN	CALL FORWARDING ANNOUNCEMENT
18	CFTB	CALL FORWARD TIMED FOR CFB
19	CFTD	CALL FORWARD TIMED FOR CFD
20	CFTOD	CALL FORWARD TIME OF DAY

SR #	Acronym	Name
21	CFU	CALL FORWARD UNIVERSAL
22	CFW	CALL FORWARDING
23	CFWANN	Call Forwarding With Announcement
24	CFX	IBN CALL FORWARDING
25	CFXDNCT	NI-2 ISDN CALL FORWARDING
26	CFXVAL	NI-2 Call Forward Validation
27	CUSD	CALL FORWARDING USAGE SENSITIVE DENIAL
28	SCF	SELECTIVE CALL FORWARDING
29	IECFB / CBEI	ECFB externally % MDC INTERNAL EXTER-NAL CFB
30	IECFD / CDEI	IECFD externally % MDC INTERNAL EXTER-NAL CFD
31	CBU	IBN CALL FORWARDING BUSY UNRE-STRICTED
32	CDU	IBN CALL FORWARDING DON’T ANSWER UNRESTRICTED
33	CBI	CFB EXCLUDE INTRAGROUP
34	CBE	CALL FORWARD BUSY INTRAGROUP
35	CDI	CFD EXCLUDE INTRAGROUP
36	ADO	ADD OPTION
37	CHF	CHANGE FEATURE
38	DEO	DELETE OPTION
39	MARCH	Bellcore operations support system for provisioning
41	MMI	Machine- Machine Interface
42	TELCO	Telephone Company
43	HMI	Human-Machine Interface

1.16 References

1. AF7334 - Redundant Feature in NA009 release.

2. AF7778 - Redundant Feature in NA011 release.

2: Functional description (FN)

2.1 Feature name

800 Plus Southbound CLID Delivery Enhancements (NA013)

2.2 Description

800 Plus Southbound calls in the Canadian market are 800 calls which go beyond the customer's network boundaries. This designation includes but is not restricted to calls that go south of the United States Border. The present functionality in the Canadian Market (800P) for Southbound calls converts the Calling Party Number (CgPN) to a Charge Number (CHG) parameter as per current specifications. Additionally, current behaviour dictates that the CgPN is passed to the outgoing southbound trunk only if the Calling Party address is 10 digits and the Calling Party address type is unique_national_significant_number.

This work item implements functionality so that the Calling Line Identification (CLID) is extended for all Southbound calls, regardless of the Calling Party address type. This work item also addresses the situation where calls that are forwarded to a toll free number and subsequently do not send the CLID if the call goes Southbound.

The implementation of this functionality will result in the CgPN being delivered identically in the customer's network, and any other carrier's network.

Specifically, this work item provides:

1. Delivery of CLID to all carriers on toll free (TF) calls, when a CgPN is available at the 800P SSP, for calls from both unique and non-unique signalling number originations.

2. Delivery of CLID to all carriers on TF calls, when a CgPN is available at the 800P SSP, for calls which are forwarded to a TF number.

The exact call scenarios that this work item addresses, and how they are addressed, are detailed below.

A. If a PBX connects to an end office (EO) using DOD lines of PBX LCC (Line Class Code), then a non-unique signalling number CgPN is sent via ISUP signalling between the EO and the AT, which sends the call with only a 10-digit CHG (Charge Number).

The work item will change this situation. A 10-digit CgPN, as well as the 10-digit CHG will be sent southbound.

B. When a Toll-free call is made from a Millenium payphone, the EO sends a non-unique signalling number 10-digit CLID to the AT. When the Toll-Free call is sent from the AT to the southbound trunk, a 10-digit CHG is sent (no CLID).

The work item will change this situation. A 10-digit CgPN, as well as a 10-digit CHG will be sent southbound.

C. A line is call forwarded to a TF number. When there is an incoming call to that line, the call is call-forwarded to the Toll-free number. The original calling party CLID and redirection information is sent to the AT. When the AT sends the call southbound, the 10-digit CHG of the redirected number is sent (no CLID).

The work item will change this situation. Additional information that will be sent along will be a 10-digit CgPN, equal to that of the originator's DN. Also sent will be a 10-digit CHG, equal to that of the RDN (last re-directed number).

2.3 Hardware requirements

None

2.4 Limitations and restrictions

This functionality is being bridged into the following releases: NA010, NA011, NA012. It will be available in NA013.

2.5 Interactions

None

2.6 Logs (LG)

Not Affected

2.7 Data schema (DS)

Not Applicable

2.8 Office parameters (OP)

Not Affected

2.9 Service orders (SO)

Not Affected

2.10 Alarms (AL)

Not Affected

2.11 Command interface (CI)

Not Affected

2.12 Operational measurements (OM)

Not Affected

2.13 AMA/Billing information (AM)

Not Affected

2.14 Software optionality control (SOC)

Not Affected

2.15 Glossary

Term	Description
800P	800 Plus
AT	Access Tandem
CHG	Charge Number
CgPN	Calling Party Number

CLID	Calling Line Identification
DN	Directory Number
DOD	Direct Outward Dialing
EO	End Office
ISUP	ISDN User Part
LCC	Line Class Code
PBX	Private Branch Exchange
RDN	Redirecting Number
SSP	Service Switching Point
TF	Toll Free

2.16 References

None.

2: Functional description (FN)

2.1 Feature name.

SR.10253300 for CI command QDNSU

2.2 Description

QDNSU will report all the Software Unassigned DNs in a given range or all of them in the office. Although QDNSU was designed specifically for DNs up to 10 digits, for those markets where SOC NPE00003 is enabled QDNSU will accept DNs over 10 digits.

The algorithm used to search for DNs limits the DNs that are reported. When searching for DNs the algorithm finds a datafilled DN and the next datafilled DN after that. The DNs between those two DNs are reported on. If the two DNs have different STNCODE lengths, the length of the DNs reported is equal to the DN with the larger length.

For example,

Given:

819 622 1000 T OFRT 59

819 622 9 T OFRT 59

The DNs reported would be

8196221001 BLDN

8196221002 BLDN

8196221003 BLDN

.

.

.

8196228999 BLDN

2.3 Hardware requirements

Not applicable

2.4 Limitations and restrictions

None.

2.5 Interactions

There are no interactions between this activity and other existing features.

2.6 Logs (LG)

Not applicable.

2.7 Data schema (DS)

Not applicable.

2.8 Office parameters (OP)

None.

2.9 Service orders (SO)

Not applicable.

2.10 Alarms (AL)

None.

2.11 Command interface (CI)

2.11.1 New/modified commands

Table 1 New or modified commands

Command name	NEW, CHANGED OR DELETED	New name (if renamed)	Directory/MAP level name	MENU/NON-MENU /HIDDEN
QDNSU	CHANGED		PROGDIR	NON-MENU

2.12 Operational measurements (OM)

Not applicable

2.13 AMA/Billing information (AM)

Not applicable

2.14 Software optionality control (SOC)

None.

2.15 Glossary.

Term	Description
Software Unassigned	DNs that have NOT been datafilled.

2.16 References

None.

2: Functional description (FN)

2.1 Feature name

Black Box Fraud Prevention on Spectrum Peripheral Module

2.2 Description

Black Box Fraud Prevention was developed to eliminate fraud based on manipulation of the answer signal from the recipient's side during call interaction. This type of fraud costs telephone companies millions of dollars a year in lost revenue via theft of services. This feature is brought into service on the SPM platform.

2.2.1 Feature HLD

Black Box Fraud Prevention for the SPM is activated by the craftsperson filling of DLYFWDXMT in TRKOPTS, resulting in the activation of BBFP for the entire trunk group. This table is to be datafilled after tables CLLI, TRKGRP and TRKSGRP.

A tuple is added to TRKOPTS consisting of the CLLI NAME of the trunk to enable and the TIME-OUT value. This time out value contains the time in minutes that the switch will allow a one-way call without answer supervision to stay in service. This duration can be one to five minutes in one minute intervals. If no value is given for the time-out value then the customer will have the option of disabling the timer portion of the feature.

```
table TRKOPTS
>add <CLLI NAME> DLYFWDXMT DLYFWDXMT <TIME-OUT VALUE> <RETURN>
WARNING: This option will block the forward speech path until a
message is returned from the far-end trunk. If no answer messag
received, the forward speech path is never established.
TUPLE TO BE CHANGED:
<CLLI NAME> DLYFWDXMT DLYFWDXMT
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>Y <RETURN>
TUPLE CHANGED
JOURNAL FILE INACTIVE
```

Upon activation a waning message is displayed to warn craftspersons about the impact of the DLYFWDXMT option to the selected trunk group (CLLI Name) during call processing.

At this point if a call is placed via a supported trunk to a PBX. The state of the call at this point is one-way, with speech only being supported for the initiating party. If answer supervision is received within the time specified by DLYFWDXMT in TRKOPTS then the call will be torn down. Following this event a log is updated on this event.

If answer supervision is received within the time specified by DLYFWDXMT then speech is allowed along the incoming trunk. Billing can now be initiated for the incoming call.

The feature is disabled from the CI level using the following sequence:

```
>Table TRKOPTS<RETURN>
>POS <CLLI NAME> DLYFWDXMT <RETURN>
><CLLI NAME> DLYFWDXMT DLYFWDXMT
>DEL <RETURN>
>Y <RETURN>
```

2.2.2 Feature Decomposition

This feature is scheduled for release in NA013. The following actids are associated with this feature:

— AJ4532 (BASE/TL08)

— AJ4771 (SHR08)

— AJ4772 (CNA08)

— AJ4841 (CCM08)

— ~~AJ4599 (XPM09)~~

The following actids are associated with its enhancements:

— ~~AJ4949 (CCM09)~~

— AJ4950 (SHR09)

— AJ4951 (CNA09)

The functionality is divided into the following areas:

- Table Control

  The following trunks will be affected by this feature:

— PX (Digital PBX Trunk)

— IBNT2 (Two-way IBN Trunk)

— IBNTO (Outgoing IBN Trunk)

— T2 (Two-way Local Trunk)

— TO (Outgoing Local Trunk)

— PRI

These trunks are provisioned and modified using the following tables.

— A new option DELAYFWDXMT to be created in Table TRKOPTS which is a new table developed by actid AQ1572 in CSP08. This feature is to be activated on a per trunk group basis by adding DELAYFWDXMT option to those trunk groups that require this feature. Before this new option datafill is accepted, a warning message which specifies the functions and impacts of this option will be displayed to make sure the datafill will not be created accidently.

- Call Processing

  — The call processing software is enhanced to decide if two-way speech or one-way speech path should be established. One-way speech path will be made provided the following conditions are met:

    – If the new option DLYFWDXMT is datafilled in table TRKOPTS for that trunk group.

    – And the terminating trunk is one of the trunk types (PX,IBNT2, IBNTO, T2, TO).

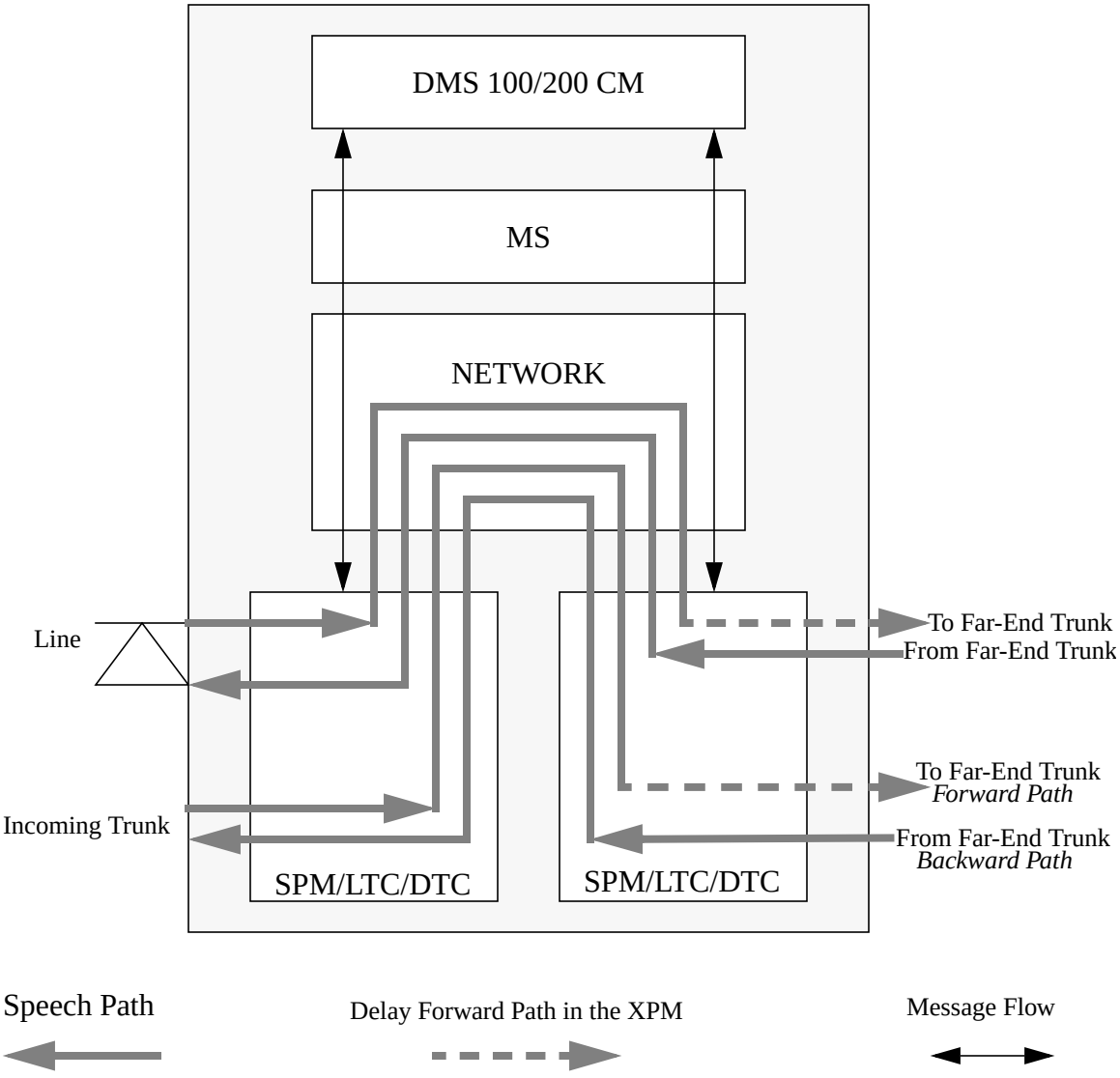
  — In all affected supervisor modules, a new template DELAY_FWDXMT_TMPLT will be sent to the XPM to delay the forward voce path until answer message is received from the far-end trunk providing the DELAYFWDXMT option is added to table TRKOPTS for the trunk group.

  — A timer is implemented that will tear down a call if answer supervision has not been received within a specified time. The customer will be able to datafill a time-out value on a trunk group basis. The time-out value ranges from one to five in one minute increments. The customer will also have the option of disabling the timer portion of the feature by entering a datafill value of zero.

  — Peg a newly created TRK OM and generate a new TRK 610 log indicating that the black box fraud timer expired before receiving answer supervision. If the time-out value datafilled was 0 no TRK log will be generated and the TRK OM will not be pegged since no timer will be started.

- Software Optionality Control (SOC)

This is an optional feature which is activated and deactivated by a tracked SOC. This is done by adding DELAYFWDXMT in table TRKOPTS to track feature status. Password is not required to activate this feature.



2.3 Hardware requirements

The inclusion of the black box fraud prevention feature for the Spectrum Peripheral Module requires no additional hardware.

2.4 Limitations and restrictions

- There is no way to differentiate an incoming operator originated trunk call with a normal incoming trunk call. As a result, the forward paths of all incoming trunk calls will be blocked until answer supervision is returned from the far-end trunk.
- This feature does not comply with section 6.1.1 of the FSD#BBF3287 or section 3.1.1.4 of FSD 45-15-0000 which states that operator originated calls shall be exempt from this feature, regardless of the option setting for the outgoing trunk group. But this section does not apply to calls connected to a PBX. This means that this design limitation does not violate the Bellcore requirements.
- If the DLYFWDXMT option is active on a trunk group, all members of that trunk group must terminate to either a SPM or a DTC/LTC with XPM (Plus option only)
- Only line-to-trunk and trunk-to-trunk connections are supported.
- CAMA trunks will not be supported by this feature.
- Analog trunks are not supported.
- P2 trunks are analog and will not be supported by this feature. A workaround is to use digital trunk from DMS to channel bank to do the analog-to-digital conversion.
- This feature is limited to trunk group types IBNT2, IBNT0, T2, TO, PX, PRA and PRI on SPM and DTC/LTC peripherals with XPM Plus option only. RCC and RCC2 peripherals are not supported.
- This feature is limited to an end office to PBX environment.
- ISUP calls are not impacted by this feature.

2.5 Interactions

- BBFP enhancements limit operator assisted calls by the prevention of call completion unless the answer supervision signal is received.

2.6 Logs (LG)

2.6.1 New/modified logs

SPMBBFP does not require creating or modifying any of the current logs.

2.7 Data schema (DS)

2.7.1 New/modified tables

Table TRKOPTS now accepts the SPM as a valid peripheral when the DLYFWDXMT is being filled for a trunk.

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
TRKOPTS		CHANGED

2.8 Office parameters (OP)

2.8.1 New/modified office parameters

No modifications are to be made to the office parameters list due to the extension of BBFP to the SPM platform.

2.9 Service orders (SO)

No changes are to be made with respect to service orders due to the extension of BBFP to the SPM platform.

2.10 Alarms (AL)

SPM BBFP requires no alarm changes.

2.10.1 New/modified directories

SPM BBFP requires no directory changes.

Table 2 New or modified directories

Directory name	NEW, CHANGED OR DELETED	New name (if renamed)	Target	RES/ NONRES

2.11 Command interface (CI)

SPM BBFP requires no changes to the command interface.

2.12 Operational measurements (OM)

2.12.1 New/modified OM groups

No changes to OM groups due to the implementation of blkbxfrd on the SPM platform.

Table 3 New or modified OM groups

Group name (acronym)	Group name (expanded)	NEW, CHANGED or DELETED	Reason

2.13 AMA/Billing information (AM)

SPM BBFP requires no changes to AMA or Billing information.

2.14 Software optionality control (SOC)

Table 4 SOC

SOC option name:	
SOC option title:	
SOC option control type:	
New SOC option?	No
SOC option order code	
Option defined in DRU:	CNA
Affected products:	

2.15 Glossary

Term	Description
BBFP	Black Box Fraud Prevention
CLLI	Common Language Location Identifier
CPE	Customer Premised Equipment
DMS	Digital Multiplex Switch
FSD	Feature Specification Document

LTC	Line Trunk Controller
OM	Operational Measurements
PBX	Private Branch Exchange
PRI	Primary Rate Interface
SOC	Software Opthionality Control
New term	definition

2.16 References

1. Bellcore FSD 45-15-0000 LSSGR Administration
2. Bellcore TR-TSY-000743 LSSGR: Prevention and Inhibition of CPE Misuse
3. FCC Docket 89-114
4. Black Box Fraud Prevention FSD Draft FSD ID#: BBF3287
5. HLD AJ4532HL, Black Box Fraud Prevention (PLS FMDOC)
6. AQ1572 Table TRKOPTS DDOC (PLS DOC)
7. HLD AJ4951HL, Black Box Fraud Prevention Enhancements (PLS FMDOC)

*** LOGS LIST OF FEATURES ***

a59006371_lg.aa08
a59006586_lg.ab44
a59010572_lg.aa12
a59010576_lg.aa12
a59011294_lg.aa28
a59011676_lg.aa12
a59011902_lg.aa05
a59011907_lg.aa82
a59011948_lg.aa14
a59011953_lg.aa09
a59012000_lg.aa07
a59012144_lg.aa11
a59012182_lg.aa20
a59012192_lg.aa12
a59012232_lg.aa09
a59012291_lg.aa03
a59012446_lg.aa10
a59012468_lg.aa08
a59012488_lg.aa14
a59012574_lg.aa14
a59012624_lg.aa08
a59012642_lg.aa06
a59012655_lg.aa07
a59012846_lg.aa08
a59012880_lg.aa07
a59013009_lg.aa11
a59013034_lg.aa11
a59013044_lg.aa21
a59013088_lg.aa10
a59013169_lg.aa14
a59013226_lg.aa49
a59013251_lg.aa08
a59013383_lg.aa11
a59013430_lg.aa23
a59013476_lg.aa04
a59013533_lg.aa04
a59013762_lg.aa12
a59013792_lg.aa03
a59013804_lg.aa13
a59013873_lg.aa09
a59013912_lg.aa13
a59013999_lg.aa12
a59014046_lg.aa07
a59014132_lg.aa15
a59014137_lg.aa11
a59014167_lg.ab01
a59014406_lg.aa10
a59014614_lg.aa05
a59014653_lg.aa05
a59014752_lg.aa08
a59015125_lg.aa10

b59017494_lg.aa05
s10252433_lg.aa03
s10253300_lg.aa01
spmbbfp_lg.aa01

10: Log changes (LG)

10.1 E911232: E911 Call Sent to Treatment

10.1.1 Explanation

This is an informational log that is generated in an E911 Tandem office when a 911 call fails to complete and is sent to treatment.

Contact the appropriate support personnel.

10.1.2 Format

Figure 1 Formats of log reports

```
RTPB    E911232 mmmdd hh:mm:ss ssdd INFO E911 CALL SENT TO TREATMENT
<originating agent>
    TREATMENT SET = <extended treatment>
    CALLED NO = <called number>
    ANI      = <automatic_number_identification>
    pANI     =  <wireless automatic_number_identification>
    CALLID   = <call identification>
```

Figure 2 Sample log report of line originator

```
RTPT13AR    E911232 NOV03 16:05:04 0502 INFO E911 CALL SENT TO TREATMENT
      HOST 00 0 01 18    DN 6136210180
      TREATMENT SET = VACT
      CALLED NO =                  9914413
      ANI           = 6136210180
      pANI          =
      CALLID        = 00B3 0014
```

Figure 3 Sample log report of wireless call with trunk originator

```
RTPT13AT    E911232 NOV18 14:32:04 6981 INFO E911 CALL SENT TO TREATMENT
      CKT       E911ICS7    0
      TREATMENT SET = VACT
      CALLED NO =                  9914413
      ANI           = 6136210180
      pANI          = 6139110747
      CALLID        = 001A 0008
```

10.1.3 Field descriptions

Table 54 Field Descriptions

Field	Value	Description
Originating Agent	LEN of line or CLLI of trunk	Agent originating the call
Treatment Set	Extended Treatment	Treatment applied to the call
Called Number	0 to 32 digits	PSAP telephone number
ANI	7 or 10 digits	Automatic Number Identification
pANI	7 or 10 digits	Wireless Pseudo ANI
Call ID	2 words of hex data	Number to uniquely identify the call

10.1.4 Action

Contact E911 Support Personnel

10.1.5 Associated OM registers

none

10.1.6 Additional information

none

10: Log changes (LG)

10.1 ISDN 404

10.1.1 Explanation

Name:

ISDN 404

Description:

ISDN 404 log is generated to provide the accessibility of the billing counters, which are maintained on a per routelist basis, to the Telephone Company (Telco). One log per routelist is generated once every 24 hours (at 00:14 hours).

Event type:

Successful CFIB

A call is considered to be **successfully** forwarded if one of the following condition is encountered:

- Remote DN answers
- Remote DN is busy
- Remote DN is alerted, but does not answer
- Remote switch does not have available resources

10.1.2 Format

Figure 1 ISDN 404 Log format

```
LOAD_NAME CM ISDN404 mmm dd hh:mm:ssdd INFO CFIB BILLING COUNTER REPORT
     CFIB Billing counters for <route> from mmm dd hh:mm to mmm dd hh:mm
     ---------------------------------------------------------------------------------------
     Billing Counter                                  Value
     ---------------------------------------------------------------------------------------
     RDN_Answers                                      xxxx
     RDN_Alerted                                      xxxx
     RDN_Busy                                         xxxx
     RDN_No_Avail                                     xxxx
```

Figure 2 A sample of ISDN 404 log

```
RTP713AU      ISDN404 NOV23 13:50:15 0700 INFO CFIB BILLING COUNTER REPORT
CFIB Billing counters for IBNRT2 1 FROM NOV-23 8:46 TO NOV-23 13:50
---------------------------------------------------------------------------------------
Billing Counter                                  Values
---------------------------------------------------------------------------------------
RDN_Answers                                       2
RDN_Alerted                                       0
RDN_Busy                                          0
RDN_No_Avail                                      3
```

10.1.3 Field descriptions

Table 757 Field descriptions

Field	Value	Description
route	RTE_TAB {IBNRTE, IBNRT2, IBNRT3, IBNRT4,OFRT, OFR2, OFR3, OFR4} route_index {0 TO 1023}	Route. Datafilled in table DNROUTE, for the DN which has CFIB subscribed.
RDN_Answeres	unsigned integer size : 0-65,536	Counts the number of forwarded calls which are answered by Remote DN.
RDN_Alerted	unsigned integer size : 0-65,536	Counts the number of forwarded calls which are not answered by Remote DN.
RDN_Busy	unsigned integer size : 0-65,536	Counts the number of forwarded calls which the remote DN was busy.
RDN_No_Avail	unsigned integer size : 0-65,536	Counts the number of forwarded calls on which the remote switch does not have available B-channel to terminate the call.

10.1.4 Action

For information only. No immediate action is required.

10.1.5 Associated OM registers

- **CFIBRDNA**: Remote DN answered
- **CFIBRDNN**: Remote DN alerted but did not answer
- **CFIBRDNB**: Remote DN busy
- **CFIBRNAR**: Remote switch does not have available resources

10.1.6 Additional information

Not Applicable

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 43 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

10.1 NMS100

10.1.1 Explanation

Log title: NMS100
Name: INVALID ADDRESS FROM NMS

Description:

Log report NMS100 is generated at a host when a message service generates an address that is not valid. The log is generated only if the optional NMS subsystem is present. Furthermore, it provides information only; no action is required.

10.1.2 Format

Figure 1 Formats of log report

```
NMS100 mmmdd hh:mm:ss ssdd INFO INVALID ADDRESS FROM NMS
INVALID ADDR = <DN>
```

Figure 2 Sample log report

```
 NMS100 JUN09 08:12:57 1234 INFO INVALID ADDRESS FROM NMS
INVALID ADDR = 9999999999
```

10.1.3 Field descriptions

Table 2 Field descriptions

Field	Value	Description
INFO INVALID ADDRESS FROM NMS	Constant	Indicates that the address is invalid.
INVALID ADDR	Symbol text	Identifies the subscriber directory number. Because of E.164 compliancy, this field is changed to support variable length DN format up to 10 digits.

10.1.4 Action

No immediate section.

10.1.5 Associated OM registers

This log corresponds to OM register NMSINVAD of OM group NMS.

10.1.6 Additional information

None.

10.2 NMS101

10.2.1 Explanation

Log title: NMS101
Name: VACANT NMS SUBSCRIBER DN

Description:

NMS101 is generated at the server node when a message wait indicator change request is received for a vacant subscriber directory number.The log is generated only if the optional NMS subsystem is present. Furthermore, it provide information only; no action is required.

10.2.2 Format

Figure 3 Formats of log report

```
NMS101 mmmdd hh:mm:ss ssdd INFO VACANT NMS SUBSCRIBER DN
INVALID ADDR = <DN>
```

Figure 4 Sample log report

```
 NMS100 JUN09 08:12:57 1235 INFO VACANT NMS SUBSCRIBER DN
INVALID ADDR = 8153692666
```

10.2.3 Field descriptions

Table 3 Field descriptions

Field	Value	Description
INFO VACANT NMS SUBSCRIBER DN	Constant	Indicates that a message wait indicator change request is received for a vacant subscriber directory number

Table 3 Field descriptions

Field	Value	Description
INVALID ADDR	Symbol text	Identifies the subscriber directory number. Because of E.164 compliancy, this field is changed to support variable length DN format up to 10 digits.

10.2.4 Action

No immediate section.

10.2.5 Associated OM registers

This log corresponds to OM register NMSVACT of OM group NMS.

10.2.6 Additional information

None.

10.3 NMS102

10.3.1 Explanation

Log title: NMS102
Name: NOTIFICATION UNAVAILABLE

Description:

NMS102 is generated at the server node when notification cannot be provided to the subscriber DN for some short term reason, for example; the line is temporarily out of service.

10.3.2 Format

Figure 5 Formats of log report

```
NMS102 mmmdd hh:mm:ss ssdd INFO NOTIFICATION UNAVAILABLE
  SUBSCRIBER DN = <DN>
```

Figure 6 Sample log report

```
NMS102 AUG05 12:12:12 1235 INFO NOTIFICATION UNAVAILABLE
SUBSCRIBER DN = 6135551111
```

10.3.3 Field descriptions

Table 4 Field descriptions

Field	Value	Description
INFO NOTIFICATION UNAVAILABLE	Constant	Indicates that a subscriber number is temporarily out of service.
SUBSCRIBER DN	Symbol text	Identifies the subscriber directory number. Because of E.164 compliancy, this field is changed to support variable length DN format up to 10 digits.

10.3.4 Action

This log is to be used to detect any problems which may result in a network message service sending incorrect DNs. Refer to table DNINV for correct datafill. The network messages service are:

- vacant subscriber DNs
- global title translation not functioning properly
- message service generating invalid DNs

10.3.5 Associated OM registers

None.

10.3.6 Additional information

None.

10.4 NMS103

10.4.1 Explanation

Log title: NMS103
Name: NOTIFICATION UNAVAILABLE TO DESTINATION DN

Description:

NMS103 is generated at the server node when a TCAP response is received with a component type of return error.

10.4.2 Format

Figure 7 Formats of log report

```
NMS103 mmmdd hh:mm:ss ssdd INFO NOTIFICATION UNAVAILABLE TO
DESTINATION DN
SUBSCRIBER DN = <DN>
```

Figure 8 Sample log report

```
 NMS103 AUG05 12:12:12 1235 INFO NOTIFICATION UNAVAILABLE TO
DESTINATION DN
SUBSCRIBER DN = 6135551111
```

10.4.3 Field descriptions

Table 5 Field descriptions

Field	Value	Description
INFO NOTIFICATION UNAVAILABLE TO DESTINATION DN	Constant	Indicates that a TCAP response is received with a component type of return error.
SUBSCRIBER DN	Symbol text	Identifies the subscriber directory number. Because of E.164 compliancy, this field is changed to support variable length DN format up to 10 digits.

10.4.4 Action

This log is to be used to detect any problems which may result in a network message service sending incorrect DNs. Refer to table DNINV for correct datafill. The network messages service are:

- vacant subscriber DNs
- global title translation not functioning properly
- message service generating invalid DNs

10.4.5 Associated OM registers

This log correspond to two NMS group OM registers, NMSVACT and NMSINVAD.

10.4.6 Additional information

None

10.5 NMS104

10.5.1 Explanation

Log title: NMS104
Name: TRID_UNRELEASE_REPORT

Description:

NMS104 is generated when TRID cannot be released by the IDPL functionality. TRIDs are dynamically created using IDPL functionality. After sending TCAP message , If TRID cannot be released then NMS104 log generates.

10.5.2 Format

Figure 9 Formats of log report

```
NMS104 mmmdd hh:mm:ss ssdd INFO TRID_UNRELEASE_REPORT
TRANSACTION ID can not be released.
```

Figure 10 Sample log report

```
 NMS103 AUG05 12:12:12 1235 INFO TRID_UNRELEASE_REPORT
TRANSACTION ID can not be released.
```

10.5.3 Field descriptions

Table 6 Field descriptions

Field	Value	Description
INFO TRID_UNRELEASE_REPORT TRANSACTION ID can not be released.	Constant	Indicates that TRID cannot be released after sending TCAP message

10.5.4 Action

No immeadiate action is required.

10.5.5 Associated OM registers

None

10.5.6 Additional information

None.

10.6 SMDI100

10.6.1 Explanation

Log title: SMDI100
Name: REQUESTEE STATION MISSING MWT OPTION

Description:

SMDI100 is generated when the DMS-100 switch encounters an error in the SMDI message waiting indicator (MWI). The error report text denotes the reason for the error.

10.6.2 Format

Figure 11 Formats of log report

```
SMDI100 mmmdd hh:mm:ss ssdd INFO SMDI_ERR_REPORT
REQUESTEE STATION MISSING MWT OPTION
DATALINK = linkname
REQUESTEE INFO = LEN len DN dn
SUBSCRIBER DN = nnnnnnnnnn
```

Figure 12 Sample log report

```
 SMDI100 NOV08 15: 26: 53 3122 INFO SMDI_ERR_REPORT
REQUESTEE STATION MISSING MWT OPTION
DATALINK = SMDILK0
REQUESTEE INFO = $ LEN HOST 2 0 0 13   DN 7227640
```

10.6.3 Field descriptions

Table 7 Field descriptions

Field	Value	Description
INFO SMDI_ERR_REPORT REQUESTEE STATION MISSING MWT OPTION	Constant	Indicates an error in the SMDI message waiting indicator (MWI).
DATALINK	Symbol text	This is the SMDI datalink for incoming and outgoing messages.
REQUESTEE INFO	Symbol text	This is the LEN and DN for local requestees. Because of E.164 compliancy, this field is changed to support variable length DN format up to 10 digits.

10.6.4 Action

No immediate section.

10.6.5 Associated OM registers

None.

10.6.6 Additional information

None.

10.7 SMDI101

10.7.1 Explanation

Log title: SMDI101
Name: DATALINK IS DOWN. FAILED TO SEND SMDI MESSAGE.

Description:

This report is generated for each datalink the first time a call is made to a voice messaging system (VMS) voice link and the SMDI cannot send the corresponding SMDI message.

10.7.2 Format

Figure 13 Formats of log report

```
SMDI101 mmmdd hh:mm:ss ssdd INFO SMDI_ERR_REPORT
DATALINK IS DOWN. FAILED TO SEND SMDI MESSAGE.
DATALINK = linkname
```

Figure 14 Sample log report

```
 SMDI101 NOV08 15:26:53 3122 INFO SMDI_ERR_REPORT
DATALINK IS DOWN. FAILED TO SEND SMDI MESSAGE.
DATALINK = VMSLINK1
```

10.7.3 Field descriptions

Table 8 Field descriptions

Field	Value	Description
INFO SMDI_ERR_REPORT DATALINK IS DOWN. FAILED TO SEND SMDI MESSAGE.	Constant	Indicates that the datalink is down.

Table 8 Field descriptions

Field	Value	Description
DATALINK	Symbol text	This is the SMDI datalink for incoming and outgoing messages.

10.7.4 Action

No immediate section.

10.7.5 Associated OM registers

None.

10.7.6 Additional information

This log is not changed because of this activity and is mentioned here for documentation purpose only.

10.8 SMDI102

10.8.1 Explanation

Log title: SMDI102
Name: DATALINK IS UP.

Description:

This report is generated for each datalink the first time an SMDI message could be successfully enqueued after an SMDI101 log was previously generated.

10.8.2 Format

Figure 15 Formats of log report

```
SMDI102 mmmdd hh:mm:ss ssdd INFO SMDI_ERR_REPORT
DATALINK IS UP. DATALINK = linkname
```

Figure 16 Sample log report

```
 SMDI102 NOV08 15:26:53 3122 INFO SMDI_ERR_REPORT
DATALINK IS UP. DATALINK = VMSLINK1
```

10.8.3 Field descriptions

Table 9 Field descriptions

Field	Value	Description
INFO SMDI_ERR_REPORT DATALINK IS UP.	Constant	Indicates that the datalink is up.
DATALINK	Symbol text	This is the SMDI datalink for incoming and outgoing messages.

10.8.4 Action

No immediate section.

10.8.5 Associated OM registers

None.

10.8.6 Additional information

This log is not changed because of this activity and is mentioned here for documentation purpose only.

10.9 SMDI103

10.9.1 Explanation

Log title: SMDI103
Name: SMDINMPC process died. Require manual intervention

Description:

This log is generated whenever the SMDINMPC process dies

10.9.2 Format

Figure 17 Formats of log report

```
** SMDI103 mmmdd hh:mm:ss ssdd INFO SMDI INCOMING PROCESS
SMDINMPC process died. Require manual intervention
```

Figure 18 Sample log report

```
 ** SMDI103 MAR26 20:59:44 7500 INFO SMDI INCOMING PROCESS
SMDINMPC process died. Require manual intervention
```

10.9.3 Field descriptions

Table 10 Field descriptions

Field	Value	Description
INFO SMDI INCOMING PROCESS SMDINMPC process died. Require manual intervention	Constant	Indicates that the SMDINMPC process has died.

10.9.4 Action

Manual intervention is required for this log.

10.9.5 Associated OM registers

None.

10.9.6 Additional information

AT.59010576 converted this log into a major log. Due to this Two asteriks appear as shown above in the log report.

An alarm(SMDIERROR) generates along with this log SMDI103.

10.10 SMDI104

10.10.1 Explanation

Log title: SMDI104
Name: Rotational Desk used. NO primary desk for DN.

Description:

This information-only report is generated to indicate that the switch failed to locate a primary desk for a host requestee line. Hence, a rotational message desk is used. No operating impact.

10.10.2 Format

Figure 19 Formats of log report

```
SMDI104 mmmdd hh:mm:ss ssdd INFO SMDI_ERR_REPORT
Rotational desk used.No primary desk for Dn.
DATALINK = linkname
REQUESTEE INFO = LEN len DN dn
SUBSCRIBER DN = nnnnnnnnnn
```

Figure 20 Sample log report

```
SMDI104 NOV08 15:26:53 3122 INFO SMDI_DESK_ERR_ REPORT
Rotational Desk used. NO primary desk for DN.
DATALINK = VMAIL1
REQUESTEE INFO = $ LEN HOST 2 0 0 13  DN 7224444
```

10.10.3 Field descriptions

Table 11 Field descriptions

Field	Value	Description
INFO SMDI_ERR_REPORT Rotational Desk used. NO primary desk for DN.	Constant	Indicates an error in the SMDI message waiting indicator (MWI).
DATALINK	Symbol text	This is the SMDI datalink for incoming and outgoing messages.
REQUESTEE INFO	Symbol text	This is the LEN and DN for local requestees. Because of E.164 compliancy, the DN field is changed to support variable length DN format up to 10 digits.

10.10.4 Action

No immediate section.

10.10.5 Associated OM registers

None.

10.10.6 Additional information

None.

10.11 SMDI105

10.11.1 Explanation

Log title: SMDI105
Name: Failed to determine a Common Desk for Network MWI Request.

Description:

This report is generated to indicate that the switch failed to locate a common message desk for a network message waiting indicator (MWI) request (setting or removal). The first message desk datafilled is used to set MWI.

10.11.2 Format

Figure 21 Formats of log report

```
SMDI105 mmmdd hh:mm:ss ssdd INFO SMDI_ERR_REPORT
Failed to determine a Common Desk for Network MWI Request.
DATALINK = linkname
```

Figure 22 Sample log report

```
SMDI105 NOV08 15:26:53 3122 INFO SMDI_ERR_REPORT
Failed to determine a Common Desk for Network MWI Request.
DATALINK = VMAIL1
```

10.11.3 Field descriptions

Table 12 Field descriptions

Field	Value	Description
INFO SMDI_ERR_REPORT Failed to determine a Common Desk for Network MWI Request.	Constant	Indicates that the switch failed to locate a common message desk for network MWI Request.
DATALINK	Symbol text	This is the SMDI datalink for incoming and outgoing messages.

10.11.4 Action

No immediate section.

10.11.5 Associated OM registers

None.

10.11.6 Additional information

This log is not changed because of this activity and is mentioned here for documentation purpose only.

10.12 SMDI106

10.12.1 Explanation

Log title: SMDI106
Name: DESKNUM message desk of COMMON option does not exist.

Description:

This report is generated to indicate that the switch failed to locate the message desk number associated with option COMMON of table SLLNKDEV.

10.12.2 Format

Figure 23 Formats of log report

```
SMDI106 mmmdd hh:mm:ss ssdd INFO SMDI_COMMON_ERR_REPORT
DESKNUM message desk of COMMON option does not exist.
DATALINK = linkname
```

Figure 24 Sample log report

```
 SMDI106 NOV08 15:26:53 3122 INFO SMDI_COMMON_ERR_REPORT
DESKNUM message desk of COMMON option does not exist.
DATALINK = VMAIL1
```

10.12.3 Field descriptions

Table 13 Field descriptions

Field	Value	Description
INFO SMDI_COMMON_ERR_REPORT Failed to determine a Common Desk for Network MWI Request.	Constant	Indicates that the switch failed to locate a common message desk for network MWI Request.
DATALINK	Symbol text	This is the SMDI datalink for incoming and outgoing messages.

10.12.4 Action

No immediate action.

10.12.5 Associated OM registers

None.

10.12.6 Additional information

This log is not changed because of this activity and is mentioned here for documentation purpose only.

10.13 SMDI107

10.13.1 Explanation

Log title: SMDI107
Name: FILE STATUS NOT O.K.

Description:

This log is generated whenever the write option is denied for outgoing messages and read option for incoming messages for the files of a 1X67 card.

10.13.2 Format

Figure 25 Formats of log report

```
SMDI107 mmmdd hh:mm:ss ssdd INFO SMDI_FILE_STATUS
FILE STATUS NOT O.K.
DATALINK_INDEX = linkname
```

Figure 26 Sample log report

```
 SMDI107 NOV08 15:26:53 3122 INFO SMDI_FILE_STATUS
FILE STATUS NOT O.K.
DATALINK_INDEX = VMAIL1
```

10.13.3 Field descriptions

Table 14 Field descriptions

Field	Value	Description
INFO SMDI_FILE_STATUS FILE STATUS NOT O.K.	Constant	Indicates that write/read operation is denied for outgoing/incoming messages respectively.
DATALINK	Symbol text	This is the SMDI datalink for incoming and outgoing messages.

10.13.4 Action

No immediate section.

10.13.5 Associated OM registers

None.

10.13.6 Additional information

This log is not changed because of this activity and is mentioned here for documentation purpose only.

10.14 SMDI108

10.14.1 Explanation

Log title: SMDI108
Name: IOC PORT NOT IN SERVICE FOR LINK.

Description:

This log is generated whenever the IOC port is not in service.

10.14.2 Format

Figure 27 Formats of log report

```
*** SMDI108 mmmdd hh:mm:ss ssdd INFO SMDI_HW_AUDIT
IOC PORT NOT IN SERVICE FOR LINK.
DATALINK_INDEX = linkname
```

Figure 28 Sample log report

```
*** SMDI108 NOV08 15:26:53 3122 INFO SMDI_HW_AUDIT
IOC PORT NOT IN SERVICE FOR LINK.
DATALINK_INDEX = VMAIL1
```

10.14.3 Field descriptions

Table 15 Field descriptions

Field	Value	Description
INFO SMDI_FILE_STATUS FILE STATUS NOT O.K.	Constant	Indicates that the IOC port is not in service.
DATALINK	Symbol text	This is the SMDI datalink for incoming and outgoing messages.

10.14.4 Action

An alarm is generated for this log and a manual intervention is required.

10.14.5 Associated OM registers

None.

10.14.6 Additional information

AT.59010576 converted this log (SMDI108) into a Critical log. Due to this Three asteriks appear as shown above in the log report.

An alarm (SLLNKERR) generates along with this log.

10.15 SLNK100

10.15.1 Explanation

Log title: SLLNK100
Name: Session connected on device

Description:

This log is generated for each data link device whenever the device is connected using the DEVCON command in the LNKUTIL CI increment.

10.15.2 Format

Figure 29 Formats of log report

```
SLNK 100 mmmdd hh:mm:ss ssdd INFO SESSION
Session connected on device XXXX
```

Figure 30 Sample log report

```
 SLNK100 MAR26 20:59:44 7400 INFO SESSION
Session connected on device S134
```

10.15.3 Field descriptions

Table 16 Field descriptions

Field	Value	Description
INFO INFO SESSION Session connected on device XXXX.	Constant	Indicates that the data transfer is started.

10.15.4 Action

No immediate section.

10.15.5 Associated OM registers

None.

10.15.6 Additional information

This log is not changed because of this activity and is mentioned here for documentation purpose only.

10.16 SLNK101

10.16.1 Explanation

Log title: SLNK101
Name: Session disconnected on device

Description:

This log is generated for each data link device whenever the device is disconnected using the DEVDISC command in the LNKUTIL CI increment.

10.16.2 Format

Figure 31 Formats of log report

```
SLNK 101 mmmdd hh:mm:ss ssdd INFO SESSION
Session disconnected on device XXXX
```

Figure 32 Sample log report

```
 SLNK101 MAR26 20:59:44 7400 INFO SESSION
Session disconnected on device S134
```

10.16.3 Field descriptions

Table 17 Field descriptions

Field	Value	Description
INFO INFO SESSION Session disconnected on device XXXX.	Constant	Indicates that the data transfer is stopped.

10.16.4 Action

No immediate section.

10.16.5 Associated OM registers

None.

10.16.6 Additional information

This log is not changed because of this activity and is mentioned here for documentation purpose only.

10.17 SLNK102

10.17.1 Explanation

Log title: SLNK102
Name: Transfer started on device.

Description:

This log is generated for each data link device whenever data transfer is started using the DEVSTART command in the LNKUTIL CI increment.

10.17.2 Format

Figure 33 Formats of log report

```
SLNK 102 mmmdd hh:mm:ss ssdd INFO SESSION
SMDR Reports        transfer started on device XXXX
```

Figure 34 Sample log report

```
 SLNK102 MAR26 20:59:44 7500 INFO SESSION
SMDR Reports        transfer started on device S134
```

10.17.3 Field descriptions

Table 18 Field descriptions

Field	Value	Description
INFO SESSION Session connected on device XXXX.	Constant	Indicates that the data transfer is started.

10.17.4 Action

No immediate section.

10.17.5 Associated OM registers

None.

10.17.6 Additional information

This log is not changed because of this activity and is mentioned here for documentation purpose only.

10.18 SLNK103

10.18.1 Explanation

Log title: SLNK103
Name: Transfer stopped on device

Description:

This log is generated for each data link device whenever data transfer is stopped using the DEVSTOP command in the LNKUTIL CI increment.

10.18.2 Format

Figure 35 Formats of log report

```
*** SLNK 103 mmmdd hh:mm:ss ssdd INFO SESSION
SMDR Reports          transfer stopped on device XXXX
```

Figure 36 Sample log report

```
*** SLNK103 MAR26 20:59:44 7600 INFO SESSION
SMDR Reports          transfer stopped on device S134
```

10.18.3 Field descriptions

Table 19 Field descriptions

Field	Value	Description
INFO INFO SESSION SMDR Reports transfer stopped on device XXXX	Constant	Indicates that the data transfer is started.

10.18.4 Action

No immediate section.

10.18.5 Associated OM registers

None.

10.18.6 Additional information

AT.59010576 converted this log(SLNK103) into a CRITICAL log. Due to this Three asteriks appear as shown above in the log report.

10.19 SLNK107

10.19.1 Explanation

Log title: SLNK107
Name: Device SMDI5 has failed to restart.

Description:

Log report SLNK107 is generated when DMS-100 link wakeup (SLLNKWKP) fails to restart a 1X67 datalink for any reason after a restart or link failure.

10.19.2 Format

Figure 37 Formats of log report

```
*** SLNK107 mmmdd hh:mm:ss ssdd INFO LINK_WAKEUP_FAILURE
Device XXXX has failed to restart.
It requires manual intervention.
```

Figure 38 Sample log report

```
*** SLNK107 JUN12 01: 45: 56 1181 INFO LINK_WAKEUP_FAILURE
Device SMDI5   has failed to restart.
It requires manual intervention.
```

10.19.3 Field descriptions

Table 20 Field descriptions

Field	Value	Description
INFO SESSION Device XXXX has failed to restart. It requires manual intervention.	Constant	Indicates a datalink failure.

10.19.4 Action

An alarm is generated for this case.

Manual intervention requires the following actions:

- If the datalink is not in service, it must be returned to service.

- If the link is not in a connected state, it must be returned to a connected state.
- If the appropriate transfer types have not been started on the link, they must be started.

10.19.5 Associated OM registers

None.

10.19.6 Additional information

AT.59010576 converted this log(SLNK107) into a critical log. Due to this Three steriks appear as shown above in the log report.

An alarm(SLLNKERR) generates along with this log (SLLNKERR).

10.20 SLNK108

10.20.1 Explanation

Log title: SLNK108
Description:

The system generates SLNK108 log whenever SMDI incoming or outgoing process dies. The following are the processes related to SMDI

SMDIOG - Outgoing process for 1x67 device

SMDIINC - Incoming process for 1x67 device

SMDINMPC - Incoming process for 1x89 , Fx30 devices

SLMPCOGT - Outgoing process for 1x89 , Fx30 devices

SLLNKOGT - Outgoing process for SL100 link

SLLNKICT - Incoming process for SL100 link.

All the aboce processes are per link basis except SMDINMPC process. SMDINMPC process is not per link basis. There will be only one SMDINMPC process for the whole switch.

So whenever SMDINMPC process dies SMDI103 log generates and not SLNK108 log.

SMDI process dies due to hardware or software problems.

SLNK108 log is reported whenever SMDI process dies due to following software problems

- File status not O.K (for 1x67 device)
- Failed to claim resource (for 1x67, 1x89 , Fx30 and SLLNKOGT(SL100))
- Failed to allocate pool (for 1x67)
- Failed to allocate resource (for 1x67, 1x89 , Fx30 and SLLNKOGT(SL100))
- Failed to get resource (for 1x67, SLLNKOGT and SLLNKICT (SL100))
- Nil SMDI descriptor (for 1x67)
- Failed to setup files (for 1x67)
- Incorrect message in mailbox (for 1x67)
- Mailbox not O.K (for 1x67, 1x89, Fx30)
- SLLNK device not datafilled for SMDI (for 1x67)
- SMDI pool has not been allocated (for1x67)
- Failed to allocate mailbox (for 1x67)
- SMDIOG process not O.K (for1x67)
- SMDI link not availble for data transfer (for 1x89 and Fx30)
- SLMPC wakeup message not received (for 1x89 and Fx30)

SLNK108 log is reported whenever SMDI process dies due to following hardware problems.

- IOC port in service (for 1x67)
- Driver is not up (for 1x67)
- Port is not up (for 1x67)
- Link was deleted already (for 1x67)
- SLLNK device data unintialised (for 1x89 and Fx30)
- SMDI device is not part of SLLNK pool (for 1x89 and Fx30)
- Failed to release the resource (for 1x89 and Fx30)
- Failed to send data out the link (SLLNKOGT (SL100))

System generates SLNK108 log as a MAJOR or CRITICAL log. If SMDI process dies due to software problems then SLNK108 is a major log and two asteriks appear at the beginning of the log report.

If SMDI process dies due to hardware problems then SLNK108 ia a CRITICAL log and three asteriks appear at the beginning of the log report.

An alarm generates along with SLNK108 log. This alarm will be either SLLNKERR or SMDIERROR. SLLNKERR alarm generates whenever process dies due to hardware problems. SMDIERROR alarm generates whenever process dies due to software problem.

10.20.2 Format

Figure 39 Formats of log report

```
*** SLNK108 mmmdd hh:mm:ss ssdd INFO SMDI_DEAD_PROCESS_REPORT
rpttxt. < Name of SMDI process> Process Killed.
DATALINK = linkname

** SLNK108 mmmdd hh:mm:ss ssdd INFO SMDI_DEAD_PROCESS_REPORT
rpttxt. < Name of SMDI process> Process Killed.
DATALINK = linkname
```

Figure 40 Sample log report

```
*** SLNK108 JUN12 01: 45: 56 1181 SMDI_DEAD_PROCESS_REPORT
Port is not up.SMDIINC process killed.
DATALINK = SMDI0

** SLNK108 mmmdd hh:mm:ss ssdd INFO SMDI_DEAD_PROCESS_REPORT
Incorrect message in mailbox.SMDIOG process killed.
DATALINK = SMDI0
```

10.20.3 Field descriptions

Table 21 Field descriptions

Field	Value	Description
INFO SMDI_DEAD_PROCESS_REPORT rpttxt	Constant File status not O.K (for 1x67 devices)	Indicates a SMDI process death. (SMDIINC, SMDIOG, SMDINMPC, SLLNKOGT, SLLNKICT) Indicates the Incoming and Outgoing files for a 1x67 card deny write option in case of outgoing messages(SMDIOG) and read option in case of Incoming messages (SMDIINC). Action : Check for any hardware problems of the link which might be causing above software problem.
	Failed to claim resource (for 1x67, 1x89, Fx30, SLLNKOGT)	Indicates the switch failed to claim resources for corresponding SMDI process. Action : Examine office engineering and increase the appropriate number of office parameters.
	Failed to allocate pool (for 1x67)	Indicates the switch failed to allocate pool resources for corresponding SMDI process. Action : Examine office engineering and increase the appropriate number of office parameters.
	Failed to get resource (for 1x67 , SLLNKOGT , SLLNKICT)	Indicates the switch failed to get resources for corresponding SMDI process. Action : Examine office engineering and increase the appropriate number of office parameters.
	Nil SMDI descriptor (for 1x67)	Indicates that SMDI descriptor is nil. Action : Check entries for SMDI device in SLLNKDEV table.

Table 21 Field descriptions

Field	Value	Description
Irpttxt	Failed to setup files (for 1x67)	Indicates SMDI failed to setup files for Incoming and Outgoing processes Action : Specific action not needed.
	Incorrect message in mailbox (for 1x67)	Indicates the incorrect messaging between SMDIINC and SMDIOG Action : Specific action not needed.
	Mailbox not O.K (1x67 , 1x89, Fx30)	Indicates the messages in mailbox are not of correct format. Action: Specific action not needed.
	SLLNK device not datafilled for SMDI (1x67)	Indicates that SMDI device not datafilled for SMDI Action : Check SLLNKDEV table for SMDIDATA transfer option against SLLNK device.
	SMDI pool has not been allocated (for 1x67)	Indicates switch failed to allocate pool resources for corresponding SMDI process Action : Examine office engineering parameters and increase the appropriate number of office parameters.
	Failed to allocate mailbox (for 1x67)	Indicates switch failed to allocate mailbox for the corresponding SMDI process Action: Examine office engineering parameters and increase the appropriate number of office parameters.

Table 21 Field descriptions

Field	Value	Description
lrpttxt	SMDIOG process not O.K (for 1x67)	Indicates SMDIOG process not O.K Action : Specific action not needed.
	SMDI link not availble for data transfer (1x89, Fx30)	Indicates SLLNK device not availble for data transfer Action : Check for link status.
	SLMPC wakeup message not received (1x89 , Fx30)	Indicates that SLMPC wakeup message not received for SMDI link. Action : Check for link status.
	IOC port not in service (for 1x67)	Indicates IOC port not in service for corresponding link. Action : Bring the IOC port into service
	Driver is not up (for 1x67)	Indicates driver is not in service for the link. Action : Bring the driver into service.
	Port is not up (1x67)	Indicates port not in service for the link. Action : Bring the port into service
	LInk was deleted already (for 1x67)	Indicates that SLLNK device was deleted from SLLNKDEV table. Action : Add SLLNK device in SLLNKDEV table.

Table 21 Field descriptions

Field	Value	Description
lrpttxt	SLLNK device data unintialised (for 1x89,Fx30)	Indicates unintialised SLLNK device data Action : SLLNK device data to be intialised.
	SMDI device is not part of SLLNK pool (for 1x89 , Fx30)	Indicates that SLLNK device not datafilled in table SLLNDEV for SMDI data trasfer. Action :Add SLLNK device in SLLNKDEV table for SMDI data transfer
	Failed to release the resource (for 1x89 , Fx30)	Indicates that resources cannot be released Action : Specific action not needed.
	Failed to send data out the link (SLLNKOGT)	Indicates data cannot be transferred over the link. Action : Check the link status.
	Failed to allocate resource (for 1x67, 1x89 , Fx30 and SLLNKOGT(SL100))	Indicates switch failed to allocate pool resources for corresponding SMDI process Action : Examine office engineering parameters and increase the appropriate number of office parameters.
DATALINK	Symbol text	This is the SMDI datalink for incoming and outgoing messages.

10.20.4 Action

For the appropriate action required , refer to each description in filed rpttxt.

10.20.5 Associated OM registers

None.

10.20.6 Additional information

An alarm (SMDIERROR, SLLNKERR) generates along with this log SLNK108.

Please refer to pcnal.fm of this activity(A59010576).

10.21 TCAP200

10.21.1 Explanation

Log title: TCAP200
Name: TCAP FAC SEND FAILED.

Description:

This report is generated at the host node if a Network Message Waiting Indication (MWI) request specifies an invalid DN and there is no route datafilled in table MSGRTE.

10.21.2 Format

Figure 41 Formats of log report

```
 TCAP200 mmmdd hh:mm:ss ssdd INFO TCAP FAC SEND FAILED
ORG NETID:  0  DN:   nnnnnnnnnn
DST NETID:  0  DN: nnnnnnnnnn
PKG TYPE:   QUERY_W_PERMISSION
REASON: NO ROUTE DATAFILLED
32E2  04C7  0000  0008  2AE8  28E9  01CF  D101
7E02  F203  AA1F  841D  0109  2100  160A  2273
3211  C0DF  0949  00FA  0A21  7316  1122  DF12
45C0  0101  007F  EBAD  CE12  210A  000A  001D
```

Figure 42 Sample log report

```
 TCAP200 NOV08 15:26:53 3122 INFO TCAP FAC SEND FAILED
ORG NETID:  0  DN:   6137221121
DST NETID:  0  DN:   6137221123
PKG TYPE:   QUERY_W_PERMISSION
REASON: NO ROUTE DATAFILLED
32E2  04C7  0000  0008  2AE8  28E9  01CF  D101
7E02  F203  AA1F  841D  0109  2100  160A  2273
3211  C0DF  0949  00FA  0A21  7316  1122  DF12
45C0  0101  007F  EBAD  CE12  210A  000A  001D
```

10.21.3 Field descriptions

Table 22 Field descriptions

Field	Value	Description
INFO TCAP FAC SEND FAILED	Constant	Indicates that the switch failed to locate a common message desk for network MWI Request.
ORG NETID	Symbol text	This is the originating DN. Because of E.164 compliancy, the DN field is changed to support variable length DN format up to to 10 digits.
DST NETID	Symbol text	This is the destination DN. Because of E.164 compliancy, the DN field is changed to support variable length DN format up to 10 digits.
PKG TYPE	Constant	The package type of the TCAP message.
REASON	Constant	Indicates the reason for the log-generation i.e incomplete datafill.

10.21.4 Action

No immediate section.

10.21.5 Associated OM registers

None.

10.21.6 Additional information

This log is not changed because of this activity and is mentioned here for documentation purpose only.

10.22 AMAB150

10.22.1 Explanation

Log title: AMAB150
Name: SMDR_CALL_DATA

Description:

Log report AMAB150 is used to monitor the generation of Station Message Detail Recording (SMDR) records. The information in the log is the same as that written to the file (on tape or disk). The number 10 in the TERM_FC field of AMAB150 indicates the type of call as a call request retrieval and is enclosed in quotes in the example to demonstrate the position of the TERM_FC field.This report is generated at the host node if a Network Message Waiting Indication (MWI) request specifies an invalid DN and there is no route datafilled in table MSGRTE.

10.22.2 Format

Figure 43 Formats of log report

```
 AMAB150 mmmdd hh:mm:ss ssdd INFO SMDR_CALL_DATA
CUSTGRP = custgrpno
0 0 0 6137227111 ** 00 0 6137227112 ** +
10 0 25112********** 002 12 30 02 000006
ORIG = LEN len DN dn TERM LEN len DN dn
ANS=Y 0
DTO = ******* AUTH = ***** ACC =*******
```

Figure 44 Sample log report

```
 AMAB150 JUL03 15:25:29 6707 INFO SMDR_CALL_DATA
CUSTGRP =       CUSGRP1
0 0 0 6137227111 ** 00 0 6137227112 ** +
10 0 25112********** 002 12 30 02 000006
ORIG = LEN HOST 00 1 02 13  DN 7227111 +
TERM LEN HOST 00 1 05 13 DN 7227112 +
ANS=Y 0
DTO = ******* AUTH = ***** ACC =*******
```

Note: The plus sign (+) indicates that the next line is a continuation of the text. In the actual log report, all the information appears on the same The plus sign (+) indicates that the next line is a continuation of the text. In the actual log report, all the information appears on the same line. Due to space limitations here, the text lines are split.

10.22.3 Field descriptions

Table 23 Field descriptions

Field	Value	Description
INFO SMDR_CALL_DATA	Constant	Indicates the SMDR call data.
CUSTGRP	Symbol text	Indicates the customer group.
ORIG	Symbol text	This is the originating LEN and DN.
TERM	Constant	This is the destination LEN and DN.
ANS	Boolean	This field indicates whether the call is answered.
DTO	Symbol	The field indicates the SMDR digits.
AUTH	Symbol	This field indicates the Auth code.
ACC	Symbol	This field indicates the Account code.

10.22.4 Action

No immediate section.

10.22.5 Associated OM registers

None.

10.22.6 Additional information

This log is not changed because of this activity and is mentioned here for documentation purpose only.

10: Log changes (LG)

10.1 INFO Maintenance Call Control Timer Expired

10.1.1 Explanation

Log title: INFO Connection Hold Timer Expired
Name: TRK921
Description: This log in generated to indicate that the CONNECTION_HOLD_TIMER_IN_MINS has expired during Connection Hold. The ISUP trunk associated with the call has been cleared and teh calling party has been disconnected.

Event type: Maintenance call clearing.

10.1.2 Format

Figure 1 Formats of log reports

```
TRK921 mmmdd hh:mm:ss ssdd INFO Connection Hold Control Timer Expired

CKT <trkid>
CLINO <calling party number>
```

Figure 2 Sample log reports

```
TRK91 APR09 12:32:22 8100 INFO Connection Hold Timer Expired

CKT ISUP2WIT 8
CLINO 910-870-6124
```

10.1.3 Field descriptions

Table 7 Field descriptions

Field	Value	Description
Connection HoldTimer Expired	Constant	Indicated the Connecion Hold TImer has expired.

Table 7 Field descriptions

Field	Value	Description
CKT	Symbolic text	Provides an equipment identification for the trunk that was cleared.
CLINO	Integers	Provides the directory number that originated teh call and has now been disconnected.

10.1.4 Action

No action required. This log is for infromation purposes only.

10.1.5 Associated OM registers

None

10.1.6 Additional information

None

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
ENET state change. Set from CSBY; rsntxt
Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
ENET STATE CHANGE. SET FROM CSBY; text_reason
Translated CSLink: MS Card: msed MSLink: mslk post: msptt

Figure 2 Sample log reports

Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
ENET state change. Set from CSBY; CSID BUSY dropped
Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
Translated CSLink: MS Card: 15 MSLink: 0 Post: 2

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 188 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

8: Log changes (LG)

8.1 CTFP600

8.1.1 Explanation

Log title: CTFP600
Name: Call Transfer Fraud Prevention
Description: The log is generated each time a call transfer attempt is denied due to CTFP dial plan screening criteria or throttling.

Event type: INFO

8.1.2 Format

Figure 1 Formats of log reports

```
CTFP600 mmmdd hh:mm:ss ssdd INFO ATTEMPT BLOCKED
CALL ID: ffff ffff
SUBSCRIBER DN: xxxxxxxxxx
TRANSFER-TO DN: xxxxxxxxxxxxxxxxxxxxxxxx
REASON: text reason
```

Figure 2 Sample log reports

```
CTFP600 APR22 15:25:33 4500 INFO ATTEMPT BLOCKED
CALL ID: 038B 0000
SUBSCRIBER DN: 6136211500
TRANSFER-TO DN: 8002221234
REASON: THROTTLING EXCEEDED
```

```
CTFP600 APR22 15:29:33 4600 INFO ATTEMPT BLOCKED
CALL ID: 038B 0000
SUBSCRIBER DN: 6136211500
TRANSFER-TO DN: 5143691234
REASON: INTERTOLL_RESTRICTED
```

8.1.3 Field descriptions

Table 2 Field descriptions

Field	Value	Description
Call ID	Integer	Call Identification Number
Subscriber DN	10 digits	Controller's directory number
Transferred-To DN	1 to 24 digits	Post translated number to which the call was transferred to or Directory number terminated on.
Reason	"OP_OUT RESTRICTED, IDDD_IN RESTRICTED, IDDD_OUT RESTRICTED, FGB RESTRICTED, CUTTHRU RESTRICTED, INTERTOLL RESTRICTED, INTRATOLL RESTRICTED, COIN RESTRICTED"	Call Transfer attempt denied due to CTFP dial plan call option type
	"PREXLA RESTRICTED"	Call Transfer attempt denied due to the dialed number in PREXLA list
	"POSTXLA RESTRICTED"	Call Transfer attempt denied due to the post translated number in the POSTXLA list
	"THROTTLING EXCEEDED"	Call Transfer attempt over allowed limit

8.1.4 Action

The CTFP600 log indicates that a Call Transfer attempt has been denied due to CTFP dial plan screening criteria or throttling. No immediate action is required since the logs are for information purposes.

8.1.5 Associated OM registers

Whenever a CTFP600 log is generated due to a call throttling violation, the CTFPTHRO register is pegged. For all other violations which generate a log, the CTFPSCRN register is pegged.

8.1.6 Additional information

None

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

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10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
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- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

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- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the “Action” part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

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Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

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10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 78 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

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- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

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10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

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Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 46 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

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- numerical values
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Include the following information, as appropriate, in the description column.

- the meaning of the field
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- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes(LG)

10.1 Summary

Table 1 New Call Redirect (CRT) log.

LOG NAME	LOG NUMBER	NEW/MOD/ DELETED	SYSTEM (SOS/UNIX)
CRT	600	NEW	SOS

10.2 Log Report

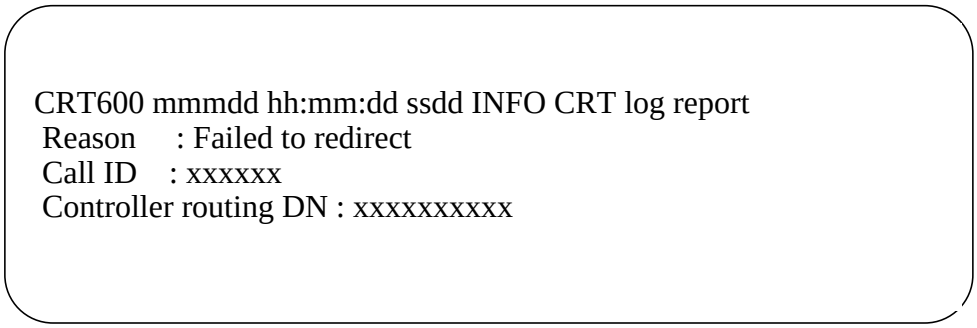
CRT600.

10.2.1 Overview

The CRT600 information log is generated for unsuccessful translation of Routing DN.

10.2.2 Format

Figure 1 Format of CRT600 log report.



10.2.3 Field descriptions

Table 2 Field descriptions

Field	Value	Description
Reason	Failed to redirec	Unsuccessful translation of Routing DN.
Call ID	Hexadecimal	Call identification number.
Controller Routing DN.	10 digits	Controllers directory number.

10.2.4 Action

The CRT600 log indicates a problem with the translation of the Routing DN. To determine the cause of the problem

- Save the log for reference.
- Verify the Routing Directory Number.
- Use the translations verification (TRAVER) tool to verify the translation for the call from calling party to Routing DN.

10.2.5 Associated OM registers

None.

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

11: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 11.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

11.1 <Log title>

11.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

11.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

11.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

11.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

11.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

11.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

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10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 21 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
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Value column:

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- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
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Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

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Duplicate template section 10.1 for each log.

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10.1.1 Explanation

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Name:
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Event type:

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Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 18 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

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Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
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Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
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Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

There is no new log or change to existing logs introduced by this feature.

The new SOC option, AIN00061, can be seen in various standard SOC logs (SOC300-305, 307, 308, 310-314, 318, 500-506, 509-511, 600-602, 604), the SOC logs' formats can be obtained from NTP 297-8021-8407 North American DMS-100 Log Report Reference Manual.

10.1 <Log title>

Not applicable.

10.1.1 Explanation

Log title:
Name:
Description:
Event type:

10.1.2 Format

Figure 1 Formats of log reports

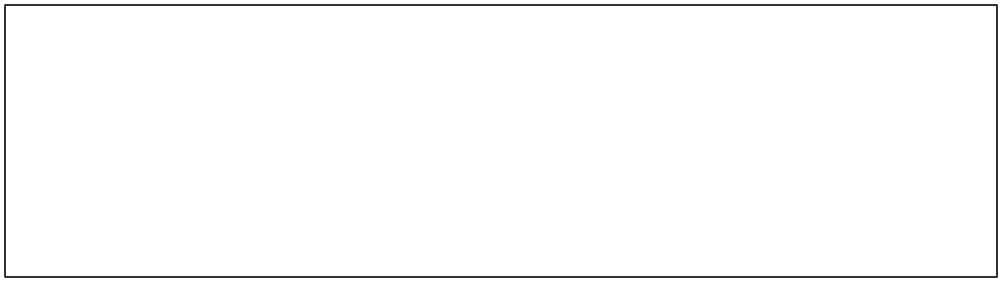
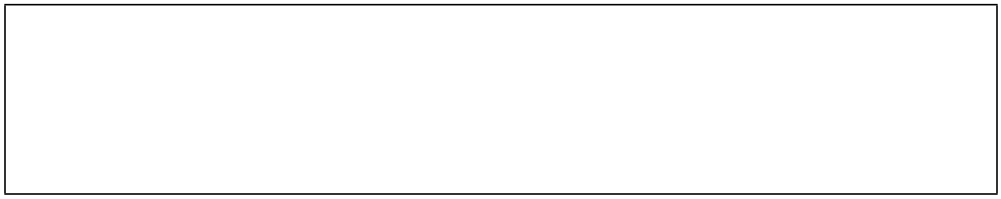


Figure 2 Sample log reports



10.1.3 Field descriptions

Table 26 Field descriptions

Field	Value	Description

10.1.4 Action

10.1.5 Associated OM registers

10.1.6 Additional information

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the “Action” part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 61 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

9: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

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Duplicate template section 9.1 for each log.

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9.1 <Log title>

9.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

9.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

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Format 1

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   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

9.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

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Field	Value	Description

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Include appropriate action for specific field values in cases not covered in the “Action” part of this Log section.

9.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

9.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

9.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

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Figure 1 Formats of log reports

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Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 39 Field descriptions

Field	Value	Description

Field column:

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Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

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10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

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Event type:

10.1.2 Format

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Figure 1 Formats of log reports

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Format 1

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   ENET STATE CHANGE. SET FROM CSBY; text_reason
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```

Figure 2 Sample log reports

```
Format 1

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   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

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   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

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Field column:

Provide the following types of entry:

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- numerical values
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Include the following information, as appropriate, in the description column.

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- the meaning of specific values
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- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

10.1 Summary

Table 1 New Who's Calling Logs

LOG NAME	LOG NUMBER	NEW/MOD DELETED	SYSTEM (SOS/UNIX)
WHC	600	NEW	SOS
WHC	601	NEW	SOS

10.2 Log Report

WHC600

10.2.1 Overview

The WHC600 information log is generated when one of the following scenarios is encountered:

- A call fails to route to the Service Node (SN).
- The call to the SN encounters an unsupported feature or agent.

10.2.2 Format

Figure 1 Format of WHC600 log report

```
     WHC600 mmmdd hh:mm:ss ssdd WHC log report
Reason    : rsntxt
Call ID   : FFFF FFFF
WC DN     : NPANXXXXXX
SN DN     : XXXXXXXXXXXXXXXXXXXXXXXXXXXX
Treatment : trmnt
```

Figure 2 Sample of WHC600 log report

```
U112AP WHC600 MAR11 16:04:14 2300 WHC log report
         Reason    : Fails to route to Service Node
         Call ID   : 038B 0000
         WC DN     : 6125425541
         SN DN     : 6128547855
         Treatment : PSIG
```

10.2.3 Field descriptions

Table 2 Field descriptions

Field	Value	Description
Reason	"Fails to route to Service Node"	Error while routing to the SN
	"Unsupported type of call to the SN"	Encountered an unsupported feature or agent for the call to the SN
Call ID	integer	call identification number
WC DN	10 digits	the WC subscriber's directory number
SN DN	4 to 30 digits	Service Node directory number
Treatment	treatment text of 4 characters maximum	treatment applied to the call

10.2.4 Action

The WHC600 log indicates a problem with the call to the SN. To determine the cause of the problem

- save the log for reference
- examine the log report to verify the Directory Number (DN) that WC used to route to the SN and the treatment that was applied to the call
- use the translations verification (TRAVER) tool to verify the translations for the call to the SN

Fails to route to Service Node

The WHC600 information log has a value of "fails to route to Service Node" when the call to the SN encounters a treatment.

Examine the treatment field of the log report to determine what treatment the call to the SN encountered. Modify the datafill so that the call to the SN avoids this treatment and use the TRAVER tool to verify the new translations.

In the specific case where the treatment field is NOSR, the log might indicate that the call to the SN could not be translated using Routing Characteristics because of a lack of software resources. In this case, increasing the value of NUM_RC_EXT_BLKS office parameter in OFCENG table would ensure that the calls to the SN are successfully translated.

Unsupported type of call to SN

The WHC600 information log has a value of “unsupported type of call to SN” when the call to the SN encounters an unsupported feature or an unsupported agent. This value can result in two treatments:

Feature Not Allowed (FNAL)

A treatment of FNAL indicates that the call to the SN encountered an unsupported feature.

In this case, change the datafill so that the call to the SN avoids unsupported features and use traver to verify the new translations.

Undetermined (UNDT)

A treatment of UNDT indicates that WC blocks the call to the SN because the agent is unsupported. The supported agents to route out of the WC serving office for the call to the SN are ISUP, BRI or PRI trunks.

If WC blocks the call to the SN because the agent is unsupported, modify the datafill for the call to the SN and use the TRAVER tool to verify the new translations.

10.2.5 Associated OM registers

Whenever a WHC600 log is generated the WCDNERR OM register will be pegged.

10.3 Log Report

WHC601

10.3.1 Overview

The WHC601 information log is generated when one of the following scenarios is encountered:

- The T1 timer expires
- The T2 timer expires
- WC could not allocate a CVID to route the call to the SN

10.3.2 Format

Figure 3 Format of WHC601 log report

```
            WHC601 mmmdd hh:mm:ss ssdd WHC log report
        Reason    : rsntxt
        Call ID   : FFFF FFFF
        WC DN     : NPANXXXXXX
        SN DN     : XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

Figure 4 Sample of WHC601 log report

```
  U112AP WHC601 MAR11 16:04:14 2300 WHC log report
         Reason    : T1 expired
         Call ID   : 038B 0000
         WC DN     : 6125425541
         SN DN     : 6128547855
```

10.3.3 Field descriptions

Table 3 Field descriptions

Field	Value	Description
Reason	“T1 expired”	The T1 timer expired
	“T2 expired”	The T2 timer expired
	“NO_OF_CLONE_TIDS exceeded”	WC was not able to allocate a necessary resource to route the call to the SN
Call ID	integer	call identification number
WC DN	10 digits	the WC subscriber’s directory number
SN DN	4 to 30 digits	Service Node directory number

10.3.4 Action

Save the log and use it as additional information to investigate:

- the failure of the SN to respond within the normal time range (also check the values of T1 and T2).
- the failure of the system to allocate enough resources to route the call to the SN (also check the value of NO_OF_CLONE_TIDS).

10.3.5 Associated OM registers

Whenever a WHC601 log with reason “T1 expired” is generated the WCT1 OM register will be pegged.

Whenever a WHC601 log with reason “T2 expired” is generated the WCT2 OM register will be pegged.

Whenever a WHC601 log with reason “NO_OF_CLONE_TIDS exceeded” is generated the WCDNERR OM register will be pegged.

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Purpose: TThis feature does not make any LOG changes.

10.1 <Log title>

N/A

10.1.1 Explanation

N/A

10.1.2 Format

N/A

10.1.3 Field descriptions

N/A

10.1.4 Action

N/A

10.1.5 Associated OM registers

N/A

10.1.6 Additional information

None

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

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10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 28 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

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- symbolic text, indicating a range of values as described in the description column
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Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
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- why a particular value is displayed
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- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

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Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

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10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

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Event type:

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Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 40 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
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Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
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- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

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10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 43 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
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A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

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- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
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Include the following information, as appropriate, in the description column.

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Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

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Duplicate template section 10.1 for each log.

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10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 149 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

10.1 AINT 700

The AINT 700 log is an existing log used to record TCAP messages captured by AINTrace.

This feature modifies the log in three ways:

- The header will not display the tid and agent when the message is a Create_Call or NCR message
- The Operation Code field will include Create_Call, ACG, Monitor_For_Change, Update, Update_Data, and Update_Request as settings
- Support for displaying the parameters AdminstrableObject, ControlEncountered, EditListType, NotificationDuration is added.

Note that the log format is unchanged for CallP messages except Create_Call.

10.1.1 Explanation

Log title: AINTrace Report
Name: AINTrace Report
Description: This log is generated when AINTrace captures a TCAP message.
Event type:INFO

10.1.2 Format

The format of the log for Create_Call and NCR messages follows. The format for all other messages remains unchanged. The only difference is that the tid and agent is not displayed for Create_Call or NCR.

Three formats are shown: TEXT, HEX, and BOTH.

Figure 1 Formats of AINT 700 log reports

TEXT Format

```
<loadname> AINT700 <date> <time> <sequence no> INFO AINTrace Report
TCAP Message recorded by AINTrace:
 Time: <>
 Direction: <>

       ***** TCAP message in TEXT format *****
 TCAP Package Type:      <>
   Origin ID:          <>
   Respond ID:         <>

Component Sequence
==================

COMPONENT:              <>

Component Type:         <>

Invoke ID:              <>
Correlation ID:         <>

Operation Code
  Operation Family:   <>
  Operation Name:     <>

====Parameter Sequence----

<Parameter Name>
<Parameter Fields>
```

HEX Format

```
<loadname> AINT700 <date> <time> <sequence no> INFO AINTrace Report
TCAP Message recorded by AINTrace:
 Time: <>
 Direction: <>

 ***** TCAP message in HEX format *****
        <sequence of hex bytes>
```

BOTH Format

```
<loadname> AINT700 <date> <time> <sequence no> INFO AINTrace Report
TCAP Message recorded by AINTrace:
 Time: <>
 Direction: <>

 ***** TCAP message in HEX format *****
        <sequence of hex bytes>

 ***** TCAP message in TEXT format *****
 TCAP Package Type:      <>
   Origin ID:          <>
   Respond ID:         <>

Component Sequence
==================

COMPONENT:              <>

Component Type:         <>

Invoke ID:              <>
Correlation ID:         <>

Operation Code
  Operation Family:   <>
  Operation Name:     <>

====Parameter Sequence----

<Parameter Name>
<Parameter Fields>
```

Figure 2 Sample log reports

```
COMR11BA AINT700 JAN19 15:22:19 0500 INFO AINTrace Report
 TCAP Message recorded by AINTrace:
 Time: 99/01/19 15:22:19
 Direction:    from SCP or Adjunct (incoming)

       ***** TCAP message in TEXT format *****
 TCAP Package Type:      Query
   Origin ID:          NIL
   Respond ID:         00 00 61 00

Component Sequence
==================

COMPONENT:              1

Component Type:         Invoke (not last) Component

Invoke ID:              1
Correlation ID:         0

Operation Code
  Operation Family:   Network Management
  Operation Name:     ACG
ControlCauseIndicator:
    Control Digits:     10 digit control
    SMS Indicator:      SMS initiated controls encountered
    SCP Indicator:      no SCP overload controls encountered
GapDuration:            no128Seconds
PrivateGapInterval:     no30Seconds
Translation Type:       AINPOP - internetwork applications - 15
GlobalTitleValue:       6136214310
```

10.1.3 Field descriptions

The following fields are modified by this feature: Operation Name, Parameters.

Table 2 Field descriptions

Field	Value	Description
Operation Name	New values: Create_Call, ACG, Monitor_For_Change, Update, and Update_Request	The operation code of the message
Parameters	New values: AdminstrableObject, ControlEncountered, EditListType, NotificationDuration	The parameters contained in the message.

10.1.4 Action

None. The logs are informational.

10.1.5 Associated OM registers

None.

10.1.6 Additional information

10: Log changes (LG)

10.1 DFIL 802

10.1.1 Explanation

Log title: DFIL 802
Name: Maximum Routes Attempted
Description: This log report is generated when the Number of Routes Attempted in Table IBNRTE / IBNRT2-4 / OFRT / OFR2-4 is equal to or exceeds the Number of Routes Permitted for a particular call. It is just an INFO report. This log will not be genrated in the normal condition when the search terminates due to number of elements searched reaches MAX_ATMPT count.
Event type: When a call cannot terminate on a route till the permitted number of tries.

10.1.2 Format

Figure 1 Formats of log reports

Format 1

DFIL802 <mmmdd> <hh:mm:ss> <nnnn> INFO ATGS Turned ON: Maximum Routes Attempted

CALLING PARTY = <cp_id>

CALLED PARTY = <DN>

NUMBER OF ROUTES ATTEMPTED = <int>

NUMBER OF ROUTES PERMITTED = <int>

CALLID = <callid Word 1> <callid Word 2>

Figure 2 Sample log reports

```
Format 1: Line to Route

 DFIL802 JUL06 19:42:12 8700 INFO ATGS Turned ON: Maximum Routes
   Attempted

       CALLING PARTY = HOST 00 1 08 03    DN 9194814210

       CALLED PARTY  = 74813002

       NUMBER OF ROUTES ATTEMPTED = 60

       NUMBER OF ROUTES PERMITTED = 50

       CALLID = 01F3 0013


Format 2 : Trunk to Route

DFIL802 JUL06 19:44:16 9000 INFO ATGS Turned ON: Maximum Routes
   Attempted

       CALLING PARTY = CKT E911OGES 0

       CALLED PARTY  = 74813002

       NUMBER OF ROUTES ATTEMPTED = 60

       NUMBER OF ROUTES PERMITTED = 50

       CALLID = D9B4 0013
```

10.1.3 Field descriptions

Table 293 Field descriptions

Field	Value	Description
CALLING PARTY	cp_id	Gives the calling party information. If the calling party is a line, it gives the LEN and DN of the calling party. If the calling party is a Trunk, it gives the TRKGRP Name and the member number.
CALLED PARTY	DN	Gives the dialled digits.
NUMBER OF ROUTES ATTEMPTED	int	Gives the total number of Routes which have been attempted for the call. This applies only to routes in Table IBNRTE / IBNRT2-4 / OFRT / OFR2-4.

Table 293 Field descriptions

Field	Value	Description
NUMBER OF ROUTES PERMITTED	int	Gives the maximum number of Routes which are permitted for the call. This applies only to routes in Table IBNRTE / IBNRT2-4 / OFRT / OFR2-4.

10.1.4 Action

This is just an INFO log report. It does not require any immediate action.

10.1.5 Associated OM registers

None.

10.1.6 Additional information

None.

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 1 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
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- numerical values
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- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

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- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
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Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

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10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
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A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

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- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

11: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 11.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

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11.1 <Log title>

11.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

11.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

11.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 8 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

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- symbolic text, indicating a range of values as described in the description column
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Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
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Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

11.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

11.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

11.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the “Action” part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

11: Log changes (LG)

As synchronization software evolves, there is a need to expand, improve or restructure synchronization related logs to be more helpful to the customers.

The minimum code change required to support STM-1 loop timing is to display STM-1 as “STM” when the reference change log, SPM510 is generated. This chnage is highlighted by RED in “11.11 SPM 510” on page 178. The rest of change is introduced to improve text reasons for existing logs and restructure the existing logs to be more user-friendly.

The following is the list of the SPM related synchronization log categories.

- SPM 300 series - used to report device faults and issued as a result of an alarmable condition
- SPM 500 series - used to report device state changes
- SPM 600 series - used for information reports

In this document, the logs enhanced to support STM-1 as synchronization source and restructuring of the existing SPM synchronization logs are depicted in the list below.

- SPM 301 log is to inform if the clock source is within 70%/90% tuning range. This log is replaced by new logs (SPM 339 and SPM 336).
- SPM 332 log is replaced by the new SPM510 log.
- SPM 334 log text is modified to be more informative.
- SPM336 is a new log which replaces SPM301. This log monitors the clock source within a 90% tuning range.
- The new SPM 337 is generated when the SPM enters HOLDOVER mode, which was covered by SPM 334 log previously.
- The new SPM 338 log is generated when the SPM stays HOLDOVER state longer than 24 hours, which was covered by SPM 334 previously.
- SPM339 is a new log which replaces SPM301. This log monitors the clock source within a 70% tuning range.

- The new SPM 510 log is replacement of SPM 332 to capture clock reference switch.
- The new SPM 637 log is to address recovery from HOLDOVER.
- The SPM 638 log is to address recovery from HOLDOVER longer than 24 hours.

Many logs documented here are generated when the corresponding alarms are raised or cleared. For node alarms, thieir severity is datafilled in table MNNODE. For the CEM alarms, their severity is datafilled in table MNCKTPAK.

In the following sections, **BOLD** text means the difference from old log format.

11.1 SPM 301

This log is generated when VCXO70/VCXO90 alarm is raised and cleared, which means that the clock reference reached 70%/90% tuning range or comes back under such tuning range.

This log is replaced by the new SPM 339 and SPM 336 logs. For format and samples, please refer to sections for SPM 339 and SPM 336 logs

11.2 SPM 332

This log is generated when the clock reference is changed from one to another. i.e. from C side 1 to STM 0

This log is replaced by the new SPM 510 log and the reason text is modified as well to support STM-1 as clock reference.

For more detail, please refer to section for SPM 510 log.

11.3 SPM 334

This log is generated to inform whenever an alternate synchronization source is not available and the timing configuration no longer conforms to required specifications.

The CLKOOS is alarm against a node.

11.3.1 Explanation

Log title: SPM
Name: 334
Description: This log is generated when CEM is not meeting any sync performance criteria.
Event type: CLKOOS alarm is raised or cleared.

11.3.2 Format

Figure 1 Formats of log reports

SPM334 MMMDD hh:mm:ss ssdd INFO **SPM Clock Performance Out of Spec**
Location: SPM: <spm number> CEM: <unit number>
Reason: **<reason text>**
Alarm: CLKOOS
Action: <action>

Figure 2 Sample log reports

SPM334 JAN03 20:06:19 5500 INFO SPM Clock Performance Out of Spec
Location: SPM: 0 CEM: 0
Reason: Message Switch Clocks not in sync.
Alarm: CLKOOS
Action: Raise

SPM334 JAN03 20:06:19 5500 INFO SPM Clock Performance Out of Spec
Location: SPM: 0 CEM: 1
Reason: SPM has achieved network quality synchronization
Alarm: CLKOOS
Action: Clear

11.3.3 Field descriptions

Table 2 Field descriptions

Field	Value	Description
SPM	0 - 63	arbitrary integer which identify the SPM
CEM	0 - 1	Indicates unit number of CEM affected
Reason	Symbolic text	reason for not meeting synchronization specification
Alarm	CLKOOS	Clock out of synchronization alarm Node alarm.
Action	Raise/Clear	indicates the action towards the alarm

11.3.4 Action

Manual intervention is required.

11.3.5 Associated OM registers

None.

11.3.6 Additional information

The reason texts are changed to be more informative from old reason texts. Possible new reason texts when CLKOOS is raised:

- No suitable network carriers available for sync
- Message Switch Clocks not in sync
- Frequency difference detected between DMS and network clocks

Possible reason texts when CLKOOS is cleared:

- SPM has achieved network quality synchronization
- SPM no longer provisioned for loop-timing

11.4 SPM 336

The information in this new log was originally covered by SPM 301 log. This log is assigned a new number to differentiate between 70% and 90% VCXO problems so that each has a separate log.

When this log is generated, the CEM is at the end of life cycle.

The log text remains unchanged from the previous version.

The VCXO90 is the alarm against the CEM.

11.4.1 Explanation

Log title: SPM
Name: 336
Description: This log is generated when oscillator tuning range reached to 90% or comes back from 90%.
Event type:VCXO90 alarm is raised or cleared.

11.4.2 Format

Figure 3 Formats of log reports

SPM336 MMMDD hh:mm:ss ssdd INFO Clock Range
Location: SPM: <spm number> CEM: <unit number>
Reason: <reason text>
Alarm: VCXO90
Action: <action>

Figure 4 Sample log reports

SPM336 NOV22 13:41:04 2400 INFO Clock Range
Location: SPM: 0 CEM: 0
Reason: Clock oscillator tuning range has reached 90%.
Alarm: VCXO90
Action: Raise

SPM336 NOV22 13:41:04 2400 INFO Clock Range
Location: SPM: 0 CEM: 0
Reason: Clock oscillator within nominal tuning range
Alarm: VCXO90
Action: Clear

11.4.3 Field descriptions

Table 3 Field descriptions

Field	Value	Description
SPM	0 - 63	arbitrary integer which identify the SPM
CEM	0 - 1	Indicates unit number of CEM affected
Reason	Symbolic text	- Clock oscillator tuning range has reached 90% - Clock oscillator within nominal tuning range
Alarm	VCXO90	synchronization alarm CEM alarm
Action	Raise/Clear	indicates the action towards the alarm

11.4.4 Action

Manual intervention is required. It is recommended to replace the card.

11.4.5 Associated OM registers

None.

11.4.6 Additional information

None.

11.5 SPM 337

This new log is to provide a valid alarmable log for Holdover entry. This reason was previously covered by SPM334.

The HLDOVR is the alarm against a node.

11.5.1 Explanation

Log title: SPM
Name: 337
Description: This log is generated when no clock reference is available so that the SPM goes into HOLDOVER state.
Event type: HLDOVR alarm is raised.

11.5.2 Format

Figure 5 Formats of log reports

SPM337 MMMDD hh:mm:ss ssdd INFO SPM Has Entered Holdover
Location: SPM: <spm number> CEM: <unit number>
Reason: <reason text>
Alarm: HLDOVR
Action: Raise

Figure 6 Sample log reports

SPM337 JAN03 20:06:19 5600 INFO SPM Has Entered Holdover
Location: SPM: 0 CEM: 0
Reason: No available sync references.
Alarm: HLDOVR
Action: Raise

11.5.3 Field descriptions

Table 4 Field descriptions

Field	Value	Description
SPM	0 - 63	arbitrary integer which identify the SPM
CEM	0 - 1	Indicates unit number of CEM affected
Reason	Symbolic text	No available sync references.
Alarm	HLDOVR	the SPM enters HOLDOVER state Node alarm

11.5.4 Action

Manual intervention is required.

11.5.5 Associated OM registers

None.

11.5.6 Additional information

None.

11.6 SPM 339

The information in this new log was originally covered by SPM 301 log. This log is assigned a new number to differentiate between 70% and 90% VCXO problems so that each has a separate log.

When this log is generated, the CEM is near end of life cycle.

The log text remains unchanged from the previous version.

The VCXO70 is the alarm against CEM.

11.6.1 Explanation

Log title: SPM
Name: 339
Description: This log is generated when oscillator tuning range reached to 70% or comes back from 70%.
Event type: VCXO70 alarm is raised or cleared.

11.6.2 Format

Figure 7 Formats of log reports

SPM339 MMMDD hh:mm:ss ssdd INFO Clock Range
Location: SPM: <spm number> CEM: <unit number>
Reason: <reason text>
Alarm: VCXO70
Action: <action>

Figure 8 Sample log reports

SPM339 NOV22 13:41:04 2400 INFO Clock Range
Location: SPM: 0 CEM: 0
Reason: Clock oscillator tuning range has reached 70%.
Alarm: VCXO70
Action: Raise

SPM339 NOV22 13:41:04 2400 INFO Clock Range
Location: SPM: 0 CEM: 0
Reason: Clock oscillator within nominal tuning range
Alarm: VCXO70
Action: Clear

11.6.3 Field descriptions

Table 5 Field descriptions

Field	Value	Description
SPM	0 - 63	arbitrary integer which identify the SPM
CEM	0 - 1	Indicates unit number of CEM affected
Reason	Symbolic text	- Clock oscillator tuning range has reached 70% - Clock oscillator within nominal tuning range
Alarm	VCXO70	synchronization alarm CEM alarm
Action	Raise/Clear	indicates the action towards the alarm

11.6.4 Action

Manual intervention is required. It is recommended to spare the card.

11.6.5 Associated OM registers

None.

11.6.6 Additional information

None.

11.7 SPM 637

This new log is counterpart to SPM 337 log indicating clearing of the condition.

The HLDOVR is the alarm against a node.

11.7.1 Explanation

Log title: SPM
Name: 637
Description: This log is generated when he SPM is recovered from HOLDOVER state and become synchronized.
Event type: HLDOVR alarm is cleared.

11.7.2 Format

Figure 9 Formats of log reports

SPM637 MMMDD hh:mm:ss ssdd INFO SPM Has Exited Holdover
Location: SPM: <spm number> CEM: <unit number>
Reason: <reason text>
Alarm: HLDOVR
Action: Clear

Figure 10 Sample log reports

SPM637 JAN03 20:06:19 5600 INFO SPM Has Exited Holdover
Location: SPM: 0 CEM: 0
Reason: Sync has been restored.
Alarm: HLDOVR
Action: Clear

11.7.3 Field descriptions

Table 6 Field descriptions

Field	Value	Description
SPM	0 - 63	arbitrary integer which identify the SPM
CEM	0 - 1	Indicates unit number of CEM affected
Reason	Symbolic text	- Sync has been restored.
Alarm	HLDOVR	the SPM is HOLDOVER state Node alarm

11.7.4 Action

None.

11.7.5 Associated OM registers

None.

11.7.6 Additional information

None.

11.8 SPM 338

This is a new log to differentiate Holdover from 24 Hour Holdover. This

This is a new log to differentiate HOLDOVER from 24 hours HOLDOVER. The HLDOVR24 is the alarm against a node.

11.8.1 Explanation

Log title: SPM
Name: 338
Description: This log is generated when the SPM stays HOLDOVER state longer than 24 hours.
Event type:HLDOVR24 alarm is raised.

11.8.2 Format

Figure 11 Formats of log reports

SPM338 MMMDD hh:mm:ss ssdd INFO SPM Has Been In Holdover Over 24 Hours
Location: SPM: <spm number> CEM: <unit number>
Reason: <reason text>
Alarm: HLDOVR24
Action: Raise

Figure 12 Sample log reports

SPM338 JAN03 20:06:19 5600 INFO SPM Has Been In Holdover Over 24 Hours
Location: SPM: 0 CEM: 0
Reason: No available sync references.
Alarm: HLDOVR24
Action: Raise

11.8.3 Field descriptions

Table 7 Field descriptions

Field	Value	Description
SPM	0 - 63	arbitrary integer which identify the SPM
CEM	0 - 1	Indicates unit number of CEM affected
Reason	Symbolic text	- No available sync references.
Alarm	HLDOVR24	the SPM is in HOLDOVER state over 24 hours Node alarm

11.8.4 Action

Manual intervention is required.

11.8.5 Associated OM registers

None.

11.8.6 Additional information

None.

11.9 SPM 638

This new log is counterpart to SPM 338 log indicating clearing of the condition.

This is a new info log to indicate recovery from 24 Hour Holdover

The HLDOVR24 is the alarm against a node.

11.9.1 Explanation

Log title: SPM
Name: 638
Description: This log is generated when he SPM is recovered from HOLDOVER state and become synchronized.
Event type:HLDOVR24 alarm is cleared.

11.9.2 Format

Figure 13 Formats of log reports

SPM638 MMMDD hh:mm:ss ssdd INFO SPM Has Exited 24 Hour Holdover
Location: SPM: <spm number> CEM: <unit number>
Reason: <reason text>
Alarm: HLDOVR24
Action: Clear

Figure 14 Sample log reports

SPM638 JAN03 20:06:19 5600 INFO SPM Has Exited 24 Hour Holdover
Location: SPM: 0 CEM: 0
Reason: Sync has been restored.
Alarm: HLDOVR24
Action: Clear

11.9.3 Field descriptions

Table 8 Field descriptions

Field	Value	Description
SPM	0 - 63	arbitrary integer which identify the SPM
CEM	0 - 1	Indicates unit number of CEM affected
Reason	Symbolic text	- Sync has been restored.
Alarm	HLDOVR24	the SPM is in HOLDOVER state over 24 hours Node alarm

11.9.4 Action

None.

11.9.5 Associated OM registers

None.

11.9.6 Additional information

None.

11.10 SPM 501

This is a existing log and remains to provide mode change of sync software on the SPM. However there is a minor change in format. .

11.10.1 Format

Figure 15 Formats of log reports

SPM501 MMMDD hh:mm:ss ssdd INFO Sync Operation Mode Change
Location: SPM: <spm number> CEM: <unit number>
Reason: SPM changed modes from **<intial mode>** to **<new mode>**

Figure 16 Sample log reports

```
SPM501 OCT31 01:11:12 7400 INFO Sync Operation Mode Change
Location: SPM: 3   CEM: 1
Reason: SPM changed modes from Sync     to Sync
```

11.10.2 Field descriptions

Table 9 Field descriptions

Field	Value	Description
SPM	0 - 63	arbitrary integer which identify the SPM
CEM	0 - 1	Indicates unit number of CEM affected
from/to	mode name	{Acquire, Holdover, Freerun, Sync}

11.10.3 Action

None.

11.10.4 Associated OM registers

None.

11.10.5 Additional information

In order to accomodate mode names with different length, there is a chance to have extra blank space in reason text.

When CEM is initiliazed (i.e. CEM is just return to service), even though mode is changed from ‘NIL SYNC’ mode to other synchronization mode, this log is not generated.

11.11 SPM 510

This new log is generated to inform that the clock reference has been changed (Nodal event). This information was previously covered by SPM 332 log.

The reason text is also enhanced to support STM-1 as a clock reference. The possible reason text list will be documented in “Additional information” on page 180.

11.11.1 Explanation

Log title: SPM
Name: 510
Description: This log is generated when he SPM switched a clock reference.
Event type: No alarm related.

11.11.2 Format

Figure 17 Formats of log reports

SPM510 APR15 23:21:18 7837 INFO Sync Reference Switch
Location: SPM: <spm number> CEM: <unit number>
Reason: System switch: from <device name> to <device name>.

Figure 18 Sample log reports

SPM510 APR15 23:21:18 7837 INFO Sync Reference Switch
Location: SPM: 2 CEM: 1
Reason: System switch: from CEM 0 LINK 1 to STM 1.

11.11.3 Field descriptions

Table 10 Field descriptions

Field	Value	Description
SPM	0 - 63	arbitrary integer which identify the SPM
CEM	0 - 1	Indicates unit number of CEM affected
from/to	device name	this field contains possible clock reference and they are listed in Additional Information section below.

11.11.4 Action

None.

11.11.5 Associated OM registers

None.

11.11.6 Additional information

The table below captures the mapping of device names from the previous log (SPM 332) to this new log (SPM 510).

When CEM is initialized (i.e. CEM is just return to service), even though synchronization reference is changed from ‘NIL’ source to other reference, this log is not generated.

Table 11 Mapping from SPM332 reason text to SPM510 reason text

SPM332 device names	SPM510 device names
C Side 1	CEM X LINK 1
C Side 2	CEM X LINK 2
C Side 3	CEM X LINK 3
C Side 4	CEM X LINK 4
MATE 1	CEM Y LINK 1
MATE 2	CEM Y SYSFP
OC-3 0	OC3 0
OC-3 1	OC3 1
N/A	STM 0
N/A	STM 1

Note: For example, if the CEM 0 changes the reference source from STM 0 to mate, its reason text shows “... from STM 0 to CEM 1 LINK 1”.

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 31 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

12: Log changes (LG)

The present SYNC subsystem logs are being re-used by this feature with modifications to reflect slip counts being “Not Available”.

The following table lists the SYNC subsystem logs being changed by this feature.

Table 1 SYNC subsystem logs

Log	Type	Trigger
SYNC 202	INFO	change in clock state, timing link status, or an update to the tuning control for the system clock.
SYNC 203	FLT	Timing link fault, clock fault, office dropped synchronization, or digital-to-analog convertor (DAC) for the system clock.

12.1 SYNC 202

12.1.1 Explanation

Log title: SYNC
Name: 202
Description: This is an info log generated to inform of any change in clock state, timing link status, or an update to the tuning control for the system clock.

12.1.2 Format

Figure 1 Formats of log report SYNC 202

```
SYNC202 mmmdd hh:mm:ss ssdd INFO eventtxt
CLOCK = n clktxt
      CLK0,CLK1: State = synctxt,synctxt Tuning Control = hhhh,hhhh
            ALARM = flttxt, flttxt
      LK0 ,LK1 : State = linktxt, linktxtl    Slip Count = n,n
            Carrier = carrtxt,carrtxt
         rsntxt
```

Figure 2 Sample log reports

```
SYNC202 AUG25 11:38:50 0600 INFO System CNFG: SYNC Info
      CLOCK 1   Master Clock       Mastership update
      CLK0,CLK1: State = Sync,Free   Tuning Control = 0800,8358
            ALARM =  .  ,MM
      LK0 ,LK1 : State = Smp ,Idl    Slip Count = NA,NA
            Carrier =  .  ,SysB
      System Request
```

12.1.3 Field descriptions for fields changed by this feature.

The other fields are described under Section “12.3 Appendix” on page 165

Table 2 Field descriptions for fields changed by this feature

Field	Value	Description
SLIP CT	0-32,768	Slip count of the timing link since clock system was initially synchronized.
	NA	Slip count is Not Available, in case of OC-3 Line Timing mode.

12.1.4 Action

No action is required. This report provides information on the synchronous clock which may be used in conjunction with trouble clearing procedures.

12.1.5 Associated OM registers

None.

12.2 SYNC 203

12.2.1 Explanation

Log title: SYNC
Name: 203
Description: This is a FLT log generated to inform of any Timing link fault, clock fault, office dropped synchronization, or digital-to-analog convertor (DAC) for the system clock.

12.2.2 Format

Figure 3 Formats of log report SYNC 203

```
SYNC203 mmmdd hh:mm:ss ssdd FLT event
CLOCK = n clktxt
      CLK0,CLK1: State = synctxt,synctxt Tuning Control = hhhh,hhhh
            ALARM = flttxt, flttxt
      LK0 ,LK1 : State = linktxt, linktxtl    Slip Count = n,n
            Carrier = carrtxt,carrtxt
         rsntxt
```

Figure 4 Sample log reports

```
SYNC203 AUG27 08:58:34 4500 FLT  System CNFG: SYNC Event Failure
      CLOCK 1   Master Clock       Sync faults changed
      CLK0,CLK1: State = Sync,Free   Tuning Control = 0800,8358
            ALARM =  .  ,MM
      LK0 ,LK1 : State = Idl ,Idl    Slip Count = NA,NA
            Carrier = ManB,SysB
Timing Ref 0 Fault:      Samples timed out in local
```

12.2.3 Field descriptions for fields changed by this feature.

The other fields are described under Section “12.3 Appendix” on page 165

Table 3 Field descriptions for fields changed by this feature

Field	Value	Description
SLIP CT	0-32,768	Slip count of the timing link since clock system was initially synchronized.
	NA	Slip count is Not Available, in case of OC-3 Line Timing mode.

12.2.4 Action

No action is required. This report provides information on the synchronous clock which may be used in conjunction with trouble clearing procedures.

12.2.5 Associated OM registers

None.

12.3 Appendix

The following sections are provided here for a better understanding of the SYNC subsystem logs and its behavior with OC-3 line-timing feature.

12.3.1 Other sync subsystem Logs

The following logs are part of the SYNC subsystem Logs and are all remote sync office configuration specific.

Table 4 Other Sync subsystem logs

Log	Type	Trigger
SYNC205	INFO	change in clock state, timing link status, or an update to the tuning control for the system clock in a Remote Sync Office configuration
SYNC206	FLT	Timing link fault, clock fault, office dropped synchronization, or digital-to-analog convertor (DAC) adjust failure for the system clock in a remote sync office configuration
SYNC208	INFO	change in clock state, timing link status, or an update to the tuning control for the remote clock in a Remote Sync Office configuration
SYNC209	FLT	Timing link fault, clock fault, office dropped synchronization, or digital-to-analog convertor (DAC) adjust failure for the remote clock in a Remote Sync Office configuration

12.3.2 Additional information on Log SYNC202

12.3.2.1 Field Descriptions for fields unchanged by this feature

The table below gives a description of all the fields in the log except the slip count field.

Table 5 Field descriptions for fields unchanged by this feature

Field	Value	Description
eventtxt	Symbolic text	Indicates the event which caused this report to be generated. Refer to Table 4 “SYNC clock status” under section “12.3 Appendix”.
CLOCK	0,1	Number of the clock which caused this report to be generated.
clktxt	Master clock, slave clock	Indicates whether the clock which caused the report to be generated is the master or the slave clock.

CLK0,CLK1	Constant	Indicates the following values are given for both clocks.
STATE	FREE (free-running), SYNC(synchronized), LKNG(linking).	The synchronization of the two synchronous clocks.
Alarm	 Htr Pwr Phse Tun Ext Alm 0 Alm 1 Beat MM (blank)	The alarm(s) associated with the clocks. Fltcode refers to the fault code for the internal or external oscillator. Values are : Internal oscillator heater fault. Failure of a clock card power converter. Malfunction of phase detector circuitry. The clock is near the end of it's tuning range. Active clock in master-external office is in state FREE, or external reference signal has failed. The external reference oscillator has failed. The power supply of the emergency reference oscillator has failed. The beat frequency of the two external reference signals has two short a period. N/A if no value appears after ALARM, there is no alarm.
Tuning control	0000-FFFF 0000 8000 FFFF	Label for tuning control values of clocks. Values are presented for each clock as four hexadecimal digits. The hexadecimal values and their corresponding frequencies are : A frequency lower than middle by a FSR of -1.5*10e-6. The middle frequency, nominally 10.240MHZ. A frequency higher than middle by a FSR of +1.5*10e-6.
LINK0, LINK1	LCK(locked), SMP(sampling), IDL(idle)	Values for the two links used for synchronizing
rsntxt	Symbolic text	Provides a detailed reason for the generation of this log report. Refer to Table 5 "SYNC log reasons" list under section "12.3 Appendix"

12.3.2.2 SYNC Clock Status

The table below provides a list of SYNC clock status, which would cause the generation of this log. The SYNC clock status is displayed as the event text on the log. All the clock status which could occur in OC-3 line-timing mode, are flagged in the table with the second column.

Table 6 SYNC Clock Status

Status	Could occur with OC-3 line-timing
Clock SYNC started	Yes
Clock SYNC acquired	Yes
Carrier switch okay	Yes
Carrier switch fail	Yes
Unexpected sample	Yes
Primary PM Slip	No
Alternate PM slip	No
No Primary samples	Yes
No alternate samples	Yes
Sampling stopped	Yes
Sampling continued	Yes
Link state changed	Yes
Man clock test pass	Yes

12.3.2.3 SYNC log reasons

The table below provides all the reasons for the generation of the log and flags whether it is expected in OC-3 line-timing mode.

Table 7 SYNC log reasons

Heading	Could occur with OC-3 line-timing
Manual request	Yes
Clock CMU DAC failure	Yes
Central and local data mismatch	Yes
DAC upper limit has been reached	Yes
DAC lower limit has been reached	Yes
Timing link has been return to service	Yes
Office configuration has changed	Yes
Failed to reach synchronization	Yes
Sample range exceeded - check source	No

Heading	Could occur with OC-3 line-timing
Unable to start PM sampling	Yes
No in-service timing links available	Yes
No primary PM samples received	Yes
No alternate PM samples received	Yes
A slip has occurred while in sync	No
Local timeout threshold has been reached	Yes

12.3.3 Additional information on Log SYNC203

12.3.3.1 Field Descriptions for fields unchanged by this feature

The table below gives a description of all the fields in the log except the slip count field.

Table 8 Field descriptions for fields unchanged by this feature

Field	Value	Description
FLT event	Descriptive text	Indicates the event which caused this report to be generated. Refer to Table SYNC clock failures at the end of this report.
CLOCK	0,1	Number of the clock which caused this report to be generated.
clktxt	Master clock, slave clock	Indicates whether the clock which caused the report to be generated is the master or the slave clock.
CLK0,CLK1	Constant	Indicates the following values are given for both clocks.
STATE	FREE (free-running), SYNC(synchronized), LKNG(linking).	The synchronization of the two synchronous clocks.

Table 8 Field descriptions for fields unchanged by this feature

Field	Value	Description
Alarm		The alarm(s) associated with the clocks. Flt code refers to the fault code for the internal or external oscillator. Values are :
	Htr	Internal oscillator heater fault.
	Pwr	Failure of a clock card power converter.
	Phse	Malfunction of phase detector circuitry.
	Tun	The clock is near the end of it's tuning range.
	Ext	Active clock in master-external office is in state FREE, or external reference signal has failed.
	Alm 0	The external reference oscillator has failed.
	Alm 1	The power supply of the emergency reference oscillator has failed.
	Beat	The beat frequency of the two external reference signals has two short a period.
	MM	N/A
	(blank)	if no value appears after ALARM, there is no alarm.
Tuning control	0000-FFFF	Label for tuning control values of clocks. Values are presented for each clock as four hexadecimal digits. The hexadecimal values and their corresponding frequencies are :
	0000	A frequency lower than middle by a FSR of -1.5*10e-6.
	8000	The middle frequency, nominally 10.240MHZ.
	FFFF	A frequency higher than middle by a FSR of +1.5*10e-6.
LINK0, LINK1	LCK(locked), SMP(sampling), IDL(idle)	Values for the two links used for synchronizing
rsntxt	Symbolic text	Provides a detailed reason for the generation of this log report. Refer to Table SYNC log reasons list at the end of this log report.

12.3.3.2 Sync clock failures

The following tables provide all possible clock synchronization failures and flags whether it is expected in OC-3 line-timing mode.

Table 9 SYNC clock failures

Events	Could occur with OC-3 line-timing
Clock failed to SYNC	Yes

Table 9 SYNC clock failures

Events	Could occur with OC-3 line-timing
Phase limit exceeded	Yes
Sample range exceeded	Yes
Stuck samples	Yes
Phase range error	No
Ext ref select fail	No
Ref oscillator fail	No
Beat frequency det	No
Phase counter error	No
Multiple bad samples	No
Man clock test fail	Yes

12.3.3.3 Sync log reasons

The table below provides all the reasons for the generation of the log and flags whether it is expected in OC-3 line-timing mode

Table 10 SYNC log reasons

SYNC log reasons	Could occur with OC-3 line-timing
Manual request	Yes
Clock CMU DAC failure	Yes
Central and local data mismatch	Yes
DAC upper limit has been reached	Yes
DAC lower limit has been reached	Yes
Timing link has been return to service	Yes
Office configuration has changed	Yes
Failed to reach synchronization	Yes
Sample range exceeded - check source	No
Unable to start PM sampling	Yes
No in-service timing links available	Yes
No primary PM samples received	Yes

SYNC log reasons	Could occur with OC-3 line-timing
No alternate PM samples received	Yes
A slip has occurred while in SYNC	No
Local timeout threshold has been reached	Yes

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port” mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 10 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

4: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

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Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 4.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

4.1 <Log title>

4.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

4.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

4.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 19 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the “Action” part of this Log section.

4.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

4.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

4.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

4: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 4.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

4.1 <Log title>

4.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

4.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

4.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 35 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the “Action” part of this Log section.

4.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

4.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

4.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

4: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 4.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

4.1 <Log title>

4.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

4.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

4.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 34 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

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- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
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- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

4.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

4.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

4.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

4: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 4.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

4.1 <Log title>

4.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

4.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

4.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 34 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
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- numerical values
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- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the “Action” part of this Log section.

4.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

4.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

4.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

10.1 IOD206 ENDIAN FAIL

10.1.1 Explanation

Log title: IOD206 ENDIAN FAIL
Name: IOD206 INFO LOG
Description:

Note that an IOD206 log is an already existing INFO log with INFO text at the end of the LOG. This documentation reports a new version of this log, because new text is being added to the end of the LOG. IOD206 logs have existed since 1977. This is not the creation of a new log.

This log will be output if a user attempts to set the ENDIAN of an IOM DAT tape drive to BIG and the IOM firmware load is PRE version IOMRAW01 or IOMRAW01. The ENDIAN of the IOM DAT tape drive can be set to BIG only if the IOM FIRMWARE is POST version IOMRAW01. The way a user would attempt to set the ENDIAN of an IOM DAT tape drive to BIG would be to update the MTD table so the ENDIAN field is set to BIG for that DAT tape drive, then do an RTS, TSTS or MOUNT on that tape drive.

10.1.2 Format

Figure 1 Formats of log reports

```
IOD206 mmmdd hh:mm:ss ssdd INFO MTD: mtdno;info_text
```

Figure 2 Sample log reports

```
IOD206 JUN17 15:53:21 9200 INFO MTD: 7; ENDIAN FAIL
```

10.1.3 Field descriptions

Table 2 Field descriptions

Field	Value	Description
mtdno	0 to 15	specifies the magnetic tape drive number
info_text	ENDIAN FAIL	The user was not able to set the ENDIAN of the specific MTD to BIG.

10.1.4 Action

The telco should detemine if it is desired to have the write and read format of the IOM DAT tape drive set to BIG ENDIAN. If so, then the telco must reload the IOM with an IOM firmware load POST version IOMRAW01, and again attempt to set the ENDIAN to BIG. The log should now not be generated. The way the telco sets the endian to big is to set the ENDIAN field in table MTD to BIG for the specified IOM DAT, then do a TST, RTS or MOUNT command on the relevant IOM DAT tape drive. At this point, the log should not be generated. To double check that the ENDIAN is set correctly, the telco should go to the IOM DAT level or menu (eg MAPCI;MTC:IOD:IOC x;port y--where x is the IOC number and y is the IOM port number for the DAT), and enter CHKTAPE. This command should reply with ‘BIG’. If it replies with ‘LITTLE’, then the IOM DAT tape drive format is not set to BIG ENDIAN , but is still LITTLE ENDIAN

10.1.5 Associated OM registers

NONE.

10.1.6 Additional information

NONE.

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

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10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
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A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
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Include appropriate action for specific field values in cases not covered in the “Action” part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

10.1 <Log title>

10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 9 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

9: Log changes (LG)

9.1 <Log title>

None

9.1.1 Explanation

Log title:
Name:
Description:
Event type:

9.1.2 Format

Figure 1 Formats of log reports

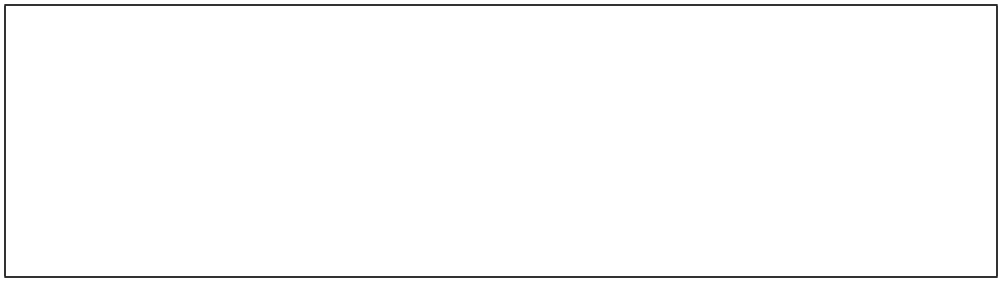
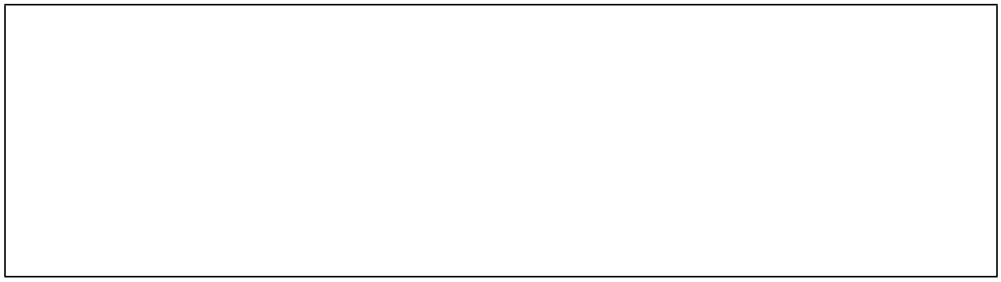


Figure 2 Sample log reports



9.1.3 Field descriptions

Table 3 Field descriptions

Field	Value	Description

9.1.4 Action

9.1.5 Associated OM registers

9.1.6 Additional information

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Log changes that result from this feature. This information is used to update the Log NTP in the customer documentation set.

Instructions: It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Template instructions: Do not include this section in the DDOC if logs are not being changed.

Refer to PLS DIS document IEMPG for log guidelines before proceeding further. Refer to the PLS home page (http://47.80.12.39:31462/pls).

Duplicate template section 10.1 for each log.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

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10.1.1 Explanation

Log title:
Name:
Description: Describe the circumstances under which the log report is

generated, its severity and operating impact. Describe the meaning of the log report.
Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

- the event identification when present
- constant fields, where the value does not change (usually written in upper case)
- variable fields, where there is more than one possible value or a range of values (written in lowercase)
- mixed fields, consisting of a constant and a closely associated variable (written in a mixture of uppercase and lowercase letters)

A small number of text variables, familiar to the reader, can be represented by their commonly used abbreviations, for example: DN

Value column:

Supply the following types of values in the value column as appropriate.

- individual values
- numerical values
- symbolic text, indicating a range of values as described in the description column
- constant, indicating only one value for the field

Description column:

Include the following information, as appropriate, in the description column.

- the meaning of the field
- the meaning of specific values
- why a particular value is displayed
- the relationship between this and other fields
- references to tables that list and describe a set of values
- references to the customer data schema (or customer data tables) that define the range of values for a particular office

Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

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Duplicate template section 10.1 for each log.

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10.1 <Log title>

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Log title:
Name:
Description: Describe the circumstances under which the log report is

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Event type:

10.1.2 Format

Provide a general format for the log report, identifying constant and variable text. Provide an actual example of the log report as it comes from the DMS switch. If more than one format exists, show all formats and number each format. For example, format 1, format 2, and so forth. Use angle brackets <> to identify all variable fields of the report.

Figure 1 Formats of log reports

```
Format 1

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

Complete one table shown below for each log report. Each field in the log report must be described. Add rows to the table to cover additional fields .

Table 2 Field descriptions

Field	Value	Description

Field column:

Provide the following types of entry:

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Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

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List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

10: Log changes (LG)

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Figure 1 Formats of log reports

```
Format 1

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   ENET state change. Set from CSBY; rsntxt
   Translated CSLink: MS Card: msed Port" mspt

Format 2

**ENET104 mmmdd hh:mmm:ss ssdd SYSB ENET Plane: pl Shelf: sh
   ENET STATE CHANGE. SET FROM CSBY; text_reason
   Translated CSLink: MS Card: msed MSLink: mslk post: msptt
```

Figure 2 Sample log reports

```
Format 1

**ENET104 SEP24 13:23:54 2112 SYSB ENET Plane:1Shelf:03
   ENET state change. Set from CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 Port: 002

Format 2

**ENET104 SEP24 00:00:00 6000 SYSB ENET Plane:1Shelf:03
   ENET STATE CHANGE . SET FROM CSBY; CSID BUSY dropped
   Translated CSLink: MS Card: 15 MSLink: 0 Post: 2
```

10.1.3 Field descriptions

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Table 2 Field descriptions

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Field column:

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Include appropriate action for specific field values in cases not covered in the "Action" part of this Log section.

10.1.4 Action

Explain what action should be taken by operating company personnel when the log report occurs. Some log reports are for information only and therefore require no immediate action; in this case state that no immediate action is required.

Example: Follow the standard procedures for maintenance of a system busy ENET.

10.1.5 Associated OM registers

List any OMs that are associated with the log. This section must be completed if you are changing either an OMPR log or an OMRS log. If no OMs are associated with the log, state NONE.

Example: The OM register ENSBU (SysB usage) is pegged.

10.1.6 Additional information

Provide any information which is relevant to the log report that is not covered in any of the previous sections. Include information such as reasons for generating the log or suggestions to support personnel about using the log with or without associated logs to interpret a problem.

Example Here is a list of reasons for generation of a log report ENET104:

- Cannot communicate with local
- computing module (CM) reload restart
- CM cold start
- CM warm SWACT

*** DATA SCHEMA LIST OF FEATURES ***

a59006371_ds.aa08
a59006586_ds.ab44
a59010572_ds.aa12
a59010576_ds.aa12
a59011294_ds.aa28
a59011676_ds.aa12
a59011902_ds.aa05
a59011907_ds.aa82
a59011948_ds.aa14
a59011953_ds.aa09
a59012000_ds.aa07
a59012144_ds.aa11
a59012182_ds.aa20
a59012192_ds.aa12
a59012232_ds.aa09
a59012259_ds.aa26
a59012291_ds.aa03
a59012446_ds.aa10
a59012468_ds.aa08
a59012488_ds.aa14
a59012574_ds.aa14
a59012624_ds.aa08
a59012642_ds.aa06
a59012655_ds.aa07
a59012846_ds.aa08
a59012880_ds.aa07
a59013009_ds.aa11
a59013034_ds.aa11
a59013044_ds.aa21
a59013088_ds.aa10
a59013169_ds.aa14
a59013226_ds.aa49
a59013251_ds.aa08
a59013383_ds.aa11
(Continued on Part 2 of 2)

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: TRKGRP

Trunk Group Table

11.1.1.1 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
TRKGRP	na	na	Memory allocation is nominal

11.1.1.2 Table fields

The following table lists fields for table TRKGRP.

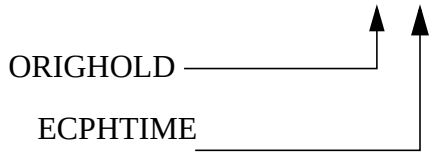
Table 2 Table field descriptions

E911 Option Subfield	New or Changed	Subfield or refinement	Entry	Explanation and action
ORIGHOLD	New	Subfield	Y/N	Originator Hold: Default value will be set to N.
ECPHTIME	New	Subfield	0-255 seconds	Enhanced Calling Party Hold Time: The default value of ‘0’ (zero) indicates that ECPH is not active..

11.1.1.3 Datafill example

The following example shows sample datafill for table TRKGRP:

E911ICS7 IT 0 ELO NCRT IC NIL MIDL 613 AT1 NSCR 613 000 N N (E911 747 113 E911_STD ***Y 120***) $



11.1.1.4 Table release history update

The following information was added:

- Subfield ORIGHOLD: A boolean value to indicate if incoming 911 calls should be held if the originator goes onhook.
- Subfield ECPHTIME: A timer used to indicate how many seconds ECPH will be active on a 911 call. If the caller goes onhook before the call is answered and before this timer has expired, it will be held. This timer will be identical to the type currently used for MF trunks

11.1.1.5 Supplementary information

NONE

11.1.1.6 Translation verification tools

ORIGHOLD and ECPHTIME do not affect call translations.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name:

DNROUTE

11.1.1.1 Functional description

CFIB is provisioned against a DN (base DN) as an option on the **FEAT Selector** in table DNROUTE. When a call to be routed over a base DN's routelist failed due to the trunks being call processing busy, out-of-service or unavailable and if the base DN subscribes to CFIB, then the call is forwarded to a remote DN.

11.1.1.2 Datafill sequence and implications

A base DN can subscribe to CFIB in table DNROUTE only after an entry in table CFIBDATA is provisioned.

11.1.1.3 Table size

Unchanged.

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory

11.1.1.4 Table fields

The following table lists the modified fields of table DNROUTE.

Table 2 Table field descriptions

Field/ Subfield	New or Changed	Subfield or refinement	Entry	Explanation and action
FEAT	Changed	Has refinement	All existing + CFIB	A new optional selector value - CFIB is added. This causes the call to be routed to a remote DN based on the incoming call's bearer capability.
TABNAME	New	None	Routing table[a]	Specifying a routelist which is to be used to route the incoming call to the base DN.
INDEX	New	None	1 to 1023	Index into the routing table
CFIBID	New	None	A string of up to sixteen characters	Index of table CFIBDATA to get information of remote DNs
CFIBBASE	New	None	common language name (clli)	This PRI clli becomes the originator of the fowarded call to the remote dn, when all the routes in the routelist is busy.
CFIBSBDN	New	None	A 10-digit number	Billing DN to be used for the base DN to remote DN portion of the CFIB call.
RPNPP	New	None	Y or N Default is Y for allowed.	Indicating whether the presentation of the remote party number (remote DN) is allowed.

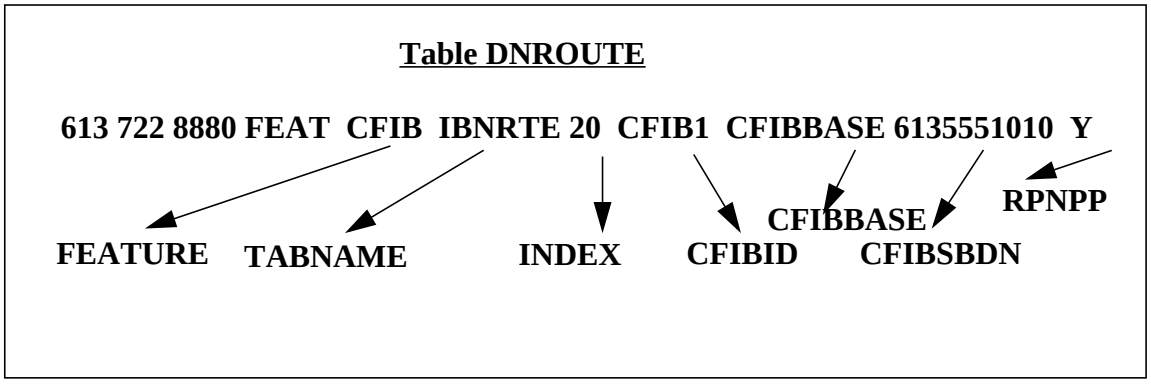
a. The supported routing tables are OFRT, OFR2, OFR3, OFR4, IBNRTE, IBNRT2, IBNRT3, IBNRT4.

11.1.1.5 Datafill example

The following example shows a sample datafill:

Figure 1 Table control interface for provisioning CFIB in table DNROUTE

```
TABLE: DNROUTE
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
AREACODE:
>613
OFCCODE:
>722
STNCODE:
>8880
DN_SEL:
>feat
FEATURE:
>cfib
TABNAME:
>ibnrte
INDEX:
>20
CFIBID:
>CFIB1
CFIBBASE:
>clli1
CFIBSBDN:
>6135551010
RPNPP: Y
><cr>
TUPLE TO BE ADDED:
   613    722     8880      FEAT CFIB IBNRTE 20 CFIB1 6135551010 Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```



11.1.1.6 Table release history update

A new CFIB FEAT selector is introduced which contains the fields mentioned from the second row onwards in Table 2, “Table field descriptions,” on page 986.

11.1.1.7 Supplementary information

The data is dumped and restored by an ONP. CFIBDATA table should be dumped and restored before table DNROUTE.

11.1.1.8 Translation verification tools

Not Applicable

11.1.1.9 New Error Messages introduced by CFIB

If attempting to add a CFIB tuple when the maximum number of DN’s provisioned with CFIB has been reached (10,000), then the following error message is produced:

THE NUMBER OF CFIB TUPLES CANNOT EXCEED 10,000.

If attempting to add a CFIB tuple in DNROUTE which has a CFIBID that is not provisioned in table CFIBDATA, the following message will be produced:

THE ENTERED CFIBID MUST BE PROVISIONED IN CFIBDATA

If attempting to add a CFIB tuple in DNROUTE which has an invalid route table or index, the following message will be produced:

THE ENTERED ROUTE IS INVALID.
THE ROUTE IS NOT PROVISIONED IN TABLE <route table>

If attempting to add a CFIB tuple in DNROUTE with IRTE as the routing table the following message is produced:

IRTE IS NOT SUPPORTED FOR CFIB

If attempting to add a CFIB tuple in DNROUTE with RRTE as the routing table the following message is produced:

RRTE IS NOT SUPPORTED FOR CFIB

If attempting to position on a CFIB tuple in DNROUTE which has a cfibid that is out of range, then the table CFIBDATA may be corrupt. The following message will be produced:

CANNOT FIND CFIBID IN CFIBDATA - DATA CORRUPTED

11.1.2 Table name:

CFIBDATA -- Call Forward Interface Busy Data

11.1.2.1 Functional description

New table CFIBDATA is used to store information of the remote DNs to which the call is to be forwarded. One Remote DN is provisioned for each of the bearer capability supported by this feature.

11.1.2.2 Datafill sequence and implications

A base DN can subscribe to CFIB in table DNROUTE only after an entry in table CFIBDATA is provisioned.

11.1.2.3 Table size

Table 3 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
CFIBDATA	0	255	20 bytes per tuple

11.1.2.4 Table fields

The following table lists the fields of the CFIBDATA table.

Table 4 Table field descriptions

Field/ Subfield	New or Changed	Subfield or refinement	Entry	Explanation and action
CFIBID	New	N/A	Char_vector A string of up to sixteen characters	CFIB identifier; key to a tuple in the table. This identifier will be specified in table DNROUTE for a DN subscribing to the CFIB option.
RDNSPCH	New	N/A	DN of max of 15 digits length. See Note	DN to which the call is forwarded if the incoming bearer capability is Circuit-Mode Speech.
RDN3KAUD	New	N/A	DN of max of 15 digits length. See Note	DN to which the call is forwarded if the incoming bearer capability is Circuit-Mode 3.1 KHz Audio

Table 4 Table field descriptions

Field/ Subfield	New or Changed	Subfield or refinement	Entry	Explanation and action
RDN64KUD	New	N/A	DN of max of 15 digits length. See Note	DN to which the call is forwarded if the incoming bearer capability is Circuit-Mode Unrestricted Digital Information (64 kbps)
RDNUDAD	New	N/A	DN of max of 15 digits length. See Note	DN to which the call is forwarded if the incoming bearer capability is Circuit-Mode Unrestricted Digital Information adapted from 56 kbps to 64 kbps

11.1.2.5 Datafill example

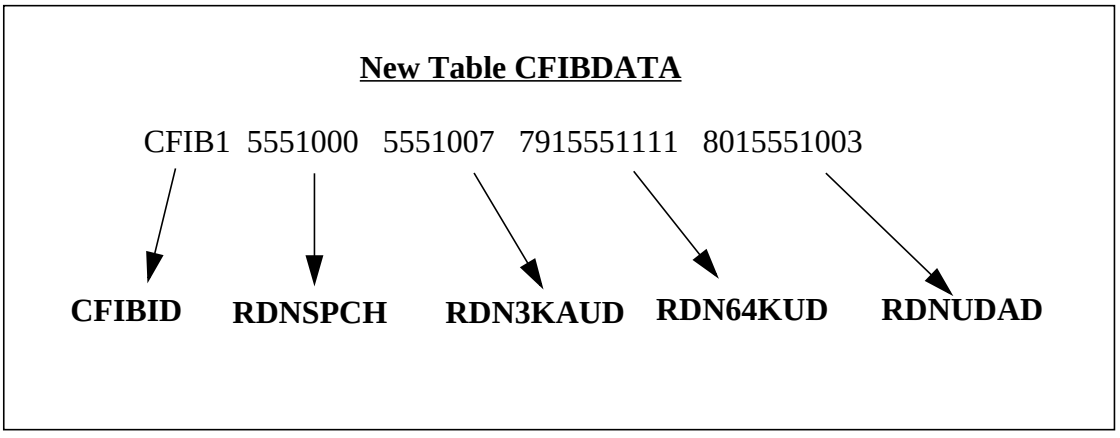
An example of sample datafill is shown below:

Figure 2 Table control interface for provisioning Remote DNs in table PRICFIB

```
TABLE: CFIBDATA
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
CFIBID:
>cfib1
RDNSPCH:
>5551000
RDN3AUD:
>5551007
RDN64UDI:
>7915551111
RDNUDIAD:
>8015551003

TUPLE TO BE ADDED:
        CFIB1       5551000       5551007     7915551111
   8015551003

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
```



11.1.2.6 Table release history update

This is a new table introduced by CFIB feature in NA013.

11.1.2.7 Supplementary information

The data is dumped and restored by an ONP. CFIBDATA table should be dumped and restored before table DNROUTE.

11.1.2.8 Translation verification tools

Not Applicable.

11.1.2.9 New Error Messages introduced by CFIB

If attempting to add a tuple when the maximum number of CFIB tuples has been reached (255) then the following error message is produced:

TABLE CFIBDATA IS FULL
THE MAXIMUM NUMBER OF TUPLES THAT CAN BE ADDED IS 255.

If attempting to position on a tuple in CFIBDATA which is out of range then the table may be corrupt. The following message will be produced:

CANNOT FIND TUPLE - DATA CORRUPTED

If attempting to add a remote DN that has digits not 0-9 then the following error message will be produced :

THE DN FOR <bearer capability> MUST BE DIGITS 0-9.

When adding a remote dn if $ is entered the following message will be produced:

NO DIGITS ENTERED
THE DN FOR <bearer capability> MUST BE DIGITS 0-9.

11: Data schema changes (DS)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Data Schema impacts that result from this feature. This information is used to update the translations NTP, in the customer documentation. Office parameter sections have been moved out of this section into a separate OP section of the DDOC.

Instructions: Do not include this section in the DDOC if data schema changes are not being made.

It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Refer to PLS FMDOC module TABCTRL, “Guide to Table Control and Reformats”, for a guide to identifying changes requiring reformats and how to write reformats. Refer to the PLS home page (http://47.80.12.39:31462/pls).

For all Data Schema changes made after the software release DC (Design Close) milestone, an email must be sent to DMS DATA and the Customer Documentation prime indicating the tables effected, feature number and nature of the change.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

11.1 Table information

Duplicate the table information in this section for each new or modified table.

11.1.1 Table name: <abbreviated name of table>

Type the abbreviated name of the table in the heading.

<long name of table>

Give the full table name from which the abbreviated table name is derived. The long table name is written with initial capital letters for each word except for prepositions, articles, and coordinate conjunctions (and, or, for, nor).

Example:
Table name:DDPACDEV
Datapac Device Table

11.1.1.1 Functional description

For new tables only, state the purpose of the table and describe how the table is accessed and used by the system. If applicable, mention relationships with other tables, functional groups, or functionalities. If appropriate, include a description of how to add, delete, or change tuples in the table. Flow charts and block diagrams may be useful to help illustrate the functional description.

Example:
Table DPACDEV lists assignments for each data packet controller (DPC) circuit card configured in the input/output controller (IOC). For related information refer to table MTD. For adequate diagnostics, the minimum number of logical channels must be three.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- <abbreviated names of tables before the current table if applicable>
- <abbreviated name of the current table>
- <abbreviated names of tables after the current table if applicable>

OR

There is no requirement to datafill tables in a specific order.

OR

Current datafill order unchanged.

This section lists other tables that must be datafilled before or after the table being documented, as well as office parameters that interact with the table.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DDPACDEV	0	8 000 000	Memory is automatically allocated for 16 DPC devices.

This section gives the minimum and maximum number of tuples allowed in the table. If appropriate, information on memory allocation is included. For more complicated tables, include a formula for calculating the table size. If memory requirements are not fixed, explain in complete sentences.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

The table describes each field to be datafilled.

If datafill is conditional upon specific values for certain fields, then provide additional tables for each value of the field. Specify the condition in a paragraph before the table.

<conditional information>

Example:
MSGFROM = ATUP
If the entry in subfield MSGFROM is ATUP, datafill field ATUPMSG as shown in the field description table.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Must be 8 characters or less and include no special characters		Indicate whether this field has any subfields, refinement, and selectors	Specify the range of values for the field, subfield, refinement or selector	Give the long name of the field. Provide instructions for datafilling the field, subfield, refinement, or selector. Provide default values, if applicable.

11.1.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>:

Provide at least one example of a MAP display of the datafilled table, preferably from a captive office or a VSOS session that uses a captive office image.

11.1.1.6 Table release history update

Identify the technical changes to the table in this release, with a short description of the change. This information will be added to the release history in the Data Schema section of the translations NTP.

Example:

The following information was added:

- entry TOPSDB added to field ATTROPTS
- maximum table size of 500 000 tuples for ISN
- blocked calls routed to treatment CNAD

11.1.1.7 Supplementary information

This optional section contains information that doesn't fit in any other section such as datafilling the table for specific applications, product descriptive information, description of feature interactions, and network configuration information.

If there is no content for this section, put NONE.

Example:

This section provides information on deleting datafill in table C7AFTPC.

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

List the tools that can be used to verify that the tables have been datafilled correctly.

Give an output example showing the call progression of the functionality through all necessary tables using these tools.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: SLLNKDEV

11.1.1.1 Functional description

Not applicable

11.1.1.2 Datafill sequence and implications

The table SLLNKDEV is used to datafill the devices for transferring various data to/from the switch. Currently three device types are available 1X67, HS1X67 and 1X89. This activity introduces a new device FX30.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
SLLNKDEV	0 Unchanged	64 Unchanged	Memory is allocated on IPL for 64 tuples.

11.1.1.4 Table fields

The following table lists field of table SLLNKDEV changed specifically for this feature.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
DEVICE	Changed		{1X67, 1X89, HS1X67, FX30}	A new device FX30 is introduced. Note that this is the PEC for IOM.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OPTION: COMMON	Changed	DESK_NUM	{1 TO 999}	The desk number is expanded from 63 to 999.
OPTION: NUMOFDIGS	Changed	NUMDIGS	{7,10,VAR}	A new symbol VAR is introduced for supporting variable digit format.

11.1.1.5 Datafill example

The following example shows sample IOM datafill for table SLLNKDEV

Adding the tuple to table SLLNKDEV:

```
TABLE  SLLNKDEV
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
DEVNAME:
>BILL1
DEVICE:
>FX30
MPCNO:
>0
LINKNO:
>1
XLATION:
>NONE
PROTOCOL:
>NONE
DRECTION:
>INOUTLK
XFER:
>SMDIDATA
OPTION:
>$
XFER:
>$
>TUPLE TO BE ADDED:
BILL1 FX30 0 1 NONE NONE INOUTLK (SMDIDATA $) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

The following example shows sample DESK_NUM and NUMOFDIGS datafill for table SLLNKDEV:

```
TABLE  SLLNKDEV
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
DEVNAME:
>BILL2
DEVICE:
>1X67
XLATION:
>NONE
PROTOCOL:
>NONE
DRECTION:
>INOUTLK
XFER:
>SMDIDATA
OPTION:
>COMMON
DESK_NUM:
>999
CRRTYPE:
>ALL
OPTION:
NUMOFDIGS
>VAR
OPTION:
>$
XFER:
>$
TUPLE TO BE ADDED:
BILL2 1X67 NONE NONE INOUTLK
(SMDIDATA ( COMMON 999 ALL) (NUMOFDIGS VAR) $)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

```
TABLE  SLLNKDEV
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: SLLNKDEV
>list 10
TOP
DEVNAME               DEVTYPE   XLATION  PROTOCOL  DRECTION
                                                      XFERS
-------------------------------------------------------------
BILL1                   FX30 0 1  NONE     NONE     INOUTLK

(SMDIDATA $)$

BILL2                   1X67      NONE     NONE     INOUTLK


(SMDIDATA (COMMON 999 ALL ) $)$


SMDI0                   1X67      NONE     NONE     INOUTLK

(SMDIDATA (CGNADDRDN ) $)$

SMDI2                   1X89 1 2  NONE     NONE     INOUTLK

(SMDIDATA (NUMOFDIGS VAR) $)$
BOTTOM
```

11.1.1.6 Table release history update

- Option FX30 added to field DEVICE.
- The field DESK_NUM is expanded to support 999 message desks.
- The subfield NUMDIGS of field NUMOFDIGS has been expanded to include new type VAR. I.e it has been changed from {7,10} to {7,10,VAR}.

11.1.1.7 Supplementary information

None

11.1.1.8 Translation verification tools

Table SLLNKDEV does not use translation verification tools.

11.1.2 Table name: TCAPTRID

11.1.2.1 Functional description

Prior to this activity NMS tuple was to be datfilled in table TCAPTRID for Network Message Waiting service(NMS MWT).This activity removes the need to datafill NMS tuple in table TCAPTRID.

11.1.2.2 Datafill sequence and implications

Table TCAPTRID datafill is not needed for Network Message Waiting service(NMS MWT).

11.1.2.3 Table release history update

- AT.59010576 removes the need to datafill table TCAPTRID (NMS tuple) for Network Message Waiting service(NMS MWT).

11.1.3 Table name: UCDGRP

11.1.3.1 Functional description

Not applicable

11.1.3.2 Table fields

The following table lists field of table UCDGRP changed specifically for this feature.

Table 3 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OPTION: UCD_SMDI	Changed	SMDI_DESK _NO	{1 TO 999}	The desk number is expanded from 63 to 999.

11.1.3.3 Datafill example

The following example shows sample datafill for table UCDGRP:

Adding the tuple to table UCDGRP:

Table UCDGRP

```
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
UCDNAME:
>SMDI1
ACD:
>n
CUSTGRP:
>mdc
UCDRNGTH:
>15
TABNAME:
>ofrt
INDEX:
>6
PRIOPRO:
>0
MAXPOS:
>5
DBG:
>n
DEFPRIO:
>0
RLSCNT:
>0
MAXWAIT:
>15
MAXCQSIZ:
>5
OPTION:
>ucd_smdi
SMDI_LINK:
>smdi0
SMDI_DESK_NO:
>999
MCOS_LIST:
>$
OPTION:
>$
```

```
TUPLE TO BE ADDED:
SMDI1 N MDC 15 OFRT 6 OFRT 6 0 5 N 0 0 15 5
(UCD_SMDI SMDI0 999 $)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
>
```

```
TABLE  UCDGRP
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: UCDGRP
>list all
TOP
UCDNAME ACD CUSTGRP UCDRNGTH THROUTE
NSROUTE PRIOPRO MAXPOS DBG DEFPRIO RLSCNT MAXWAIT MAXCQSIZ OPT
-------------------------------------------------------------
SMDI0 N MDC 15 OFRT 6 OFRT 6 0 5 N 0 0 15 5(UCD_SMDI SMDI0 63
 $)$

 SMDI1 N MDC 15 OFRT 6 OFRT 6 0 5 N 0 0 15
5(UCD_SMDI SMDI0 999 $)$
```

11.1.3.4 Table release history update

- The subfield SMDI_DESK_NO of option UCD_SMDI is expanded to support 999 message desks.

11.1.3.5 Supplementary information

None

11.1.3.6 Translation verification tools

Table UCDGRP does not use translation verification tools.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: TRKOPTS

Trunk Options

11.1.1.1 Functional description

Option OSNC will be added to table TRKOPTS. This option indicates that OSNC type calls are allowed on the outgoing or two-way ISUP Access to Carrier (ATC) or ISUP Intertoll (IT) trunks. In order to apply the option to the ISUP IT trunk group, the TRKGRP option CHGNUM ALL must be applied. The CHGNUM ALL option is not required for the ATC trunk group.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- TRKGRP
- TRKSGRP
- TRKOPTS

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
TRKOPTS	0	131072	The size of the table is changed dynamically. It may contain up to 131072 tuples with combination of boolean and data options (16). However, it can contain up to 32767 tuples with all data options, based on the maximum number of data blocks available to store the information for the data options.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

<conditional information>

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OSNC	New	N/A	N/A	OSNC calls are allowed on ISUP ATC and IInteretoll trunks

11.1.1.5 Datafill example

The following example shows sample datafill for table TRKOPTS

```
TABLE: TRKOPTS
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y

>isup2witea OSNC

OPTION:
>OSNC

TUPLE TO BE ADDED:
     ISUP2WITEA OSNC OSNC
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

11.1.1.6 Table release history update

11.1.1.7 Supplementary information

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

11: Data schema changes (DS)[1]

11.1 Table information

11.1.1 Table name: XLANAME

Translator names table

11.1.1.1 Functional description

Not Applicable (existing table).

11.1.1.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
XLANAME	unchanged	unchanged	N.A.

11.1.1.4 Table fields

The following table lists new / changed fields for table XLANAME.

[1]Datafill examples and traver examples will be provided at a later stage of detailed design.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
DEFAULT	changed	EXTN and AMBI sel, FILLDIGS field	0 to 7 non-hex digits	Used for padding station code. Refer conditional information for datafill rules.
		EXTN sel and AMBI sel, new option	opt name : SFMM; fields : station_fence, min, max : No. between 0 and 30 for all fields	station_fence in the digit position in the called number from which the station code starts. min and max are used for limits on the length of the dialed digits. When the dialed digits is less than min, the call is routed to partial dial treatment. When the dialed digits are more than max, an attempt is made to route the call by ignoring the excess digits (that is, using max digits). If this fails, the call is routed to vacant treatment.

Conditional Information :

- When the SFMM option is not used, and DIGINEXT is < 4, FILLDIGS require to be filled with 4-DIGINEXT no. of digits.
- When the SFMM option is not used and DIGINEXT is > 4, FILLDIGS are ignored, a warning message is displayed.
- When the SFMM option is used and station_fence is zero, any no. of non hex digits from length 0 to 7 may be entered.
- When the SFMM option is used and station fence is non-zero, FILLDIGS are ignored, a warning message is diplayed.

11.1.1.5 Datafill example

The following example shows sample datafill for table XLANAME :

11.1.1.6 Table release history update

EXTN and AMBI selectors are upgraded for E.164 support. The office code field is enhanced from fixed 3-digit type to ofccode_digit_register type to take 0 to 7 digits. A new option called SFMM is added whcih has three fields : Station Fence, Min digits and Max digits.

11.1.1.7 Supplementary information

11.1.1.8 Translation verification tools

The following example shows the output from Traver when it is used to verify XLANAME.

11.1.2 Table name: IBNXLA

IBN Translation Data table

11.1.2.1 Functional description

Not Applicable (existing table).

11.1.2.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.2.3 Table size

Table 3 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
IBNXLA	unchanged	unchanged	N.A.

11.1.2.4 Table fields

The following table lists new / changed fields for table IBNXLA.

Table 4 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
RESULT	changed	EXTN and AMBI sel, FILLDIGS field	0 to 7 non-hex digits	Used for padding station code. Refer conditional information 1 for datafill rules.
		EXTN and AMBI sel, new option	opt name : SFMM; fields : station_fence, min, max : No. between 0 and 30 for all fields	station_fence in the digit position in the called number from which the station code starts. min and max are used for limits on the length of the dialed digits. When the dialed digits is less than min, the call is routed to partial dial treatment. When the dialed digits are more than max, an attempt is made to route the call by ignoring the excess digits (that is, using max digits). If this fails, the call is routed to vacant treatment.

Conditional Information :

- When the SFMM option is not used, and DIGINEXT is < 4, FILLDIGS require to be filled with 4-DIGINEXT no. of digits.
- When the SFMM option is not used and DIGINEXT is > 4, FILLDIGS are ignored, a warning message is displayed.
- When the SFMM option is used and station_fence is zero, any no. of non hex digits from length 0 to 7 may be entered.
- When the SFMM option is used and station fence is non-zero, FILLDIGS are ignored, a warning message is diplayed.

11.1.2.5 Datafill example

The following example shows sample datafill for table IBNXLA :

11.1.2.6 Table release history update

EXTN and AMBI selectors are upgraded for E.164 support. The office code field is enhanced from fixed 3-digit type to ofccode_digit_register type to take 0 to 7 digits. A new option called SFMM is added whcih has three fields : Station Fence, Min digits and Max digits.

11.1.2.7 Supplementary information

11.1.2.8 Translation verification tools

The following example shows the output from Traver when it is used to verify IBNXLA.

11.1.3 Table name: IBNRTE / IBNRT2 / IBNRT3 / IBNRT4

IBN routing tables

11.1.3.1 Functional description

Not Applicable (existing table).

11.1.3.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.3.3 Table size

Table 5 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
IBNRTE	unchanged	unchanged	N.A.

11.1.3.4 Table fields

The following table lists new / changed fields for table IBNRTE.

Table 6 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
RTELIST	changed	DN sel, changed field NXX	0 to 7 digits	The field can now take variable length office codes in place of the fixed 3-digit length. The field is renamed OFCCODE.
		DN sel, new field : STNLEN	value between 1 and 8	Used to identify the station code length of the terminating agent.

11.1.3.5 Datafill example

The following example shows sample datafill for table IBNRTE :

11.1.3.6 Table release history update

DN selector is upgraded for E.164 compliance. The office code field NXX is upgraded from a fixed 3-digit type to a variable type ofccode_digit_register which can take between 0 and 7 digits. It is renamed appropriately as OFCCODE. A new field called STNLEN (station length) is added which makes it possible to use routing tuples for DNs with variable length station codes.

11.1.3.7 Supplementary information

11.1.3.8 Translation verification tools

The following example shows the output from Traver when it is used to verify IBNRTE.

11.1.4 Table name: OFRT / OFR2 /OFR3 / OFR4

Public routing tables

11.1.4.1 Functional description

Not Applicable (existing table).

11.1.4.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.4.3 Table size

Table 7 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
IBNRTE	unchanged	unchanged	N.A.

11.1.4.4 Table fields

The following table lists new / changed fields for table OFRT.

Table 8 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
RTELIST	changed	DN sel, new field : STNLEN	value between 1 and 8	Used to identify the station code length of the terminating agent.

Table 8 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action

11.1.4.5 Datafill example

The following example shows sample datafill for table OFRT :

11.1.4.6 Table release history update

DN selector is upgraded for E.164 compliance. A new field called STNLEN (station length) is added which makes it possible to use routing tuples for DNs with variable length station codes.

11.1.4.7 Supplementary information

11.1.4.8 Translation verification tools

The following example shows the output from Traver when it is used to verify OFRT.

9: Data schema changes (DS)

9.1 Table information

9.1.1 Table name: DPLNSCRN

Dial Plan Screening Table

9.1.1.1 Functional description

Table DPLNSCRN contains the dial plan screening restrictions used by the Call Transfer Fraud Prevention (CTFP) feature. The CTFP feature checks each leg of the call transfer call against the restricted dial plan in table DPLNSCRN. CTFP then blocks or allows the call transfer based on the information in the table.

The table is divided into 4 parts: DNSCRNID, CALLOPT, PREXLA and POSTXLA and performs it's screening in the respected order.

- DNSCRNID - The operating company can use this field specifies the entry that relates to the dial plan restriction. This field is used as the key for table DPLNSCRN.
- CALLOPT - The operating company can use this field to specify what types of calls to restrict.
- PREXLA - The operating company can use this field to specify the dialed digits to restrict.
- POSTXLA - The operating company can use this field to specify the translated digits to restrict.

note: CTFP screening is not performed against POSTXLA if a specific call leg is an outgoing international call or the call is inter-switch.

9.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- DPLNSCRN
- CUSTSTN

9.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DPLNSCRN	1	256	Memory is allocated via segstor

9.1.1.4 Table fields

The following table lists fields for table DPLNSCRN.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
DPNSCRNID	NEW		1 to 16 alphanumeric characters	*Dial Plan Screening Identity* This field specifies the entry that relates to the dial plan restriction. The operating company can specify up to 256 dial plans. The predefined entry which applies for the CTFP_INFO office parameter is *CTFP_OFFICEWIDE*

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
CALLOPT	NEW		OP_OUT, IDDD_IN, IDDD_OUT, FGB, CUTTHRU, INTERTOLL, INTRATOLL, COIN	*Call Option* The operating company can use the CALLOPT field to specify what types of calls to restrict. The default is $. **Note:** Please note the following acronyms: Operator outgoing (OP_OUT) International Direct Distance Dialing Incoming (IDDD_IN) International Direct Distance Dialing Outgoing (IDDD_OUT) Feature Group B (FGB) Cut-through (CUTTHRU) InterLATA Toll (INTERTOLL) IntraLATA Toll (INTRATOLL)
PREXLA	NEW		List of up to 32 entries of 1 to 18 digits	*Pre-translation Digits* The operating company can use this field to specify the dialed digits to restrict. The default is $.
POSTXLA	NEW		List of up to 32 entries of 1 to 18 digits	*Post-translation Digits* The operating company can use this field to specify the translated digits to restrict. The default is $.

9.1.1.5 Datafill example

The following example shows sample datafill for table DPLNSCRN:

```
DPSCRNID
        CALLOPT

        PREXLA

        POSTXLA
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

SET2
        ( IDDD_IN) ( IDDD_OUT) ( FGB) ( INTERTOLL) (INTRATOLL) $

        ( 411) ( 611) ( 911) $

        ( 613) ( 819) $
```

This is a new table added in NA013.

9.1.1.7 Supplementary information

None

9.1.1.8 Translation verification tools

DPLNSCRN does not use translation verification tools.

9.2 Table information

9.2.1 Table name: CUSTSTN

Customer Stationed Table

9.2.1.1 Functional description

Table CUSTSTN is modified to allow the operating company to customize the CTFP service on a customer group basis. This option enables the operating company to specify a set of restricted dial plans, previously created in table DPLNSCRN, and a limit on the number of transfers initiated within a specific time period for a line in the customer group.

9.2.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- DPLNSCRN

- CUSTSTN

9.2.1.3 Table size

Unchanged

9.2.1.4 Table fields

The following table lists changed fields for table CUSTSTN.

Table 3 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OPTNAME	Changed		CTFP	*Option name* The operating company can use this field to enable Call Transfer Fraud Prevention (CTFP) on a per customer group basis. This data override the office-wide setting defined in the CTFP_OFFICEWIDE in table DPLNSCRN.
OPTION	Changed		CTFP	*Option* This field must match the name in the OPTNAME field.
	NEW	DPSCRNID	1 to 16 alphanumeric characters	*Dial Plan Screening Identity* This field specifies the entry that relates to the dial plan restriction defined in table DPLNSCRN.
	NEW	DURATION	30 - 240 minutes	The operating company can use this field to specify the throttling time period (in minutes) on an customer group basis. Default = 30 min.
	NEW	MAXTRANSFER	0 - 30, or 0 to disable throttling	The operating company can use this field to specify the maximum number of transfers that an agent can initiate in the time period specified in the Duration field. The value of 0 specifies that throttling is disabled. Default = 0

9.2.1.5 Datafill example

The following example shows sample datafill for table CUSTSTN:

Table 4 CUSTSTN

CUSTNAME	OPTNAME	OPTION
COMKODAK	CTFP	CTFP SET1 200 30

9.2.1.6 Table release history update

The new option CTFP has been added to table CUSTSTN in NA013.

9.2.1.7 Supplementary information

None

9.2.1.8 Translation verification tools

CUSTSTN does not use translation verification tools.

9.3 Table information

9.3.1 Table name: KSETFEAT

Business Set and Data Unit Feature

9.3.1.1 Functional description

Table KSETFEAT lists the line features that are assigned to the business sets and data units listed in table KSETLINE and IVDINV.

9.3.1.2 Datafill sequence and implications

Not Applicable

9.3.1.3 Table size

Unchanged

9.3.1.4 Table fields

The following table lists changed fields for table KSETFEAT.

Table 5 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
FEATURE	Changed		DENYCTFP	

9.3.1.5 Datafill example

The following example shows sample datafill for table KSETFEAT:

Table 6 KSETFEAT

FEATKEY	FEATURE	KVAR
HOST 00 1 07 07 1 DENYCTFP	DENYCTFP	ON OFF

9.3.1.6 Table release history update

The new option DENYCTFP has been added to table KSETFEAT in NA013.

9.3.1.7 Supplementary information

None

9.3.1.8 Translation verification tools

KSETFEAT does not use translation verification tools.

9.4 Table information

9.4.1 Table name: IBNFEAT

IBN Line Feature

9.4.1.1 Functional description

Table IBNFEAT lists the line features that are assigned to the IBN lines listed in the table IBNFEAT.

9.4.1.2 Datafill sequence and implications

Not Applicable

9.4.1.3 Table size

Unchanged

9.4.1.4 Table fields

The following table lists changed fields for table IBNFEAT.

Table 7 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
FEATURE	Changed		DENYCTFP	

9.4.1.5 Datafill example

The following example shows sample datafill for table IBNFEAT:

Table 8 IBNFEAT

LEN	DNNO	DF	FEATURE	DATA
HOST 00 1 07 07	0	DENYCTFP	DENYCTFP	ON OFF

9.4.1.6 Table release history update

The new option DENYCTFP has been added to table IBNFEAT in NA013.

9.4.1.7 Supplementary information

None

9.4.1.8 Translation verification tools

IBNFEAT does not use translation verification tools.

11: Data schema changes (DS)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Data Schema impacts that result from this feature. This information is used to update the translations NTP, in the customer documentation. Office parameter sections have been moved out of this section into a separate OP section of the DDOC.

Instructions: Do not include this section in the DDOC if data schema changes are not being made.

It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Refer to PLS FMDOC module TABCTRL, “Guide to Table Control and Reformats”, for a guide to identifying changes requiring reformats and how to write reformats. Refer to the PLS home page (http://47.80.12.39:31462/pls).

For all Data Schema changes made after the software release DC (Design Close) milestone, an email must be sent to DMS DATA and the Customer Documentation prime indicating the tables effected, feature number and nature of the change.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

11.1 Table information

Duplicate the table information in this section for each new or modified table.

11.1.1 Table name: <abbreviated name of table>

Type the abbreviated name of the table in the heading.

<long name of table>

Give the full table name from which the abbreviated table name is derived. The long table name is written with initial capital letters for each word except for prepositions, articles, and coordinate conjunctions (and, or, for, nor).

Example:
Table name:DDPACDEV
Datapac Device Table

11.1.1.1 Functional description

For new tables only, state the purpose of the table and describe how the table is accessed and used by the system. If applicable, mention relationships with other tables, functional groups, or functionalities. If appropriate, include a description of how to add, delete, or change tuples in the table. Flow charts and block diagrams may be useful to help illustrate the functional description.

Example:
Table DPACDEV lists assignments for each data packet controller (DPC) circuit card configured in the input/output controller (IOC). For related information refer to table MTD. For adequate diagnostics, the minimum number of logical channels must be three.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- <abbreviated names of tables before the current table if applicable>
- <abbreviated name of the current table>
- <abbreviated names of tables after the current table if applicable>

OR

There is no requirement to datafill tables in a specific order.

OR

Current datafill order unchanged.

This section lists other tables that must be datafilled before or after the table being documented, as well as office parameters that interact with the table.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DDPACDEV	0	8 000 000	Memory is automatically allocated for 16 DPC devices.

This section gives the minimum and maximum number of tuples allowed in the table. If appropriate, information on memory allocation is included. For more complicated tables, include a formula for calculating the table size. If memory requirements are not fixed, explain in complete sentences.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

The table describes each field to be datafilled.

If datafill is conditional upon specific values for certain fields, then provide additional tables for each value of the field. Specify the condition in a paragraph before the table.

<conditional information>

Example:
MSGFROM = ATUP
If the entry in subfield MSGFROM is ATUP, datafill field ATUPMSG as shown in the field description table.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Must be 8 characters or less and include no special characters		Indicate whether this field has any subfields, refinement, and selectors	Specify the range of values for the field, subfield, refinement or selector	Give the long name of the field. Provide instructions for datafilling the field, subfield, refinement, or selector. Provide default values, if applicable.

11.1.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>:

Provide at least one example of a MAP display of the datafilled table, preferably from a captive office or a VSOS session that uses a captive office image.

11.1.1.6 Table release history update

Identify the technical changes to the table in this release, with a short description of the change. This information will be added to the release history in the Data Schema section of the translations NTP.

Example:

The following information was added:

- entry TOPSDB added to field ATTROPTS
- maximum table size of 500 000 tuples for ISN
- blocked calls routed to treatment CNAD

11.1.1.7 Supplementary information

This optional section contains information that doesn't fit in any other section such as datafilling the table for specific applications, product descriptive information, description of feature interactions, and network configuration information.

If there is no content for this section, put NONE.

Example:

This section provides information on deleting datafill in table C7AFTPC.

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

List the tools that can be used to verify that the tables have been datafilled correctly.

Give an output example showing the call progression of the functionality through all necessary tables using these tools.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: SCAISSRV

SCAI SubSeRVice Table.

11.1.1.1 Functional description

Not Applicable.

11.1.1.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
SCAISSRV	40	512	Not Applicable.

11.1.1.4 Table fields

The following table lists fields for table SCAISSRV.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
SPROFILE	Changed	CATEGORY	{ CTXEVENT, ACDEVENT, ROUTING, TPCC, RESOURCE, TPAC, RESEVENT, CALLINITATION, SCAI3WC, SCAIMWTI, DNQUERY}	ACDEVENT and ROUTING modified
		{ACDEVENT}	{CALLQUED, CALLOFFR, CALLANSWR, CALLREL, AGTLGDIN, AGTLGDOUT, AGTREADY, AGTNREADY, LOBEVENT, EMKEVENT and AGTSETACT}.	CALLQUED, CALLOFFR, CALLANSWR modified.
		{CALLQUED}	with parameter NCALLID, ACDDN, CALLNGNO, CHARGENO, CALLTYPE, ORIGDN, PREVAPPL, HOSTCALD, ACDGROUP, FWDPARTY, **CPADIGS**.	CALLQUED modified to include parameter CPADIGS.
		CPADIGS	**{N,Y}**	Setting this to 'Y' will allow the customer to view the CPADIGS in DV-CALL-QUEUED-U messages.
		{CALLOFFR}	with parameter NCALLID, ACDDN, CALLNGNO, CHARGENO, CALLTYPE, ORIGDN, PREVAPPL, HOSTCALD, ACDGROUP, DEVICEID, FWDPARTY, **CPADIGS**.	CALLOFFR modified to include parameter CPADIGS.
		CPADIGS	**{N,Y}**	Setting this to 'Y' will allow the customer to view the CPADIGS in DV-CALL-OFFERED-U messages.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
		{CALLANSWR}	with parameter NCALLID, DEVICEID, ACDDN, CALLNGNO, CHARGENO, CALLTYPE, ORIGDN, PREVAPPL, HOSTCALD, ACDGROUP, FWDPARTY, **CPADIGS**.	CALLANSWR modified to include parameter CPADIGS.
		CPADIGS	**{N,Y}**	Setting this to 'Y' will allow the customer to view the CPADIGS in DV-CALL-ANSWERED-U messages.
		{ROUTING}	{CALLRECDC, CALLREDIR}	CALLRECDC modified.
		{CALLRECDC}	with parameter NCALLID, ACDDN, CALLNGNO, CHARGENO, CALLTYPE, ORIGDN, PREVAPPL, HOSTCALD, ACDGROUP, FWDPARTY, **CPADIGS**.	CALLRECDC modified to include parameter CPADIGS.
		CPADIGS	**{N,Y}**	Setting this to 'Y' will allow the customer to view the CPADIGS in DV-CALL-RECEIVED-C messages.

11.1.1.5 Datafill example

The following example shows sample datafill for table SCAISSRV:

```
        SUBSERV
                                                                  SPROFILE
-------------------------------------------------------------------------
ACDEVENT15$
ACDEVENT (CALLQUED Y Y Y Y Y Y Y Y Y Y Y) (CALLOFFR Y Y Y Y Y Y Y Y Y Y Y)
(CALLANSWR Y Y Y Y Y Y Y Y Y Y Y) (CALLREL Y Y Y Y Y Y) (AGTLGDIN Y Y Y)
(AGTLGDOUT Y Y) (AGTREADY Y Y) (AGTNREADY Y Y N) (LOBEVENT Y Y Y)
(EMKEVENT Y Y Y Y Y Y) (AGTSETACT Y Y N)$

ROUTING15$
ROUTING (CALLRECDC Y Y Y Y Y Y Y Y Y Y Y) (CALLREDIR Y Y Y)$
```

11.1.1.6 Table release history update

The following information is added:

- A new parameter CPADIGS in ACDEVENT and ROUTING Category (field SPROFILE) for functions CALLQUED, CALLOFFR, CALLANSWR and CALLRECDC.
- This feature adds 2 new subservices for ACD events and ROUTING events.
  - ACDEVENT15$ will have subscription to the new parameter in the following functions in the existing ACDEVENT category.
    - CALLQUED
    - CALLOFFR
    - CALLANSWR
  - ROUTING15$ will have subscription to the new parameter in the following functions in the existing ROUTING category.
    - CALLRECDC

11.1.1.7 Supplementary information

None.

11.1.1.8 Translation verification tools

SCAISSRV does not use translation verification tools.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: SCAICOMS

Switch Computer Application Interface Communications Table

11.1.1.1 Functional description

N/A

11.1.1.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
SCAICOMS	0	144	N/A

11.1.1.4 Table fields

The following table lists fields for table SCAICOMS.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OPTIONS	Changed	ENHASSOC	Selector	Enhanced ACD DN association option
ENHASSOC	New	NUMACDDN	1 to 100	This parameter allows to choose the number of ACD DNs that can be associated to a SCAI session.

11.1.1.5 Datafill example

The following example shows sample datafill for table SCAICOMS:

1. **Exapmle with ENHASSOC**.

Example with TCP Linkset.

TABLE: SCAICOMS

LINKSET:

>tcp1

LNKSEL:

>tcp

IP_ADDR:

>192 136 141 205

MULTIMSG:

>n

OPTION:

>ENHASSOC

NUMACDDN

>50

OPTION:

>$

The tuple in table SCAICOMS will be as shown below

LINKSET SCAILNKS OPTIONS

TCP1 TCP 192 136 141 205 N (ENHASSOC 50) $

Similarly an X.25 tuple with ENHASSOC option is as shown below

LINKSET SCAILNKS OPTIONS

X251 X25 (MPC (0 3 000000000000000 9 9 9 9 SVC) $)$ MN CR (ENHASSOC 50) $

11.1.1.6 Table release history update

The following information was added

- Entry ENHASSOC was added to the OPTIONS field.

11.1.1.7 Supplementary information

None

11.1.1.8 Translation verification tools

SCAICOMS does not use translation verification tools.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: xxCODE (UXLA Code Tables)

ACCODE
PXCODE
FTCODE
CTCODE
FACODE
OFCCODE
AMCODE
NSCCODE

11.1.1.1 Functional description

CODE tables contain tuples (table entries) that usually perform the majority of the call processing functions within UXLA. This includes digit manipulation, feature activation, and sometimes destination determination.

CODE tables further refine the groupings in HEAD tables, by further grouping calls based on the digits collected. For example, all 1-800 numbers may be processed in a similar manner because they perform a similar function.

11.0.0.1 Datafill sequence and implications

Current datafill order unchanged.

HEAD tables contain tuples that are used as defaults when there are no associated CODE tuple datafilled. A HEAD table tuple must exist before an associated CODE tuple can be datafilled.

11.0.0.2 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
xxCODE (ACCODE, PXCODE, FTCODE, CTCODE, FACODE, OFCCODE, and NSCCODE)	0	32K	The memory storage for Table xxCODE is allocated dynamically. The amount of memory used depends on: 1. The number of tuples. 2. The length of the digit key. 3. The numerical distribution of the digit keys.
AMCODE	0	16K	Table AMCODE uses a linked-list to store its tuples.

11.0.0.3 Table fields

The following table lists fields for table xxCODE.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Key: XLANAME	Unchanged	No	**xlaname**	Translations name; up to 8 characters in length.
Key: FROM DIGITS	Unchanged	No	**from_digits**	The bottom of a range of digits. If the collected digits are contained within the range specified in the key, that tuple will be processed. This assumes that the xlaname is also a match.
Key: TO DIGITS	Unchanged	No	**to_digits**	The top of the range.
Key: SELECTOR	Unchanged	No	<selector>	The translations selector.
Key: OPTION	Unchanged	No	<options>	The options of the translation selector.

11.0.0.1 Datafill example

The following example shows sample datafill for table PXCODE:

Syntax: **xlaname from_digits to_digits** <selector> <options>

TEST1 123 123 CONT (XLT AC TEST2) (PF 3) $
TEST1 124 130 CONT (XLT AC TEST3)

11.0.0.2 Table release history update

In SHR13, Table xxCODE is expanded to 32K (double its previous capacity).

11.0.0.3 Supplementary information

None.

11.0.0.4 Translation verification tools

None.

11: Data schema changes (DS)

11.1 Tables

Are new tables added by this feature (Y/N): N

Are existing tables modified by this feature (Y/N): Y

11.1.1 New/modified tables

Table 1 New or modified tables

Table name	NEW, CHANGED or DELETED	Table Control (NEW/OLD/UNCHANGED)
IBNXLA	Changed	Unchanged
IBNLINES	Changed	Unchanged
OPTOPT	Changed	Unchanged
TMTCNTL	Changed	Unchanged
LCCOPT	Changed	Unchanged
AMAOPTS	Changed	Unchanged

The following sections describe the changed tables in detail.

11.2 Table information

11.2.1 Table name: IBNXLA
IBN Translation

11.2.1.1 General
The table IBNXLA contains the information used to translate the digits for calls from IBN stations.

11.2.1.2 Datafill sequence and implications
Current datafill order unchanged.

11.2.1.3 Table size

Table 2 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
IBNXLA	Unchanged	Unchanged	One tuple is added to the table for each customer group assigned a CRT access code.

11.2.1.4 Table fields

For the CRT feature, a new option, CRT, is added to the FTR selector of table IBNXLA to store the CRT routing DN and the billing option for a selected customer group.

The CRT access code can start either by a '*' or a '#' and it can be from 1 to 18 digits long. A star type flash translator, that equates a digit sequence with the star (*) key, needs to be defined if the CRT access code is to be entered from a dial pulse phone set. This translator is independent of CRT feature access code translation and is normally already provided for the translation of other feature access codes.

The following table lists fields for table IBNXLA.

Table 3 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
FTR_TYPE	Changed	DN, BILLING_OPTION	CRT	CRT is added as a new FTR selector.
ROUTING_DN	New	-	7 or 10 digits DN	This field stores the CRT routing DN for the selected customer group.
BILLING	New	-	{Y,N}	The BILLING_OPTION is a boolean field that controls the generation of a switch-based pay-per-use billing record when members of the selected customer group activate the CRT feature. If this field is Y and the user is not subscribed to the CRT line option, then a billing record will be generated upon successful activation of the CRT feature.

11.2.1.5 Datafill example

The following example shows sample datafill for table IBNXLA:

```
TABLE IBNXLA
>add
KEY:
>STARXLA 55
TRSEL:
>FTR
NO_ACCODE_DIGITS:
>2
FTR_TYPE:
>CRT
ROUTING_DN:
>6136200011
BILLING:
>y
TUPLE TO BE ADDED
OCTOXLA 9 FTR 1 CRT 6136200011 Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
```

11.2.1.6 Table release history update

The only modification to table IBNXLA is the addition of the new option CRT to the FTR selector to store the CRT routing DN and the billing option for a selected customer group.

11.2.1.7 Supplementary information

None.

11.2.2 Table name: IBNLINES

IBN Lines

11.2.2.1 General

The table IBNLINES contains the information that define RES and IBN lines. A tuple in this table is composed of the following fields: LEN, DNNO, SIGTYPE, FORMAT, LCC, DN, LNATTIDX and OPTLIST.

11.2.2.2 Datafill sequence and implications

Current datafill order unchanged.

11.2.2.3 Table size

Table 4 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
IBNLINES	Unchanged	Unchanged	Unchanged

11.2.2.4 Table fields

CRT and CRTDENY are added to the range of valid values for the OPTLIST field. The following table lists the changed fields for table IBNLINES.

Table 5 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OPTLIST	Changed	-	CRT, CRTDENY	By adding CRT and CRTDENY to the range of valid values for the OPTLIST field, the two line options can be assigned and removed through the SERVORD CI tool.

11.2.2.5 Datafill example

The following example shows sample datafill for table IBNLINES:

```
LEN        DNNO    RESULT
-----------------------------------
HOST 00 0 02 04 0 DT STN IBN 1690061 RES4716 0 0 047 (CRT) $
HOST 00 0 02 16 0 DT STN IBN 1690062 RES4716 0 0 047 (ACB) $
HOST 00 0 03 04 0 DT STN IBN 1690063 RES4716 0 0 047 (CRTDENY) $
```

11.2.2.6 Table release history update

The only modification to table IBNLINES is the addition of the CRT and CRTDENY line options to the range of valid values for the OPTLIST field.

11.2.2.7 Supplementary information

None.

11.2.3 Table name: OPTOPT

Incompatible Options

11.2.3.1 General

For each line option having incompatibilities, table OPTOPT lists the other line options that are not compatible.

Note: Table OPTOPT is a read-only table and cannot be changed by the operating company. It is described here for information purposes only.

11.2.3.2 Datafill sequence and implications

Current datafill order unchanged.

11.2.3.3 Table size

Table 6 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
OPTOPT	Unchanged	Unchanged	Two tuples are added in table OPTOPT.

11.2.3.4 Table fields

The CRT feature modifies table OPTOPT to include line options CRT and CRTDENY in the list of options to have incompatibilities.

The following table lists fields for table OPTOPT.

Table 7 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OPTION	Changed	-	CRT CRTDENY	This field specifies the line option for which there are incompatibilities. Although other features can be entered as valid values in field OPTION, only CRT (CRTDENY) is shown for clarity.
INCOMPAT	Changed	-	CRTDENY CRT	This field specifies all the incompatible line options with the line option specified as key. Although other features can be entered as valid values in field INCOMPAT, only CRTDENY (CRT) is shown for clarity.

11.2.3.5 Datafill example

Two tuples are added to table OPTOPT, one for CRT and one for CRTDENY. The following example shows sample datafill for table OPTOPT:

```
OPTION    INCOMPAT
-----------------------------
AAB (EHLD) (MDN) (MLAMP) (MREL) $

AAK (AEMK) (CAG) (CALLOG) (CLSUP) (DTM) (MDN)
(SETMODEL) (SLQ) (SMDI) (SOR) (SORC) (UCD) (UCDSD) $

ACB (AUL) (AVT) (BNN) (CCSA) (FIG) (LDTPSAP) (PCWT)
(PREMTBL) (RAG) (3WCPUB) $
.
.
.
CRT (CRTDENY) $

CRTDENY (CRT) $
.
.
.
```

11.2.3.6 Table release history update

The only modification to table OPTOPT is the addition of two tuples (one for CRT and one for CRTDENY).

11.2.3.7 Supplementary information

None.

11.2.4 Table name: TMTCNTL

Treatment Control

11.2.4.1 General

The subtable TREAT of table TMTCNTL contains the information which determines the tone, announcement, or state to return to the originator when the DMS switch determines that a call must terminate to a specified treatment code.

11.2.4.2 Datafill sequence and implications

Current datafill order unchanged.

11.2.4.3 Table size

Table 8 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
TMTCNTL	Unchanged	Unchanged	One tuple is added to the TREAT subtable to describe the CRT treatment.

11.2.4.4 Table fields

A new treatment ‘CRT’ Call Redirect activation Confirmation treatment is added to the range of values for the TREATMT field.
The following table lists fields for subtable TREAT of table TMTCNTL.

Table 9 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
TREATMT	Changed	-	{UNDT,NOSC,PDIL,PSIG,INAC,CNDT,VACT,MSCA..., **CRT**}	CRT is added to the range of valid values for the field TREATMT of the TREAT subtable, in table TMTCNTL.

11.2.4.5 Datafill example

The following example shows sample datafill for table TMTCNTL:

```
TABLE: TMTCNTL
>pos offtreat
LNT (  119 )
>sub TREAT
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
TREATMT:
>CRT
LOG:
>y
FSTRTSEL:
>s
CLLI:
>CONF
TUPLE TO BE ADDED:
              CRT       Y   S              CONF
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

11.2.4.6 Table release history update

The only modification to subtable TREAT of table TMTCNTL is the addition of the CRT treatment to the range of valid values for the field TREATMT. One tuple is added to subtable TREAT of table TMTCNTL to describe the CRT treatment.

11.2.4.7 Supplementary information

None.

11.2.5 Table name: LCCOPT

Line Class Code Compatible Options

11.2.5.1 General

Table LCCOPT contains the line options that are compatible with each line class code (LCC).

Note: Table LCCOPT is a read-only table and cannot be changed by the operating company. It is described here for information purposes only.

11.2.5.2 Datafill sequence and implications

Current datafill order unchanged.

11.2.5.3 Table size

Table 10 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
LCCOPT	Unchanged	Unchanged	No tuples are added to the table. CRT and CRTDENY are added to the RES tuple.

11.2.5.4 Table fields

The CRT feature modifies table LCCOPT to include line options CRT and CRTDENY in the list of compatible line options for RES LCC.
The following table lists fields for table LCCOPT.

Table 11 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
COMPAT	Changed	-	CRT	This field contains all the line options that are compatible with the line class code specified in field LCC of LCCOPT. Although other line options can be entered as valid values in field COMPAT, only CRT is shown for clarity.

11.2.5.5 Datafill example

The following example shows sample datafill for table LCCOPT:

```
LCC        COMPAT
-------------------------
RES (ACB) (ACRJ) (ADSI) (AIN) (AINDN) (AMATEST) (AR)
(ARDDN) (ATC) (AUL) (BCLID) (BNN) (CALLOG) (CCW) (CDT)
(CFBL) (CFDA) (CFGDA) (CFRA) (CFW) (CIR) (CLF) (CLI)
(CLNT900) (CMG) (CNAB) (CNAMD) (CND) (CNDB) (CNDBO)
(COD) (CONVERT) (COT) (CPU) (CRT) (CRTDENY) (CTD) (CUSD)
(CWR) (CWT) (CWTC) (CXR) (DDN) (DENY) (DENYCWTC)
(DENYU3WC) (DGT) (DLH) (DNH) (DOR) (DRCW) (DSCWID) (DTM)
(ECM) (EHLD) (ELN) (EWAL) (FANI) (FCTDNTER) (FCTDNTRA)
(FGA) (FIG) (FNT) (FPS) (FRO) (FRS) (FTRGRP) (GIC) (GND) (HOT)
(ILB) (IMB) (INT) (IRR) (LCDR) (LOD) (LOR) (LPIC) (MBK) (MDN)
(MDNNAME) (MEMDISP) (MLAMP) (MLH) (MREL) (MRF) (MSB)
(MTR) (MWT) (NAME) (NCCW) (NDC) (NFA) (NHT) (NLT) (NOH)
(NPGD) (NTS_CID) (NTS_DNID) (OCFA) (OFR) (OFS) (1MMS) (ONI)
(OUTWT) (PCI) (PIC) (PILOT) (PLP) (PPL) (PRH) (RATEAREA)
(RCVD) (RCHD) (RMB) (RMI) (RMP) (RMR) (RMS) (RMT) (RSP)
(RSUS) (SACB) (SCA) (SCF) (SCMP) (SCRJ) (SCU) (SCWID) (SC1)
(SC2) (SC3) (SDN) (SDY) (SETMODEL) (SHU) (SL) (SLC) (SLU)
(SLVP) (SMDI) (SMDICND) (SPB) (STRD) (SUPPRESS) (SUS) (TBO)
(TDN) (TERM) (TES) (TFO) (TRMBOPT) (3WC) (VMEADENY)
(VMEADN) (WML) (WUCR) (XLAPLAN) (XXTRG) $
```

11.2.5.6 Table release history update

The only modification to table LCCOPT is the addition of CRT and CRTDENY line options to the list of options compatible to LCC RES.

11.2.5.7 Supplementary information

None.

11.3 Office Parameters

11.3.1 New Parameter List

PARM TABLE	PARAMETER NAME	NEW/CHANGED/ DELETED/RELOCATED
AMAOPTS	CRT_BILLING	NEW

11.3.2 Parameter Name: CRT_BILLING

11.3.2.1 Range of values

The new office parameter CRT_BILLING can be turned ON or OFF.

11.3.2.2 Description of parameter

The new office parameter CRT_BILLING is created for the Call Redirect feature. It enables the telephone company to control the generation of the billing record. If CRT_BILLING is turned ON, the billing record of the redirected call is generated when routing the other party from the controller to the CRT routing DN. If CRT_BILLING is turned OFF, the billing of the redirected call is suppressed.

11.3.2.3 Default Value

The default value of CRT_BILLING is OFF.

11.3.2.4 Datafill sequence and implications

Current datafill order unchanged.

11.3.2.5 Table size

Table 12 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
AMAOPTS	Unchanged	Unchanged	One tuple is added to define the new office parameter CRT_BILLING.

11.3.2.6 Datafill example

The following example shows sample datafill for table AMAOPTS:

```
 AMA_OPTION_KEY        AMA_SCHEDULER
-------------------------------------------------------------
CRT_BILLING                    ON
```

11.3.2.7 Table release history update

A new office parameter CRT_BILLING is added to table AMAOPTS.

11.3.2.8 Supplementary information

None.

11: Data schema changes (DS)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Data Schema impacts that result from this feature. This information is used to update the translations NTP, in the customer documentation. Office parameter sections have been moved out of this section into a separate OP section of the DDOC.

Instructions: Do not include this section in the DDOC if data schema changes are not being made.

It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Refer to PLS FMDOC module TABCTRL, “Guide to Table Control and Reformats”, for a guide to identifying changes requiring reformats and how to write reformats. Refer to the PLS home page (http://47.80.12.39:31462/pls).

For all Data Schema changes made after the software release DC (Design Close) milestone, an email must be sent to DMS DATA and the Customer Documentation prime indicating the tables effected, feature number and nature of the change.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

11.1 Table information

Duplicate the table information in this section for each new or modified table.

11.1.1 Table name: <abbreviated name of table>

Type the abbreviated name of the table in the heading.

<long name of table>

Give the full table name from which the abbreviated table name is derived. The long table name is written with initial capital letters for each word except for prepositions, articles, and coordinate conjunctions (and, or, for, nor).

Example:
Table name:DDPACDEV
Datapac Device Table

11.1.1.1 Functional description

For new tables only, state the purpose of the table and describe how the table is accessed and used by the system. If applicable, mention relationships with other tables, functional groups, or functionalities. If appropriate, include a description of how to add, delete, or change tuples in the table. Flow charts and block diagrams may be useful to help illustrate the functional description.

Example:
Table DPACDEV lists assignments for each data packet controller (DPC) circuit card configured in the input/output controller (IOC). For related information refer to table MTD. For adequate diagnostics, the minimum number of logical channels must be three.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- <abbreviated names of tables before the current table if applicable>
- <abbreviated name of the current table>
- <abbreviated names of tables after the current table if applicable>

OR

There is no requirement to datafill tables in a specific order.

OR

Current datafill order unchanged.

This section lists other tables that must be datafilled before or after the table being documented, as well as office parameters that interact with the table.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DDPACDEV	0	8 000 000	Memory is automatically allocated for 16 DPC devices.

This section gives the minimum and maximum number of tuples allowed in the table. If appropriate, information on memory allocation is included. For more complicated tables, include a formula for calculating the table size. If memory requirements are not fixed, explain in complete sentences.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

The table describes each field to be datafilled.

If datafill is conditional upon specific values for certain fields, then provide additional tables for each value of the field. Specify the condition in a paragraph before the table.

<conditional information>

Example:
MSGFROM = ATUP
If the entry in subfield MSGFROM is ATUP, datafill field ATUPMSG as shown in the field description table.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Must be 8 characters or less and include no special characters		Indicate whether this field has any subfields, refinement, and selectors	Specify the range of values for the field, subfield, refinement or selector	Give the long name of the field. Provide instructions for datafilling the field, subfield, refinement, or selector. Provide default values, if applicable.

11.1.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>:

Provide at least one example of a MAP display of the datafilled table, preferably from a captive office or a VSOS session that uses a captive office image.

11.1.1.6 Table release history update

Identify the technical changes to the table in this release, with a short description of the change. This information will be added to the release history in the Data Schema section of the translations NTP.

Example:

The following information was added:

- entry TOPSDB added to field ATTROPTS
- maximum table size of 500 000 tuples for ISN
- blocked calls routed to treatment CNAD

11.1.1.7 Supplementary information

This optional section contains information that doesn't fit in any other section such as datafilling the table for specific applications, product descriptive information, description of feature interactions, and network configuration information.

If there is no content for this section, put NONE.

Example:

This section provides information on deleting datafill in table C7AFTPC.

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

List the tools that can be used to verify that the tables have been datafilled correctly.

Give an output example showing the call progression of the functionality through all necessary tables using these tools.

12: Data schema changes (DS)

12.1 Table information

12.1.1 Table name: IBNXLA

IBN Translations Table

12.1.1.1 Functional description

A new option is added to table IBNXLA. The name of the option is LNP. It is a “NETRTE option”, meaning it shows up as an option if the NET or ROUTE selector is chosen.

It is not a valid option for the ROUTE selector. It is a valid option for the NET selector only if either the ESN or PVT sub-selector is chosen.

Additionally, presence of the LNP option allows the selection of the DMI option for NET ESN/PVT tuples. Previously this option was not allowed.

12.1.1.2 Datafill sequence and implications

Current datafill order unchanged.

12.1.1.3 Table size

Unaffected

12.1.1.4 Table fields

‘LNP’ is an option, not a field, hence the table structure remains unchanged. Note that the current maximum of four NETRTE options per tuple remains unchanged.

12.1.1.5 Datafill example

The following examples show sample datafill for table IBNXLA:

```
KEY
                                                RESULT
------------------------------------------------------------------------
CUSTFEAT        64
NET N N 0 N NDGT N Y ESN N 0 613_P621_0 L613_LATA1_0 (LNP ) $
```

```
KEY
                                                RESULT
------------------------------------------------------------------------
CUSTFEAT        63
NET N N 0 N NDGT N Y ESN N 0 613_P621_0 L613_LATA1_0 (LNP ) (DMI 351) $
```

12.1.1.6 Table release history update

This option added in the NA013 release.

12.1.1.7 Supplementary information

None

12.1.1.8 Translation verification tools

Following are examples of TRAVER output for each valid call scenario, as well as examples for invalid scenarios.

12.1.1.8.1 7/10 Natl. Sig. dialed call, prefixed, LNP option

In this scenario, a private agent dials the prefix ‘6’, and then a 7 or 10 digit number that matches National Significant format. The LNP option is present.

```
traver l 9059731051 64638003 b
TABLE IBNLINES
HOST 01 0 15 01 0 DT STN IBN 9731051 MDC905 0 0 905 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
MDC905 AIN AIN CDPCODE
TABLE OFCVAR
AIN_OFFICE_TRIGGRP TIID
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
MDC905 0 0 0 KDK0 ( OHQ 0 TONE_OHQ) ( CBQ 0 3 N 2)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
```

```
MDC905 PXDK 905XDK FTCOMM 0 KDK
TABLE DIGCOL
KDK 6 COL L 1
TABLE IBNXLA: XLANAME PXDK
PXDK 64 NET N N 1 N NDGT N Y PVT 613 LCL NSCR ( LNP )$
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE HNPACONT
613 Y 930 20 ( 126) ( 1) ( 0) ( 0) 0 $
 . SUBTABLE HNPACODE
 . 4638003 463809 LRTE 747
 . SUBTABLE RTEREF
 .  747 T IBNRTE 88
 .  . TABLE IBNRTE
 .  .   88 VFG N N N MBGVFG 0
 .  . EXIT TABLE IBNRTE
 . EXIT TABLE RTEREF
EXIT TABLE HNPACONT
LNP Info: Called DN is not resident.
LNP Info: HNPA results are used.
LNP Info: Called DN is not resident.
LNP Info: HNPA results are used.
TABLE FNPA7DIG
613 463 463 416
TABLE TRIGGRP
CDPCODE INFOANAL
 . CDPCODE ( DG CDPDIG)$ NIL
Trigger AIN CDPCODE is applicable to customer group.
Checking AIN SDS Trigger Items as SDS is compatible with current call
Checking AIN N11 Trigger Items as N11 is compatible with current call
Checking AIN LNP Trigger Items as LNP is compatible with current call
 .  . TABLE OFCTIID
 .  . 4 L416463ON
 .  . TABLE TRIGITM
 .  . 4 L416463LNP (DG 4164638003) (ESCEA ) (ESCOP ) (ESCDN ) $ ULK EVENT R01 SS7
 .  .     AINJAZZ $
 .  .  . TABLE C7GTTYPE
 .  .  . AINJAZZ ANSI7 3 $
 .  .  . TABLE C7GTT
 .  .  . AINJAZZ 4164638003 4164638003 SSNONLY (AINTEST) $
AIN Info Analyzed TDP: trigger criteria met.
Querying the database.

+++ TRAVER: SUCCESSFUL CALL TRACE +++


AIN Info Analyzed TDP: trigger criteria met.
Querying the database.
LNP Info: Displaying pre-query translations result.
LNP Info: It is used if the database indicates the called DN is non-ported

DIGIT TRANSLATION ROUTES

1 VFG: MBGVFG           4164638003         ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

12.1.1.8.2 Non-Natl. Sig. dialed call, prefixed, LNP + DMI options

In this scenario, a private agent dials the prefix ‘6’, and then an ESN or PVT code to reach a private agent on another switch. The LNP and DMI options are present.

```
traver l 9059731051 63518003 b
TABLE IBNLINES
HOST 01 0 15 01 0 DT STN IBN 9731051 MDC905 0 0 905 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
MDC905 AIN AIN CDPCODE
TABLE OFCVAR
AIN_OFFICE_TRIGGRP TIID
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
MDC905 0 0 0 KDK0 ( OHQ 0 TONE_OHQ) ( CBQ 0 3 N 2)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
MDC905 PXDK 905XDK FTCOMM 0 KDK
TABLE DIGCOL
KDK 6 COL L 1
TABLE IBNXLA: XLANAME PXDK
PXDK 63 NET N N 1 N NDGT N Y ESN N 80 613_PUB_161 L613_LATA1_0 ( DMI 351) ( LNP )$
 . TABLE DIGMAN
 .   351 (REM 3) (INC 416463)
 . EXIT TABLE DIGMAN
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
80 IBN NONE NT 10 NILSFC 0 NIL NIL 00 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
613_PUB_161 E613 613 PUB TSPS N $ $
TABLE RATEAREA
L613_LATA1_0 L613 NIL LATA1 $
TABLE STDPRTCT
PUB ( 1) ( 0) 1
 . 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 HPCPATTN
TUPLE NOT FOUND
TABLE HNPACONT
613 Y 930 20 ( 126) ( 1) ( 0) ( 0) 0 $
 . SUBTABLE HNPACODE
 . 4164638003 416463809 FRTE 747
. SUBTABLE RTEREF
 .  747 T IBNRTE 88
```

```
 .  . TABLE IBNRTE
 .  .   88 VFG N N N MBGVFG 0
 .  . EXIT TABLE IBNRTE
 . EXIT TABLE RTEREF
EXIT TABLE HNPACONT
LNP Info: Called DN is not resident.
LNP Info: HNPA results are used.
TABLE LCASCRCN
613 L613 ( 30) OPTL N N
 . SUBTABLE LCASCR
 . 416 416
TABLE LCASCRCN
416 L613 ( 1) OPTL N N
 . SUBTABLE LCASCR
 . 463 463
TABLE PFXTREAT
OPTL NP Y NP UNDT
TABLE CLSVSCRC
613 E613 NP 2 N NONE ( 0)
 . SUBTABLE CLSVSCR
 . KEY NOT FOUND
TABLE TRIGGRP
CDPCODE INFOANAL
 . CDPCODE ( DG CDPDIG)$ NIL
Trigger AIN CDPCODE is applicable to customer group.
Checking AIN SDS Trigger Items as SDS is compatible with current call
Checking AIN N11 Trigger Items as N11 is compatible with current call
Checking AIN LNP Trigger Items as LNP is compatible with current call
 .  . TABLE OFCTIID
 .  . 4 STEPH ON
 .  . TABLE TRIGITM
 .  . 4 STEPH LNP (DG 4164638003) (ESCEA ) (ESCOP ) (ESCDN ) $ ULK EVENT R01 SS7
 .  .     AINJAZZ $
 .  .  . TABLE C7GTTYPE
 .  .  . AINJAZZ ANSI7 3 $
 .  .  . TABLE C7GTT
 .  .  . AINJAZZ 4164638003 4164638003 SSNONLY (AINTEST) $
AIN Info Analyzed TDP: trigger criteria met.
Querying the database.

+++ TRAVER: SUCCESSFUL CALL TRACE +++


AIN Info Analyzed TDP: trigger criteria met.
Querying the database.
LNP Info: Displaying pre-query translations result.
LNP Info: It is used if the database indicates the called DN is non-ported

DIGIT TRANSLATION ROUTES

1 VFG: MBGVFG           4164638003         ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

12.1.1.8.3 Non-Natl. Sig. dialed call, prefixed, LNP option

THIS IS AN INVALID SCENARIO!

The LNP option is to be used for calls whose dialed digits (minus the prefix) match National Significant format, and would match a public number in the network.

The LNP and DMI options are to be used for calls whose dialed digits need manipulation to match National Significant format, and match a public number in the network.

Use of just the LNP option in scenarios where the dialed digits need manipulation will result in the call being misrouted. An example is below; this is the same scenario as the previous example, but with the DMI option removed.

```
traver l 9059731051 63518003 b
TABLE IBNLINES
HOST 01 0 15 01 0 DT STN IBN 9731051 MDC905 0 0 905 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
MDC905 AIN AIN CDPCODE
TABLE OFCVAR
AIN_OFFICE_TRIGGRP TIID
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
MDC905 0 0 0 KDK0 ( OHQ 0 TONE_OHQ) ( CBQ 0 3 N 2)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
MDC905 PXDK 905XDK FTCOMM 0 KDK
TABLE DIGCOL
KDK 6 COL L 1
TABLE IBNXLA: XLANAME PXDK
PXDK 63 NET N N 1 N NDGT N Y ESN N 80 613_PUB_161 L613_LATA1_0 ( LNP )$
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
80 IBN NONE NT 10 NILSFC 0 NIL NIL 00 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
613_PUB_161 E613 613 PUB TSPS N $ $
TABLE RATEAREA
L613_LATA1_0 L613 NIL LATA1 $
TABLE STDPRTCT
PUB ( 1) ( 0) 1
 . 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 HPCPATTN
TUPLE NOT FOUND
TABLE HNPACONT
613 Y 930 20 ( 126) ( 1) ( 0) ( 0) 0 $
 . SUBTABLE HNPACODE
 . 351 351 FRTE 651
LNP Info: Called DN is not resident.
LNP Info: HNPA results are used.
TABLE TMTCNTL
LNT ( 113)
 . SUBTABLE TREAT
 . PDIL Y T OFRT 51
 . TABLE OFRT
 .   51 S D PSPD
 .      S D *OFLO
 .      S D ROH
 .      S D LKOUT
 . EXIT TABLE OFRT

+++ TRAVER: SUCCESSFUL CALL TRACE +++



TREATMENT ROUTES.  TREATMENT IS: PDIL
1 PSPD
2 *OFLO
3 ROH
4 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

12.1.1.8.4 7/10 Natl. Sig. dialed call, prefixed, LNP option, SOC IDLE

This scenario is like the first, with the exception that the SOC controlling the functionality is IDLE.

```
traver l 9059731051 64638003 b
TABLE IBNLINES
HOST 01 0 15 01 0 DT STN IBN 9731051 MDC905 0 0 905 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
MDC905 AIN AIN CDPCODE
TABLE OFCVAR
AIN_OFFICE_TRIGGRP TIID
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
MDC905 0 0 0 KDK0 ( OHQ 0 TONE_OHQ) ( CBQ 0 3 N 2)$
```

```
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
MDC905 PXDK 905XDK FTCOMM 0 KDK
TABLE DIGCOL
KDK 6 COL L 1
TABLE IBNXLA: XLANAME PXDK
PXDK 64 NET N N 1 N NDGT N Y PVT 613 LCL NSCR ( LNP )$
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE HNPACONT
613 Y 930 20 ( 126) ( 1) ( 0) ( 0) 0 $
 . SUBTABLE HNPACODE
 . 4638003 463809 LRTE 747
 . SUBTABLE RTEREF
 .  747 T IBNRTE 88
 .  . TABLE IBNRTE
 .  .   88 VFG N N N MBGVFG 0
 .  . EXIT TABLE IBNRTE
 . EXIT TABLE RTEREF
EXIT TABLE HNPACONT
LNP Info: Called DN is not resident.
LNP Info: HNPA results are used.
LNP Info: Called DN is not resident.
LNP Info: HNPA results are used.
TABLE FNPA7DIG
613 463 463 416
TABLE TRIGGRP
CDPCODE INFOANAL
 . CDPCODE ( DG CDPDIG)$ NIL
Trigger AIN CDPCODE is applicable to customer group.
Checking AIN SDS Trigger Items as SDS is compatible with current call
Checking AIN N11 Trigger Items as N11 is compatible with current call
Checking AIN LNP Trigger Items as LNP is compatible with current call
LNP Info: LNP interworking with ESN/PVT is IDLE.
LNP Info: NET ESN/PVT call will not trigger LNP.
AIN Info Analyzed TDP: trigger criteria not met.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

LNP Info: LNP interworking with ESN/PVT is IDLE.
LNP Info: NET ESN/PVT call will not trigger LNP.

DIGIT TRANSLATION ROUTES

1 VFG: MBGVFG           4164638003         ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: RDTINV

11.1.1.1 Functional description

Table RDTINV is used to provision IDTs subtending SMAs, SMA2s and SPMs.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- PMLOADS
- MNPRTGRP
- MNNODE
- MNSHELF
- MNCKTPAK
- MNLINK
- MNHSCARR
- RDTINV

Refer to document AD8377 in PLS library DOC for more information on the above datafill sequence, excluding RDTINV.

The above datafill sequence is necessary only when datafilling an SPM as an IDT host in table RTDINV, for which this document applies. These tables, except PMLOADS and RDTINV, are SPM specific and are used in the provisioning of an SPM.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
RDTINV	0	1000	

11.1.1.4 Table fields

The following table lists fields for table RDTINV.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
IDTNAME	Changed	XPMNAME	SMA, SMA2, SPM	Specifies the IDT host.
LINKTAB	Changed	XPMLINK	{0 to 181}	Specifies the p-side link range of the IDT host.

11.1.1.5 Datafill example

The following examples shows sample datafill for table RDTINV:

Example 1:

```
RDT1 02 0 28 SPM 0 2 $ $ $ ICB 1 NA $ N (1 95) $ N
STDLN N $ $
```

Example 2:

```
RDT1 21 0 30 SPM 0 21 DSC DSC DSC GENTMC 2 671 N N Y
$ Y (1 98) (2 99) $ N STDLN S $ (NETWORK_ID 1)
(NETWORKELEMENT_ID 21) $
```

11.1.1.6 Table release history update

- Entry SPM added to IDTNAME field.
- XPMLINK range changed to {0 to 181}. Old range was {0 to 47}.

11.1.1.7 Supplementary information

New/Changed RDTINV Datafill Error Messages.

This error message is displayed when the IDTNAME field does not contain either SMA, SMA2, nor SPM.

- `Error: IDT Host must be of type SMA, SMA2 or SPM.`

This error message is displayed when the IDT VARTYPE is ICB and the IDTNAME field does not contain either SMA2 nor SPM.

- `Error: IDT Host must be of type SMA2 or SPM for ICB IDTs`

This error message will be displayed when the SPM number in IDTNAME and the XPMLINK number in LINKTAB were not found in Table MNHSCARR.

- `Error: SPM nn XPMLINK yyy (CCTNO in table MNHSCARR) was NOT found.`

Note: ‘nn’ is the SPM number and ‘yyy’ is the carrier link number.

This error message will be displayed when IDTNAME contains SPM and the XPMLINK number in LINKTAB is not of the correct type, DS1P.

- `Error: Invalid link. SPM nn XPMLINK yyy (CCTNO in table MNHSCARR) must have CARRTYPE of DS1P.`

Note: ‘nn’ is the SPM number and ‘yyy’ is the carrier link number.

This error message will be displayed when there is an error in the translation of an SPM’s node number (0 to 4095) to its SPM number (0 to 63).

- `Error: Inconsistent MNNODE table data found when translating SPM nn to it’s internal SPM OAM database index. Conult SWERR Logs.`

This error message will be displayed when the maximum number of lines allowed on an SPM has been reached and no more lines can be added.

- `Error: Cannot have more than 21504 lines for this SPM.`

This error message will be displayed when there is no available PROTECTED memory store to allocate for SMALINKMAP in IDT_INFO_TYPE.

- `Error: NO STORE for IDT HOST LinkMap DATA BLOCK.`

This error message will be displayed when the SPM class type cannot be determined..

```
Error:Could not determine CLASS type for SPM nn.
```

This error message will be displayed when the class type of the SPM specified to host the IDT is not of the correct type.

```
Error:Invalid SPM. SPM nn must have a CLASS type of DMSCP
      in table MNNODE to host IDTs.
```

New/Changed MNHSCARR Datafill Error Messages.

This error message will be displayed when the carrier is a remote link to an IDT.

- `Error: Pside equipped on modified port - change failed.`

New/Changed TRKMEM Error Messages.

This error message will be displayed when the physical link is a remote link assigned to an IDT (datafilled in RDTINV).

- `NO CHANNEL AVAILABLE`

11.1.1.8 Translation verification tools

RDTINV does not use translation verification tools.

9: Data schema changes (DS)

9.1 Table information

9.1.1 Table name: MNNODE

9.1.1.1 Functional description

MNNODE is where SPMs are datafilled. Lines on the SPM will be datafilled in this table.

9.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- Table MNPRTGRP must be datafilled first
- Table MNNODE

Table PMLOADs must be datafilled before the above listed tables are datafilled.

9.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
MNNODE	0	64	No change

9.1.1.4 Table fields

The following table lists fields for table MNNODE.

Two new exec lineups, SPMPEX for POTS lines and SPMKEX for KeySet Lines has been added to table MNNODE for the EXECTAB field. These

lineups contains all the necessary execs required to allow the existing POTS and Keyset (Pphone) lines be supported by the SPM.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
EXEC_TAB	Changed			Two new exec lineups, **SPMPEX** for POTS and **SPMKEX** for KeySet, are added to the this field

9.1.1.5 Datafill example

The following example shows sample datafill for table MNNODE:

SPM 0 SPM_0 DMSCP 1 SYNC INTERNAL 15 (COT 60) (DTMF 60) (ECAN 60)(TONESYN 60) (MF 60) (CMR 60) $ (SYSB CR RPT) (MANB MJ RPT) (ISTB MN RPT)(SYSBNA CR RPT) (MANBNA MJ RPT) (COTLOW MN RPT) (DTMFLOW MN RPT)(ECANLOW MN RPT) (TONESLOW MN RPT) (MFLOW MN RPT) (CMRLOW MN RPT) $(**POTS SPMPEX)** $

9.2 Table information

9.2.1 Table name: LNINV

9.2.1.1 Functional description

LNINV is where lines are datafilled.

9.2.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

n/a

9.2.1.3 Table fields

The following table lists fields for table LNINV.

A new error message, “The specified CARDCODE is not allowed in an SPM,” has been added for illegal card codes (RDTISN and RDTMPY) on RDTs provisioned on an SPM.

Table 3 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
CARDCODE	Changed			error message, “The specified CARDCODE is not allowed in an SPM,” for (RDTISN and RDTMPY) on RDTs.

9.2.1.4 Datafill example

The following example shows sample datafill for table LNINV:

RDT1 03 0 01 01 **RDTISN** STDLN WORKING N NL N NIL

The specified CARDCODE is not allowed in an SPM

9.2.1.5 Table release history update

For more details on table MNNODE see documents:

- AG4960 in PLS DOC
- AD8377 in PLS DOC

9.2.1.6 Supplementary information

n/a

9.2.1.7 Translation verification tools

n/a

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: RDTINV

RDT Inventory

11.1.1.1 Functional description

Table RDTINV is a hardware inventory table that allows the end user to datafill remote digital terminals (RDT) and their corresponding integrated digital terminals (IDT) in the DMS -100/500 swithcing office. Table RDTINV contains the central control side (C - side) connectivity information and RDT configuration information.

11.1.1.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
RDTINV	0	255	N / A

11.1.1.4 Table fields

N/A. The table fields are not affected for the activity.

11.1.1.5 Datafill example

N/A. The datafill for this table has not been affected by this activity.

11.1.1.6 Table release history update

Added error message to be output when datafilling table RDTINV if limit of DS1 links for IDT subtending from SPMs has been reached..

11.1.1.7 Supplementary information

This activity adds an error message to be output when datafilling table RDTINV. If an RDT is datafilled with an IDT subtending from a SPM, the DS1 link resources for the IDT are subject to a SOC enforced limit specified by SOC option id SPMS0034. If the limit of link resources has been reached then the tuple being provisioned is denied and the error message, “SPMS0034: Usage limit reached.” will be output.

11.1.1.8 Translation verification tools

N/A.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: TRKAIN

Trunk Group AIN Trigger

11.1.1.1 Functional description

TRKAIN is used to provision individual (non-office wide) AIN triggers to trunk groups.

The only change to TRKAIN introduced by this feature is to allow PX trunk groups to be added which subscribes to the Off-Hook-Delay(OHD) AIN trigger defined in table TRIGITM (AINGRP = TIID). Refer to the FN section of this feature for details.

No other changes to TRKAIN are introduced by this feature.

11.1.1.2 Datafill sequence and implications

Current datafill order unchanged. A valid trigger group must be defined in table TRIGGRP or TRIGITM before provisioning the trigger against the trunk group.

11.1.1.3 Table size

The table size is unchanged, due to utilizing existing stores.

11.1.1.4 Table fields

Unchanged.

11.1.1.5 Datafill example

The following example shows sample datafill for table : TRKAIN

Figure 1 TRKAIN Datafill Example

```
TABLE: TRIGITM
>list
TDP TINAME TRIGGER TRIGDATA CRITERIA STATE ACTION SLHR
OPTIONS
-----------------------------------------------------
3 OHDTRIG OFFHKDEL $ ULK EVENT R02 TCPIP 0 $


TABLE: TRKAIN
>list
GRPKEY AINGRP AININFO
---------------------
PXTRKGRP TIID (3 OHDTRIG ON) $
```

11.1.1.6 Table release history update

With the change introduced to table TRKAIN, this feature removes the error message “Trigger type OFFHKDEL is not compatible with this Trunk Group” when PX trunks subscribe to the Off-Hook-Delay trigger for the Trigger Item data model (table TRIGITM).

11.1.1.7 Supplementary information

No dump and restore requirements are introduced by this feature.

11: Data schema changes (DS)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Data Schema impacts that result from this feature. This information is used to update the translations NTP, in the customer documentation. Office parameter sections have been moved out of this section into a separate OP section of the DDOC.

Instructions: Do not include this section in the DDOC if data schema changes are not being made.

It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Refer to PLS FMDOC module TABCTRL, “Guide to Table Control and Reformats”, for a guide to identifying changes requiring reformats and how to write reformats. Refer to the PLS home page (http://47.80.12.39:31462/pls).

For all Data Schema changes made after the software release DC (Design Close) milestone, an email must be sent to DMS DATA and the Customer Documentation prime indicating the tables effected, feature number and nature of the change.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

11.1 Table information

Duplicate the table information in this section for each new or modified table.

11.1.1 Table name: <abbreviated name of table>

Type the abbreviated name of the table in the heading.

<long name of table>

Give the full table name from which the abbreviated table name is derived. The long table name is written with initial capital letters for each word except for prepositions, articles, and coordinate conjunctions (and, or, for, nor).

Example:
Table name:DDPACDEV
Datapac Device Table

11.1.1.1 Functional description

For new tables only, state the purpose of the table and describe how the table is accessed and used by the system. If applicable, mention relationships with other tables, functional groups, or functionalities. If appropriate, include a description of how to add, delete, or change tuples in the table. Flow charts and block diagrams may be useful to help illustrate the functional description.

Example:
Table DPACDEV lists assignments for each data packet controller (DPC) circuit card configured in the input/output controller (IOC). For related information refer to table MTD. For adequate diagnostics, the minimum number of logical channels must be three.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- <abbreviated names of tables before the current table if applicable>
- <abbreviated name of the current table>
- <abbreviated names of tables after the current table if applicable>

OR

There is no requirement to datafill tables in a specific order.

OR

Current datafill order unchanged.

This section lists other tables that must be datafilled before or after the table being documented, as well as office parameters that interact with the table.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DDPACDEV	0	8 000 000	Memory is automatically allocated for 16 DPC devices.

This section gives the minimum and maximum number of tuples allowed in the table. If appropriate, information on memory allocation is included. For more complicated tables, include a formula for calculating the table size. If memory requirements are not fixed, explain in complete sentences.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

The table describes each field to be datafilled.

If datafill is conditional upon specific values for certain fields, then provide additional tables for each value of the field. Specify the condition in a paragraph before the table.

<conditional information>

Example:
MSGFROM = ATUP
If the entry in subfield MSGFROM is ATUP, datafill field ATUPMSG as shown in the field description table.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Must be 8 characters or less and include no special characters		Indicate whether this field has any subfields, refinement, and selectors	Specify the range of values for the field, subfield, refinement or selector	Give the long name of the field. Provide instructions for datafilling the field, subfield, refinement, or selector. Provide default values, if applicable.

11.1.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>:

Provide at least one example of a MAP display of the datafilled table, preferably from a captive office or a VSOS session that uses a captive office image.

11.1.1.6 Table release history update

Identify the technical changes to the table in this release, with a short description of the change. This information will be added to the release history in the Data Schema section of the translations NTP.

Example:

The following information was added:

- entry TOPSDB added to field ATTROPTS
- maximum table size of 500 000 tuples for ISN
- blocked calls routed to treatment CNAD

11.1.1.7 Supplementary information

This optional section contains information that doesn't fit in any other section such as datafilling the table for specific applications, product descriptive information, description of feature interactions, and network configuration information.

If there is no content for this section, put NONE.

Example:

This section provides information on deleting datafill in table C7AFTPC.

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

List the tools that can be used to verify that the tables have been datafilled correctly.

Give an output example showing the call progression of the functionality through all necessary tables using these tools.

11: Data schema changes (DS)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Data Schema impacts that result from this feature. This information is used to update the translations NTP, in the customer documentation. Office parameter sections have been moved out of this section into a separate OP section of the DDOC.

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For all Data Schema changes made after the software release DC (Design Close) milestone, an email must be sent to DMS DATA and the Customer Documentation prime indicating the tables effected, feature number and nature of the change.

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11.1 Table information

Duplicate the table information in this section for each new or modified table.

11.1.1 Table name: <abbreviated name of table>

Type the abbreviated name of the table in the heading.

<long name of table>

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Example:
Table name:DDPACDEV
Datapac Device Table

11.1.1.1 Functional description

For new tables only, state the purpose of the table and describe how the table is accessed and used by the system. If applicable, mention relationships with other tables, functional groups, or functionalities. If appropriate, include a description of how to add, delete, or change tuples in the table. Flow charts and block diagrams may be useful to help illustrate the functional description.

Example:
Table DPACDEV lists assignments for each data packet controller (DPC) circuit card configured in the input/output controller (IOC). For related information refer to table MTD. For adequate diagnostics, the minimum number of logical channels must be three.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- <abbreviated names of tables before the current table if applicable>
- <abbreviated name of the current table>
- <abbreviated names of tables after the current table if applicable>

OR

There is no requirement to datafill tables in a specific order.

OR

Current datafill order unchanged.

This section lists other tables that must be datafilled before or after the table being documented, as well as office parameters that interact with the table.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DDPACDEV	0	8 000 000	Memory is automatically allocated for 16 DPC devices.

This section gives the minimum and maximum number of tuples allowed in the table. If appropriate, information on memory allocation is included. For more complicated tables, include a formula for calculating the table size. If memory requirements are not fixed, explain in complete sentences.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

The table describes each field to be datafilled.

If datafill is conditional upon specific values for certain fields, then provide additional tables for each value of the field. Specify the condition in a paragraph before the table.

<conditional information>

Example:
MSGFROM = ATUP
If the entry in subfield MSGFROM is ATUP, datafill field ATUPMSG as shown in the field description table.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Must be 8 characters or less and include no special characters		Indicate whether this field has any subfields, refinement, and selectors	Specify the range of values for the field, subfield, refinement or selector	Give the long name of the field. Provide instructions for datafilling the field, subfield, refinement, or selector. Provide default values, if applicable.

11.1.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>:

Provide at least one example of a MAP display of the datafilled table, preferably from a captive office or a VSOS session that uses a captive office image.

11.1.1.6 Table release history update

Identify the technical changes to the table in this release, with a short description of the change. This information will be added to the release history in the Data Schema section of the translations NTP.

Example:

The following information was added:

- entry TOPSDB added to field ATTROPTS
- maximum table size of 500 000 tuples for ISN
- blocked calls routed to treatment CNAD

11.1.1.7 Supplementary information

This optional section contains information that doesn't fit in any other section such as datafilling the table for specific applications, product descriptive information, description of feature interactions, and network configuration information.

If there is no content for this section, put NONE.

Example:

This section provides information on deleting datafill in table C7AFTPC.

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

List the tools that can be used to verify that the tables have been datafilled correctly.

Give an output example showing the call progression of the functionality through all necessary tables using these tools.

10: Data schema changes (DS)

10.1 Table information

10.1.1 Table name: TOFCNAME

Terminating Office Name Table

10.1.1.1 Functional description

N/A - Not a new table.

10.1.1.2 Datafill sequence and implications

Current datafill order unchanged.

10.1.1.3 Table size

N/A - Unchanged.

10.1.1.4 Table fields

The following table lists fields for table TOFCAME.

<conditional information>

Table 1 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
AREACODE	No change			
OFFCODE	No change			

Table 1 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OPTION	Changed	None	NONNATIVE **CODEHLDR**	New CODEHLDR option has been added. CODEHLDR option cannot be present with the NONNATIVE option.

10.1.1.5 Datafill example

The following example shows sample datafill for table TOFCNAME:

```
>add 613 999 CODEHLDR $
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
Do you really want to add this tuple”
Deleting a tuple from this table requires
special care, as described in the NTP
“NORTH AMERICAN DMS-100 TRANSLATIONS GUIDE.”
TUPLE TO BE ADDED:
     613     999                                              (CODEHLDR )$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
>
```

The tuple will appear as the following in table TOFCNAME.

```
613     999                                          (CODEHLDR )$
```

10.1.1.6 Table release history update

A new TOFCNAME option, termed ‘CODEHLDR’, was added.

10.1.1.7 Supplementary information

The CODEHLDR option cannot be present with the NONNATIVE TOFCNAME option and vice versa.

10.1.1.8 Translation verification tools

TOFCNAME does not use translation verification tools.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: DNDMSB

Do Not Disturb and Make Set Busy dynamic data Table.

11.1.1.1 Functional description

Table DNDMSB lists the activation status of all the lines which have feature DND and MSB active on them. This table transfers the critical DND and MSB data (activation status) during the PRESWACT phase of the ONP. Tuples cannot be added , deleted or changed in the table. This table just acts as an interface to list all the lines in an office with DND and MSB features active on them. This table is meant only for the purpose of data transfer during PRESWACT and not for regular use by the TELCO.

11.1.1.2 Datafill sequence and implications

There is no requirement to datafill tables in a specific order.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DNDMSB	0	32k	A segstor is used which can contain a maximum of 32K items.

11.1.1.4 Table fields

The table below lists the fields for table DNDMSB.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
LEN	NEW	NO	Any valid Line Equipment Number	Line Equipment Number
KEY	NEW	NO	0 to 69	This is the Logical Key in case of Ksets or ISDN sets and DN no. in case of IBN sets.
INDEX	NEW	NO	#0000 to #8FFF	This is the index to the physical store (segstor) where the data for this tuple is stored.
FEAT	NEW	NO	DND, MSB, KMSB	This field contains feature DND, KMSB and MSB.
STATE	NEW	NO	NIL_DND, DNDIA, DNDGA, DNDIGA, NONE.	This shows the activation status of feature DND. NIL_DND, DNDIA, DNDGA and DNDIGA states are valid for feature DND. For feature MSB, the state is not required, so the value will be NONE.

11.1.1.4.1 Description of changed or new fields **LEN** - This is any valid subscriber line equipment number. It identifies the LEN number of the customer station which has feature DND or MSB assigned to it..

KEY - It is the logical key in case of KSETS or ISDN sets and DN no. in case of IBN sets. The key shows the keyno. to which the feature DND or MSB is datafilled. For KSETS and ISDN sets the value can be from 1 to 69. IBN sets can have only value 0, as the features DND and MSB can only be assigned to DN 0 of an IBN set.

INDEX - This shows the index to segmented store where the data for this tuple is stored.

FEAT - It is the feature which is active on the line. The possible values can be DND, MSB and KMSB.

STATE - It is the activation status of DND and MSB. For DND the possible states are NIL_DND, DNDIA, DNDGA and DNDIGA. For MSB and KMSB, this field is not required, so the value will be kept as NONE.

11.1.1.5 Datafill example

The following example shows sample tuple for table DNDMSB.

```
Table: DNDMSB
TOP
>lis 2
        DNDMSB_KEY                              STATE
-------------------------------------------------------------------------
HOST 00 0 01 10    2     0000     DND     DNDGA
HOST 00 1 00 09    5     0001     MSB     NONE
```

11.1.1.6 Table release history update

This is a new table.

11.1.1.7 Supplementary information

Tuples in this table cannot be added, deleted or changed.

11.1.1.8 Translation verification tools

Table DNDMSB does not use translation verification tools.

11: Data schema changes (DS)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Data Schema impacts that result from this feature. This information is used to update the translations NTP, in the customer documentation. Office parameter sections have been moved out of this section into a separate OP section of the DDOC.

Instructions: Do not include this section in the DDOC if data schema changes are not being made.

It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Refer to PLS FMDOC module TABCTRL, “Guide to Table Control and Reformats”, for a guide to identifying changes requiring reformats and how to write reformats. Refer to the PLS home page (http://47.80.12.39:31462/pls).

For all Data Schema changes made after the software release DC (Design Close) milestone, an email must be sent to DMS DATA and the Customer Documentation prime indicating the tables effected, feature number and nature of the change.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

11.1 Table information

Duplicate the table information in this section for each new or modified table.

11.1.1 Table name: <abbreviated name of table>

Type the abbreviated name of the table in the heading.

<long name of table>

Give the full table name from which the abbreviated table name is derived. The long table name is written with initial capital letters for each word except for prepositions, articles, and coordinate conjunctions (and, or, for, nor).

Example:
Table name:DDPACDEV
Datapac Device Table

11.1.1.1 Functional description

For new tables only, state the purpose of the table and describe how the table is accessed and used by the system. If applicable, mention relationships with other tables, functional groups, or functionalities. If appropriate, include a description of how to add, delete, or change tuples in the table. Flow charts and block diagrams may be useful to help illustrate the functional description.

Example:
Table DPACDEV lists assignments for each data packet controller (DPC) circuit card configured in the input/output controller (IOC). For related information refer to table MTD. For adequate diagnostics, the minimum number of logical channels must be three.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- <abbreviated names of tables before the current table if applicable>
- <abbreviated name of the current table>
- <abbreviated names of tables after the current table if applicable>

OR

There is no requirement to datafill tables in a specific order.

OR

Current datafill order unchanged.

This section lists other tables that must be datafilled before or after the table being documented, as well as office parameters that interact with the table.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DDPACDEV	0	8 000 000	Memory is automatically allocated for 16 DPC devices.

This section gives the minimum and maximum number of tuples allowed in the table. If appropriate, information on memory allocation is included. For more complicated tables, include a formula for calculating the table size. If memory requirements are not fixed, explain in complete sentences.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

The table describes each field to be datafilled.

If datafill is conditional upon specific values for certain fields, then provide additional tables for each value of the field. Specify the condition in a paragraph before the table.

<conditional information>

Example:
MSGFROM = ATUP
If the entry in subfield MSGFROM is ATUP, datafill field ATUPMSG as shown in the field description table.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Must be 8 characters or less and include no special characters		Indicate whether this field has any subfields, refinement, and selectors	Specify the range of values for the field, subfield, refinement or selector	Give the long name of the field. Provide instructions for datafilling the field, subfield, refinement, or selector. Provide default values, if applicable.

11.1.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>:

Provide at least one example of a MAP display of the datafilled table, preferably from a captive office or a VSOS session that uses a captive office image.

11.1.1.6 Table release history update

Identify the technical changes to the table in this release, with a short description of the change. This information will be added to the release history in the Data Schema section of the translations NTP.

Example:

The following information was added:

- entry TOPSDB added to field ATTROPTS
- maximum table size of 500 000 tuples for ISN
- blocked calls routed to treatment CNAD

11.1.1.7 Supplementary information

This optional section contains information that doesn't fit in any other section such as datafilling the table for specific applications, product descriptive information, description of feature interactions, and network configuration information.

If there is no content for this section, put NONE.

Example:

This section provides information on deleting datafill in table C7AFTPC.

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

List the tools that can be used to verify that the tables have been datafilled correctly.

Give an output example showing the call progression of the functionality through all necessary tables using these tools.

11: Data schema changes (DS)

11.1 Table information

Are new tables added by this feature (Y/N)? : N

Are existing tables modified by this feature(Y/N)? : Y

11.1.1 New/modified Table List

Table 1 Modified tables

TABLE NAME	NEW, CHANGED or DELETED	TABLE CONTROL (NEW/OLD/UNCHANGED)
SPINFO	CHANGED	UNCHANGED
IBNLINES	CHANGED	UNCHANGED
IBNFEAT	CHANGED	UNCHANGED

The following section will describe the changed table in details.

11.1.2 Table name: SPINFO

Service Provider Information (SPINFO)

11.1.2.1 General

Table SPINFO contains information on each service provider. The key is made of the service provider's name and the service offered. If the end-user requires the use of an alternate service provider, this provider can be chosen from those available in table SPINFO via the Alternate Service Provider (ASP) line option. Who's Calling (WC) uses table SPINFO to store the service provider specific information. Multiple tuples can be defined to be used by WC as long as the service provider's name is different. The operating company should define a tuple to be used by default.

When referring to a WC service tuple in this document, we refer to a tuple with a value of "WC" for both SERVNAME and SERVSEL fields.

11.1.2.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.2.3 Table size

Table 287 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
SPINFO	0	1000[a]	16 words / tuple

a. There is a maximum of 255 tuples with the same service (e.g. WC).

11.1.2.4 Table fields

The WC feature modifies table SPINFO to:

- add WC as a value in the subfield SERVNAME of the field SPINFKEY and in the subfield SERVSEL of the field DATA.
- add 6 new subfields of the field DATA described in the table below.

Field	New, Changed or Unchanged	Subfield or refinement	Entry	Explanation and action
SPINFKEY	UNCHANGED	PROVNAME	16-character string	This fields specifies the name of the provider for the WC service.
	CHANGED	SERVNAME	WC	This fields specifies the name of the service (WC) offered by the service provider.
DATA	CHANGED	SERVSEL	WC	This field is the same as SERVNAME.
	UNCHANGED	ENABLED	Y, N	This field turns on and off the WC service for the provider.
	UNCHANGED	CARRIER	valid carrier from table OCCNAME	This field specifies the carrier to be used for the calls placed to the SN.
	UNCHANGED	BILLINGDN	10-digit DN	This field specifies the DN against which charges should be applied (if required) for the calls placed to the SN

Field	New, Changed or Unchanged	Subfield or refinement	Entry	Explanation and action
DATA	NEW	BILLING	boolean	This field controls the billing on the calls placed to the SN.
	NEW	SNDN1	4 to 30 digits DN	This field contains the DN to route to the SN when the WC subscriber doesn't have voice mail on the line.
	NEW	SNDN2	4 to 30 digits DN	This field contains the DN to route to the SN when the WC subscriber has voice mail on the line.
	NEW	WCT1	integer from 1 to 20	This field contains the time-out value for the T1 timer (in seconds).
	NEW	WCT2	integer from 1 to 200	This field contains the time-out value for the T2 timer (in seconds)
	NEW	WCT4	integer from 1 to 200	This field contains the time-out value for the T4 timer (in seconds)

11.1.2.5 Datafill example

When datafilling a tuple in table SPINFO, some fields not added or modified by the WC feature are reused.

The PROVNAME field is used to enter the name of the service provider. To define the tuple used when no alternate service provider (ASP) is specifically assigned to a line, the value of the PROVNAME field should be set to PRIMARY.

The ENABLED field controls the availability of the service (specified in field SERVNAME) for the current ASP (specified in PROVNAME).

The CARRIER field is used to specify the carrier that should be used to route the call to the SN.

The BILLINGDN field is used to specify the DN against which the charges are billed for the call to the SN. If this field is not datafilled, the call to the SN will be billed to the WC subscriber.

The mandatory fields in table SPINFO when datafilling a WC service tuple are PROVNAME, SERVNAME, SERVSEL, ENABLED, CARRIER, BILLINGDN, BILLING, WCT1, WCT2 and WCT4. The SNDN1 and

SNDN2 fields are mandatory only when the ENABLED field is set to “Y”. The user will always be prompted to enter a value for all fields when datafilling a WC service tuple in table SPINFO.

Table 2 Typical WC SPINFO tuple

PROVNAME	SERVNAME	SERVSEL	ENABLED	CARRIER	BILLINGDN	BILLING	SNDN1
PRIMARY	WC	WC	Y	NILC	NILDN	N	91234567

SNDN2	WCT1	WCT2	WCT4
91234568	5	40	40

11.1.3 Table name: IBNLINES

Integrated Business Network Line Assignment Table (IBNLINES)

11.1.3.1 General

Table IBNLINES contains the line assignments for each 500/2500 set assigned to an Integrated Business Network (IBN), Residential Enhanced Services (RES) and Multiple Appearance Directory Number (MADN) station number. This table also contains the line assignments for the IBN attendant consoles (AC).

The WC feature adds the WC line option as a valid entry in the options list.

11.1.3.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.3.3 Table size

Current table size is not modified.

11.1.3.4 Table fields

The WC feature modifies table IBNLINES to add WC as a valid entry in the OPLIST field.

11.1.3.5 Datafill example

Table IBNLINES must not be datafilled directly. If the operating company attempts to use the table editor to enter datafill in this table, the following error message will be displayed:

```
Protected table, use SERVORD to change.
```

The WC line option must be added through SERVORD. For more information on the WC line option see the SO section of this DDOC.

11.1.4 Table name: IBNFEAT

Integrated Business Network Line Feature (IBNFEAT)

11.1.4.1 General

Table IBNFEAT contains information that defines the Integrated Business Network (IBN) and Residential Enhanced Services (RES) line features.

The existing ASP line option datafilled in IBNFEAT table is enhanced to support the WC service as a valid entry.

11.1.4.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.4.3 Table size

Current table size is not modified.

11.1.4.4 Table fields

The WC feature modifies table IBNFEAT to add WC as a valid entry in the SERVICE field of the ASP line option.

11.1.4.5 Datafill example

Table IBNFEAT must not be datafilled directly. If the operating company attempts to use the table editor to enter datafill in this table, the following error message will be displayed:

```
Protected table, use SERVORD to change.
```

The ASP line option with the WC service must be added through SERVORD. For more information on the ASP line option with the WC service see the SO section of this DDOC.

11: Data schema changes (DS)

11.1 Table information

This feature does not make any changes in any of the customer visible tables. As a part of this feature a new office parameter DELAY_FSPAIS _ALARMS will be introduced. For information related to this office parameter please refer to the Office Parameter Changes (OP) section in this document (document A59012846.AA06 in PLS FMDOC library).

11.1.1 Table name:

Not applicable.

11.1.1.1 Functional description

Not applicable.

11.1.1.2 Datafill sequence and implications

Not applicable.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
N/A	N/A	N/A	N/A

11.1.1.4 Table fields

Not applicable.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
N/A	N/A	N/A	N/A	N/A

11.1.1.5 Datafill example

Not applicable.

11.1.1.6 Table release history update

Not applicable.

11.1.1.7 Supplementary information

Not applicable.

11.1.1.8 Translation verification tools

Not applicable.

11: Data schema changes (DS)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Data Schema impacts that result from this feature. This information is used to update the translations NTP, in the customer documentation. Office parameter sections have been moved out of this section into a separate OP section of the DDOC.

Instructions: Do not include this section in the DDOC if data schema changes are not being made.

It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Refer to PLS FMDOC module TABCTRL, “Guide to Table Control and Reformats”, for a guide to identifying changes requiring reformats and how to write reformats. Refer to the PLS home page (http://47.80.12.39:31462/pls).

For all Data Schema changes made after the software release DC (Design Close) milestone, an email must be sent to DMS DATA and the Customer Documentation prime indicating the tables effected, feature number and nature of the change.

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For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

11.1 Table information

Duplicate the table information in this section for each new or modified table.

11.1.1 Table name: <abbreviated name of table>

Type the abbreviated name of the table in the heading.

<long name of table>

Give the full table name from which the abbreviated table name is derived. The long table name is written with initial capital letters for each word except for prepositions, articles, and coordinate conjunctions (and, or, for, nor).

Example:
Table name:DDPACDEV
Datapac Device Table

11.1.1.1 Functional description

For new tables only, state the purpose of the table and describe how the table is accessed and used by the system. If applicable, mention relationships with other tables, functional groups, or functionalities. If appropriate, include a description of how to add, delete, or change tuples in the table. Flow charts and block diagrams may be useful to help illustrate the functional description.

Example:
Table DPACDEV lists assignments for each data packet controller (DPC) circuit card configured in the input/output controller (IOC). For related information refer to table MTD. For adequate diagnostics, the minimum number of logical channels must be three.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- <abbreviated names of tables before the current table if applicable>
- <abbreviated name of the current table>
- <abbreviated names of tables after the current table if applicable>

OR

There is no requirement to datafill tables in a specific order.

OR

Current datafill order unchanged.

This section lists other tables that must be datafilled before or after the table being documented, as well as office parameters that interact with the table.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DDPACDEV	0	8 000 000	Memory is automatically allocated for 16 DPC devices.

This section gives the minimum and maximum number of tuples allowed in the table. If appropriate, information on memory allocation is included. For more complicated tables, include a formula for calculating the table size. If memory requirements are not fixed, explain in complete sentences.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

The table describes each field to be datafilled.

If datafill is conditional upon specific values for certain fields, then provide additional tables for each value of the field. Specify the condition in a paragraph before the table.

<conditional information>

Example:
MSGFROM = ATUP
If the entry in subfield MSGFROM is ATUP, datafill field ATUPMSG as shown in the field description table.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Must be 8 characters or less and include no special characters		Indicate whether this field has any subfields, refinement, and selectors	Specify the range of values for the field, subfield, refinement or selector	Give the long name of the field. Provide instructions for datafilling the field, subfield, refinement, or selector. Provide default values, if applicable.

11.1.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>:

Provide at least one example of a MAP display of the datafilled table, preferably from a captive office or a VSOS session that uses a captive office image.

11.1.1.6 Table release history update

Identify the technical changes to the table in this release, with a short description of the change. This information will be added to the release history in the Data Schema section of the translations NTP.

Example:

The following information was added:

- entry TOPSDB added to field ATTROPTS
- maximum table size of 500 000 tuples for ISN
- blocked calls routed to treatment CNAD

11.1.1.7 Supplementary information

This optional section contains information that doesn't fit in any other section such as datafilling the table for specific applications, product descriptive information, description of feature interactions, and network configuration information.

If there is no content for this section, put NONE.

Example:

This section provides information on deleting datafill in table C7AFTPC.

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

List the tools that can be used to verify that the tables have been datafilled correctly.

Give an output example showing the call progression of the functionality through all necessary tables using these tools.

11: Data schema changes (DS)

Purpose: This feature does not change translations of any table dealt with in this feature. Also the feature does not change the ranges of the fieds of any table. Hence there is no need of updation of any translation NTP.

11.1 Table information

N/A

11.1.1 Table name:

N/A

11.1.1.1 Functional description

N/A

11.1.1.2 Datafill sequence and implications

N/A

11.1.1.3 Table size

N/A

11.1.1.4 Table fields

N/A

11.1.1.5 Datafill example

N/A

11.1.1.6 Table release history update

N/A

11.1.1.7 Supplementary information

None

11.1.1.8 Translation verification tools

N/A

11: Data schema changes (DS)

11.1 Table information

The following tables are modified as a result of this design activity:

- HUNTGRP
- KSETFEAT

The alterations to these tables are described in the sections that follow.

11.1.1 Table name: HUNTGRP

Hunt Group Table

11.1.1.1 Functional description

Table HUNTGRP is an existing table, and its purpose is unchanged as a result of this activity. The table stores information regarding each hunt group that is datafilled in the DMS. Any hunt group which has the LOD option assigned will have the LOD field of the HUNTGRP tuple set to Y and an LOD directory number datafilled in field LODDN.

Prior to NA013, the maximum number of digits accepted in field LODDN was 11. This feature expands the LODDN field to a maximum of 30 digits.

Note: This table should not be datafilled via table editor. Changes should be made via the Servord interface.

11.1.1.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
HUNTGRP	Unchanged	Unchanged	N/A

11.1.1.4 Table fields

The following table lists the changed fields for table HUNTGRP.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
GRPDATA	Changed	LODDN	Numeric (up to 30 digits)	Line Overflow Directory Number. Enter the DN to which all overflow calls are routed. Note: Alphabetic characters are not allowed.

11.1.1.5 Datafill example

The following example shows sample datafill for table HUNTGRP with a 30 digit LODDN:

Figure 1 Table HUNTGRP example

```
HTGRP SNPA          DN
              GRPTYP
                                                    GRPDATA
-------------------------------------------------------------------------------
  15      909         9508000
                DNH  N    N    N        RCVD              N
Y   12345678901234567891919621555555                                    N
                                                    N
                                          N
                                                    N
                              2                      $
```

11.1.1.6 Table release history update

The following change is made to table HUNTGRP as a result of this feature:

- DN’s datafilled in subfield LODDN can now contain up to 30 digits.

11.1.1.7 Supplementary information

None.

11.1.1.8 Translation verification tools

N/A

11.1.2 Table name: KSETFEAT

Business Set and Data Unit Feature Table

11.1.2.1 Functional description

Table KSETFEAT is an existing table, and its purpose is unchanged as a result of this activity. The table stores information regarding various features assigned to business sets or data units. The tuples in the table differ depending on the feature in question. This activity affects only KSH feature tuples in table KSETFEAT.

When the feature type is KSH, field KVAR is datafilled in the table. When the OVTYPE selector is set to D (representing DN), subfield OVDN is datafilled. Prior to NA013, the maximum number of digits accepted in field OVDN was 11. This feature expands the OVDN field to a maximum of 30 digits.

Note: This table should not be datafilled via table editor. Changes should be made via the Servord interface.

11.1.2.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.2.3 Table size

Table 3 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
KSETFEAT	Unchanged	Unchanged	N/A

11.1.2.4 Table fields

The following table lists the changed fields for table KSETFEAT.

Table 4 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
KVAR	Changed	OVDN	Numeric (1 to 30 digits)	Overflow Directory Number. If the entry in subfield OVTYPE is D, datafill this refinement. Enter the number to which calls are routed when all members of the short hunt group are busy.

11.1.2.5 Datafill example

The following example shows sample datafill for KSH tuples in table KSETFEAT with a 30 digit OVDN:

Figure 2 Table KSETFEAT example

```
FEATKEY     FEATURE
                                                KVAR
-------------------------------------------------------------------------------------
HOST  00 0 00 04  1     KSH         KSH   D   123456789012345678919196215555
                                              $
```

11.1.2.6 Table release history update

The following change is made to table KSETFEAT as a result of this feature:

- DN’s datafilled in subfield OVDN in KSH feature tuples can now contain up to 30 digits.

11.1.2.7 Supplementary information

None.

11.1.2.8 Translation verification tools

N/A

11: Data schema changes (DS)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Data Schema impacts that result from this feature. This information is used to update the translations NTP, in the customer documentation. Office parameter sections have been moved out of this section into a separate OP section of the DDOC.

Instructions: Do not include this section in the DDOC if data schema changes are not being made.

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11.1 Table information

Duplicate the table information in this section for each new or modified table.

11.1.1 Table name: <abbreviated name of table>

Type the abbreviated name of the table in the heading.

<long name of table>

Give the full table name from which the abbreviated table name is derived. The long table name is written with initial capital letters for each word except for prepositions, articles, and coordinate conjunctions (and, or, for, nor).

Example:
Table name:DDPACDEV
Datapac Device Table

11.1.1.1 Functional description

For new tables only, state the purpose of the table and describe how the table is accessed and used by the system. If applicable, mention relationships with other tables, functional groups, or functionalities. If appropriate, include a description of how to add, delete, or change tuples in the table. Flow charts and block diagrams may be useful to help illustrate the functional description.

Example:
Table DPACDEV lists assignments for each data packet controller (DPC) circuit card configured in the input/output controller (IOC). For related information refer to table MTD. For adequate diagnostics, the minimum number of logical channels must be three.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- <abbreviated names of tables before the current table if applicable>
- <abbreviated name of the current table>
- <abbreviated names of tables after the current table if applicable>

OR

There is no requirement to datafill tables in a specific order.

OR

Current datafill order unchanged.

This section lists other tables that must be datafilled before or after the table being documented, as well as office parameters that interact with the table.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DDPACDEV	0	8 000 000	Memory is automatically allocated for 16 DPC devices.

This section gives the minimum and maximum number of tuples allowed in the table. If appropriate, information on memory allocation is included. For more complicated tables, include a formula for calculating the table size. If memory requirements are not fixed, explain in complete sentences.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

The table describes each field to be datafilled.

If datafill is conditional upon specific values for certain fields, then provide additional tables for each value of the field. Specify the condition in a paragraph before the table.

<conditional information>

Example:
MSGFROM = ATUP
If the entry in subfield MSGFROM is ATUP, datafill field ATUPMSG as shown in the field description table.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Must be 8 characters or less and include no special characters		Indicate whether this field has any subfields, refinement, and selectors	Specify the range of values for the field, subfield, refinement or selector	Give the long name of the field. Provide instructions for datafilling the field, subfield, refinement, or selector. Provide default values, if applicable.

11.1.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>:

Provide at least one example of a MAP display of the datafilled table, preferably from a captive office or a VSOS session that uses a captive office image.

11.1.1.6 Table release history update

Identify the technical changes to the table in this release, with a short description of the change. This information will be added to the release history in the Data Schema section of the translations NTP.

Example:

The following information was added:

- entry TOPSDB added to field ATTROPTS
- maximum table size of 500 000 tuples for ISN
- blocked calls routed to treatment CNAD

11.1.1.7 Supplementary information

This optional section contains information that doesn't fit in any other section such as datafilling the table for specific applications, product descriptive information, description of feature interactions, and network configuration information.

If there is no content for this section, put NONE.

Example:

This section provides information on deleting datafill in table C7AFTPC.

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

List the tools that can be used to verify that the tables have been datafilled correctly.

Give an output example showing the call progression of the functionality through all necessary tables using these tools.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: TRKOPTS

Trunk Option Table.

11.1.1.1 Functional description

The table TRKOPTS introduced with GETS project is used to provision options on trunk groups. There is an entry in the table for each option assigned on a trunk group. The key of the table is composed of CLLI of the trunk group, and the name of the option.

The ISUP Generic Name feature adds a boolean option CNAMINGN to table TRKOPTS. This option is used to allow the calling party name to be sent in the GN parameter of ISUP IAM. The CNAMINGN option can only be assigned to the ISUP trunks.

11.1.1.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.1.3 Table size

The ISUP Generic Name feature does not change the size of the table. The size of this table changes dynamically as options are assigned/removed from trunk groups. It can contain upto 131072 tuples with combination of boolean and data options, based on the maximum number of trunks (8192) and maximum number of options (16). However it can contain upto 32767 tuples with all data options, based on the maximum number of data blocks available to store the information for the data options.

11.1.1.4 Table fields

The following table lists fields for the new CNAMINGN option in table TRKOPTS.

Table 1 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OPTKEY	Changed	OPTION	CNAMINGN	The new option CNAMINGN is added in the list of available options.
OPTINFO	Changed	OPTION	CNAMINGN	The new option CNAMINGN is added in the list of available options. No other information is associated with the new option.

11.1.1.5 Datafill example

"Figure 1 " on page 138 shows sample datafill for table TRKOPTS with the new option:

Figure 1 Datafill for table TRKOPTS

```
CI:
>TABLE TRKOPTS
TABLE: TRKOPTS
>ADD ISUP2W CNAMINGN CNAMINGN
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
TUPLE TO BE ADDED:
     ISUP2W CNAMINGN CNAMINGN
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
>
```

11.1.1.6 Table release history update

The ISUP Generic Name feature adds option CNAMINGN to the list of available options in table TRKOPTS in NA013.

11.1.1.7 Supplementary information

None.

11.1.1.8 Translation verification tools

The new CNAMINGN option of table TRKOPTS does not use translation verification tools.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: OFRT / OFR2 / OFR3 / OFR4

Office Routing Tables

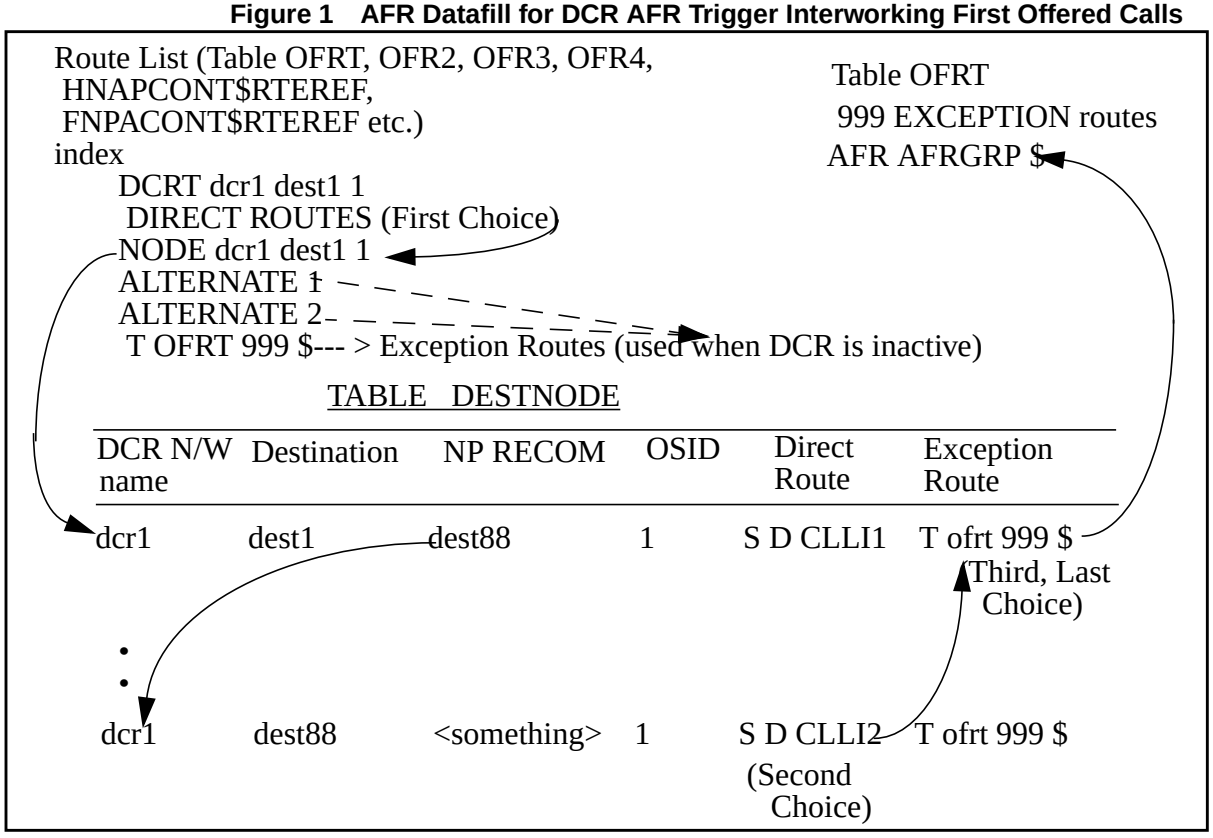
11.1.1.1 Datafill sequence and implications

Current datafill order for AFR trigger provisioning and subscription is not changed.

AFR trigger is recommended to be datafilled only at the end of the DCR exception routes. AFR trigger will be encountered when all the DCR routes are busy (Direct, recommended tandem routes if applicable, and exception routes). However it is possible to specify AFR at any location in the route list. Once the SSP has encountered AFR in the route list, AFR trigger processing is started. The route list entries following AFR are ignored.

For first offered calls i.e new DCR calls. the DCRT route element in table OFRT / OFR2 / OFR3 / OFR4 / HNAPCONT$RTEREF / FNPACONT$RTEREF does not perform routing. The direct routes are tried first. If the direct routes are unavailable, then the NODE route element attempts the NP recommendation for the destination node (as found in the DESTNODE table). The DCR recommended routes in table DESTNODE are tried. If the recommended tandem routes are unavailable, then the exception routes to the final destination are attempted. Hence if AFR is datafilled at the end of the exception route list, the AFR trigger will be encountered only after all the DCR routes are busy (Direct, recommended tandem routes if applicable, and exception routes). Please refer to “Figure 1 AFR Datafill for DCR AFR Trigger Interworking First Offered Calls” on page 218. The remainder of the route list in the above routing tables are not used when DCR is active.

Figure 1 AFR Datafill for DCR AFR Trigger Interworking First Offered Calls



For DCR tandem calls (calls incoming on a DCR trunk), DCRT route element in table OFRT / OFR2 / OFR3 / OFR4 / HNAPCONT$RTEREF / FNPACONT$RTEREF is used for routing to the DCR destination. The direct link to the destination is attempted (according to information in the DESTNODE table). If unsuccessful, the exception routes are used only when SLER (Second Leg Exception Routing) is ON. Please refer to “Figure 2 AFR Datafill for DCR AFR Trigger Interworking for TANDEM calls with SLER ON” on page 219. When SLER is OFF exception routes are not used for routing. Hence the AFR trigger even if datafilled in exception route is not encountered. Please refer to “Figure 3 AFR Datafill for DCR AFR Trigger Interworking for TANDEM calls with SLER OFF” on page 220.The rest of the route list is in the above routing tables are not used for tandem calls when DCR is active.

Figure 2 AFR Datafill for DCR AFR Trigger Interworking for TANDEM calls with SLER ON

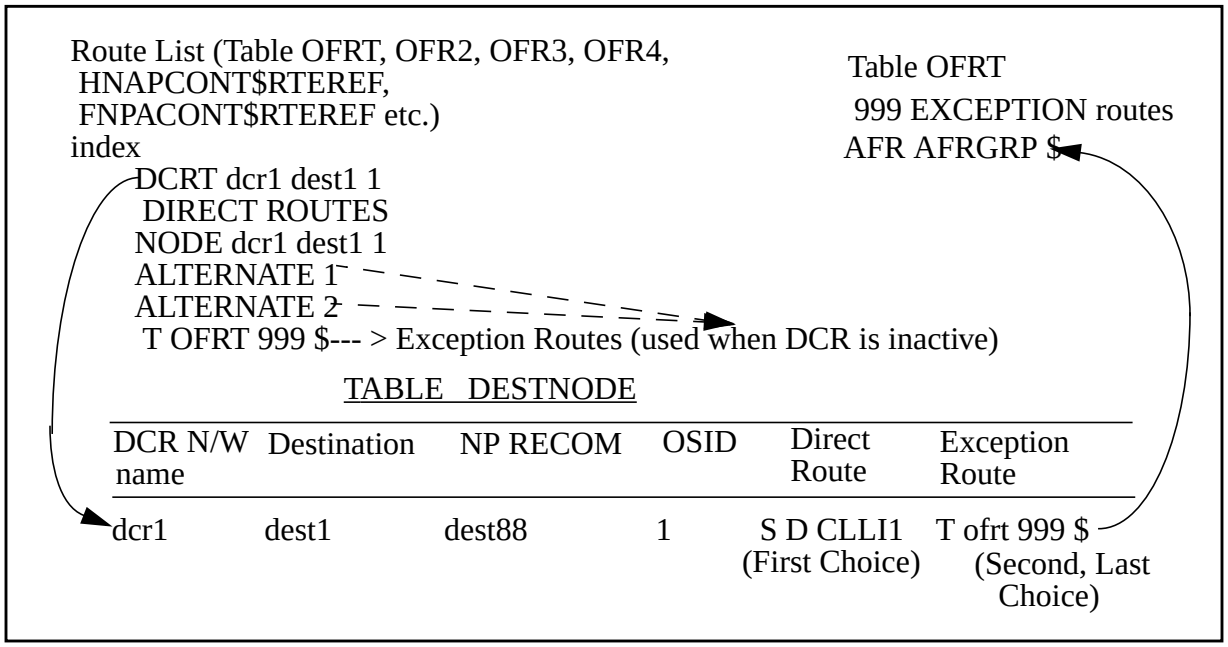
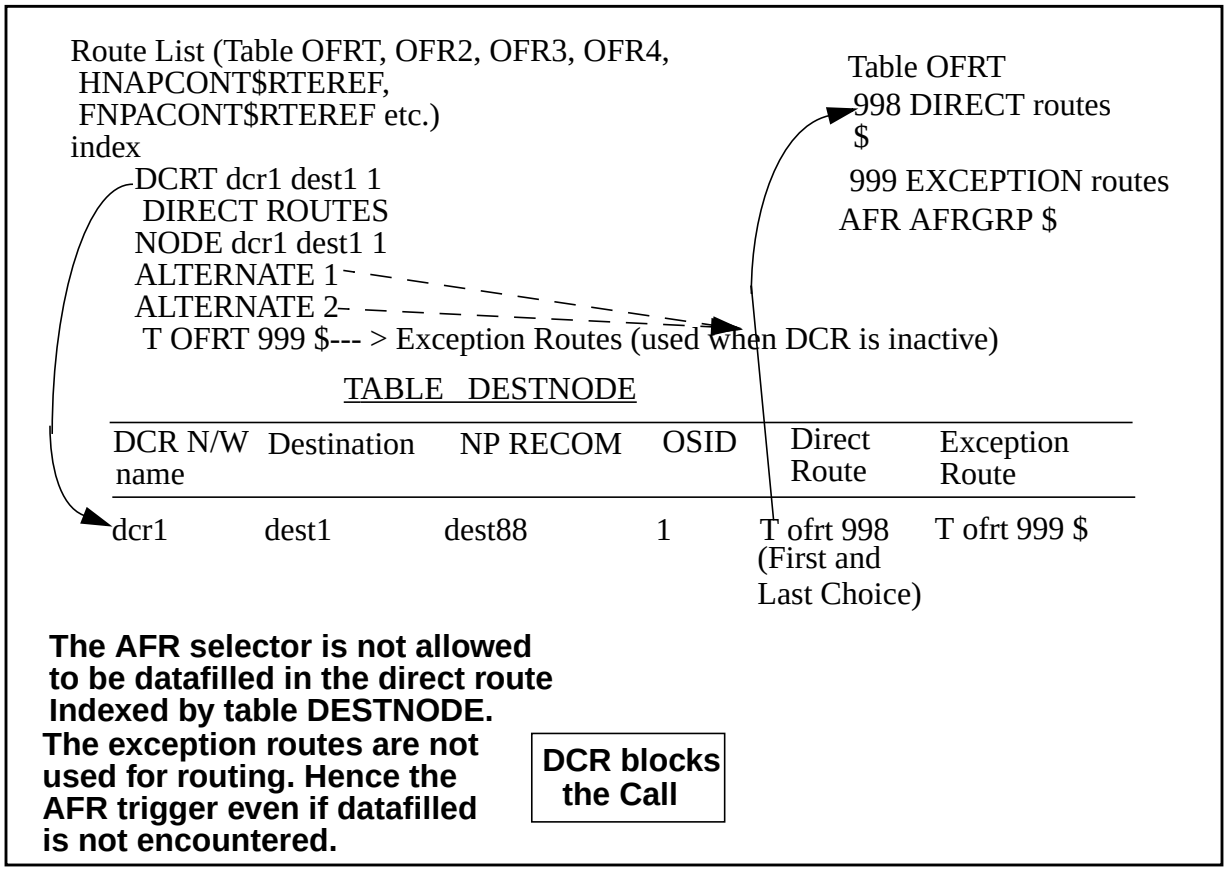


Figure 3 AFR Datafill for DCR AFR Trigger Interworking for TANDEM calls with SLER OFF



Note1: when DCR is inactive, the DCRT and the NODE route elements do not perform routing. The direct routes are tried first. If the direct routes are unavailable, the route elements after the NODE route element in the route list are tried until an available route is found. If no route in the route list is available, the call is blocked.

Note2: For a DCR tandem call, if SLER is ON, the exception routes are tried once the direct routes are exhausted. When SLER is OFF the call is blocked by DCR once the direct routes are exhausted.

SLER is a subcommand available under CI command "DCRUTIL". SLER (Second Leg Exception Routing) is turned ON/OFF on a office wide basis using this CI subcommand.

11.1.1.2 Datafill example

The following example shows sample datafill for table OFRT / OFR2 / OFR3 / OFR4:

```
TABLE: OFR2
>list
RTE RTELIST
-------------------------------------------------------------------
865 (N D EXC_6TO5_2W 4 6211 N) (AFR TCPINFO) $
```

11.1.1.3 Supplementary information

NONE

11.1.1.4 Translation verification tools

The following example shows the output from TRAVER when it is used to verify AFR datafill in table OFR2.

```
>traver l 6211002 9465004 b
TABLE LINEATTR
407 1FR NONE NT 10 NILSFC 0 NIL NIL 00 $

<Traver output Skipped - Non-Relevant>

. SUBTABLE RTEREF
.  965 DCRT DCRNET1 NODE5SEENBY6 5
.      N D NET1_6TO5_2W 4 6211 N
.      NODE DCRNET1 NODE5SEENBY6 5
. . TABLE DESTNODE (ACCESSED IF DCR IS ACTIVATED IN OFFICE)
. . NORMAL ROUTING RESUMES IF NODE TUPLE IS SKIPPED
. . DCR NETWORK: DCRNET1
. . . NODE5SEENBY6 NODE7SEENBY6 5 T OFR4 865 T OFR2 865
. . . NODE7SEENBY6 NODE5SEENBY6 5 T OFR4 967 T OFR2 865
. . . . TABLE OFR4
. . . .  967 N D NET1_6TO7_2W 3 947 N
. . . . EXIT TABLE OFR4
. . . NODE5SEENBY6 NODE7SEENBY6 5 T OFR4 865 T OFR2 865
. . . . TABLE OFR2
. . . .  865 N D EXC_6TO5_2W 4 6211 N
. . . .      AFR TCPINFO
TABLE TRIGGRP
OFCTRIG NETBUSY
 . AFR $ NIL
Trigger AIN AFR is applicable to office.
 . . TABLE TRIGINFO
 . . TCPINFO EVENT TCAP R01 TCPIP 0 $
AIN Network Busy TDP: trigger criteria met.
Querying the database will occur if network is busy.
Use the AINMQG option to save the query to a file for use in TstQuery.
 . . . . EXIT TABLE OFR2
 . . EXIT TABLE DESTNODE
 .      N D NET1_6TO4_2W 3 944 N
 .      N D NET1_6TO7_2W 3 947 N
 .      T OFR2 865
 . . TABLE OFR2
 . .  865 N D EXC_6TO5_2W 4 6211 N
 . .      AFR TCPINFO
TABLE TRIGGRP
OFCTRIG NETBUSY
 . AFR $ NIL
```

```
Trigger AIN AFR is applicable to office.
 . . TABLE TRIGINFO
 . . TCPINFO EVENT TCAP R01 TCPIP 0 $
AIN Network Busy TDP: trigger criteria met.
Querying the database will occur if network is busy.
Use the AINMQG option to save the query to a file for use in TstQuery.
 . . EXIT TABLE OFR2
 . EXIT TABLE RTEREF
EXIT TABLE HNPACONT

<Traver output Skipped - Non-Relevant>

+++ TRAVER: SUCCESSFUL CALL TRACE +++


AIN Network Busy TDP: trigger criteria met.
Querying the database will occur if network is busy.
Use the AINMQG option to save the query to a file for use in TstQuery.

DIGIT TRANSLATION ROUTES

1 NET1_6TO5_2W        6211004         ST
2 NET1_6TO7_2W        9475004         ST
3 EXC_6TO5_2W         6211004         ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

11: Data schema changes (DS)

Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Data Schema impacts that result from this feature. This information is used to update the translations NTP, in the customer documentation. Office parameter sections have been moved out of this section into a separate OP section of the DDOC.

Instructions: Do not include this section in the DDOC if data schema changes are not being made.

It must be reviewed and approved by the Customer Documentation prime for the DRU before design document completion. Do not include any designer-level information. Avoid using customer names or acronyms.

Refer to PLS FMDOC module TABCTRL, “Guide to Table Control and Reformats”, for a guide to identifying changes requiring reformats and how to write reformats. Refer to the PLS home page (http://47.80.12.39:31462/pls).

For all Data Schema changes made after the software release DC (Design Close) milestone, an email must be sent to DMS DATA and the Customer Documentation prime indicating the tables effected, feature number and nature of the change.

Help: If you need help using this template please contact the Customer Documentation prime for the appropriate DRU. The list of Customer Documentation DRU primes can be found at: http://47.202.17.6/cgi-bin/drumap.pl

For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

11.1 Table information

Duplicate the table information in this section for each new or modified table.

11.1.1 Table name: <abbreviated name of table>

Type the abbreviated name of the table in the heading.

<long name of table>

Give the full table name from which the abbreviated table name is derived. The long table name is written with initial capital letters for each word except for prepositions, articles, and coordinate conjunctions (and, or, for, nor).

Example:
Table name:DDPACDEV
Datapac Device Table

11.1.1.1 Functional description

For new tables only, state the purpose of the table and describe how the table is accessed and used by the system. If applicable, mention relationships with other tables, functional groups, or functionalities. If appropriate, include a description of how to add, delete, or change tuples in the table. Flow charts and block diagrams may be useful to help illustrate the functional description.

Example:
Table DPACDEV lists assignments for each data packet controller (DPC) circuit card configured in the input/output controller (IOC). For related information refer to table MTD. For adequate diagnostics, the minimum number of logical channels must be three.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- <abbreviated names of tables before the current table if applicable>
- <abbreviated name of the current table>
- <abbreviated names of tables after the current table if applicable>

OR

There is no requirement to datafill tables in a specific order.

OR

Current datafill order unchanged.

This section lists other tables that must be datafilled before or after the table being documented, as well as office parameters that interact with the table.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DDPACDEV	0	8 000 000	Memory is automatically allocated for 16 DPC devices.

This section gives the minimum and maximum number of tuples allowed in the table. If appropriate, information on memory allocation is included. For more complicated tables, include a formula for calculating the table size. If memory requirements are not fixed, explain in complete sentences.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

The table describes each field to be datafilled.

If datafill is conditional upon specific values for certain fields, then provide additional tables for each value of the field. Specify the condition in a paragraph before the table.

<conditional information>

Example:
MSGFROM = ATUP
If the entry in subfield MSGFROM is ATUP, datafill field ATUPMSG as shown in the field description table.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Must be 8 characters or less and include no special characters		Indicate whether this field has any subfields, refinement, and selectors	Specify the range of values for the field, subfield, refinement or selector	Give the long name of the field. Provide instructions for datafilling the field, subfield, refinement, or selector. Provide default values, if applicable.

11.1.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>:

Provide at least one example of a MAP display of the datafilled table, preferably from a captive office or a VSOS session that uses a captive office image.

11.1.1.6 Table release history update

Identify the technical changes to the table in this release, with a short description of the change. This information will be added to the release history in the Data Schema section of the translations NTP.

Example:

The following information was added:

- entry TOPSDB added to field ATTROPTS
- maximum table size of 500 000 tuples for ISN
- blocked calls routed to treatment CNAD

11.1.1.7 Supplementary information

This optional section contains information that doesn't fit in any other section such as datafilling the table for specific applications, product descriptive information, description of feature interactions, and network configuration information.

If there is no content for this section, put NONE.

Example:

This section provides information on deleting datafill in table C7AFTPC.

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

List the tools that can be used to verify that the tables have been datafilled correctly.

Give an output example showing the call progression of the functionality through all necessary tables using these tools.

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Audience: Nortel marketing organizations, Nortel technical writers, other Nortel functional groups, and other design teams. This section as written, is included in release documents going to the CUSTOMER.

Purpose: This section helps Customer Information Development (CID) writers determine the Data Schema impacts that result from this feature. This information is used to update the translations NTP, in the customer documentation. Office parameter sections have been moved out of this section into a separate OP section of the DDOC.

Instructions: Do not include this section in the DDOC if data schema changes are not being made.

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For template information (including ownership, change history, FAQ, and help on how to access and use the template), refer to the DDOC home page at URL http://47.73.7.31:8080/DDOC/.

11.1 Table information

Duplicate the table information in this section for each new or modified table.

11.1.1 Table name: <abbreviated name of table>

Type the abbreviated name of the table in the heading.

<long name of table>

Give the full table name from which the abbreviated table name is derived. The long table name is written with initial capital letters for each word except for prepositions, articles, and coordinate conjunctions (and, or, for, nor).

Example:
Table name:DDPACDEV
Datapac Device Table

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For new tables only, state the purpose of the table and describe how the table is accessed and used by the system. If applicable, mention relationships with other tables, functional groups, or functionalities. If appropriate, include a description of how to add, delete, or change tuples in the table. Flow charts and block diagrams may be useful to help illustrate the functional description.

Example:
Table DPACDEV lists assignments for each data packet controller (DPC) circuit card configured in the input/output controller (IOC). For related information refer to table MTD. For adequate diagnostics, the minimum number of logical channels must be three.

11.1.1.2 Datafill sequence and implications

Tables must be datafilled in the following sequence:

- <abbreviated names of tables before the current table if applicable>
- <abbreviated name of the current table>
- <abbreviated names of tables after the current table if applicable>

OR

There is no requirement to datafill tables in a specific order.

OR

Current datafill order unchanged.

This section lists other tables that must be datafilled before or after the table being documented, as well as office parameters that interact with the table.

11.1.1.3 Table size

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory
DDPACDEV	0	8 000 000	Memory is automatically allocated for 16 DPC devices.

This section gives the minimum and maximum number of tuples allowed in the table. If appropriate, information on memory allocation is included. For more complicated tables, include a formula for calculating the table size. If memory requirements are not fixed, explain in complete sentences.

11.1.1.4 Table fields

The following table lists fields for table <abbreviated name of table>.

The table describes each field to be datafilled.

If datafill is conditional upon specific values for certain fields, then provide additional tables for each value of the field. Specify the condition in a paragraph before the table.

<conditional information>

Example:
MSGFROM = ATUP
If the entry in subfield MSGFROM is ATUP, datafill field ATUPMSG as shown in the field description table.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
Must be 8 characters or less and include no special characters		Indicate whether this field has any subfields, refinement, and selectors	Specify the range of values for the field, subfield, refinement or selector	Give the long name of the field. Provide instructions for datafilling the field, subfield, refinement, or selector. Provide default values, if applicable.

11.1.1.5 Datafill example

The following example shows sample datafill for table <abbreviated name of table>:

Provide at least one example of a MAP display of the datafilled table, preferably from a captive office or a VSOS session that uses a captive office image.

11.1.1.6 Table release history update

Identify the technical changes to the table in this release, with a short description of the change. This information will be added to the release history in the Data Schema section of the translations NTP.

Example:

The following information was added:

- entry TOPSDB added to field ATTROPTS
- maximum table size of 500 000 tuples for ISN
- blocked calls routed to treatment CNAD

11.1.1.7 Supplementary information

This optional section contains information that doesn't fit in any other section such as datafilling the table for specific applications, product descriptive information, description of feature interactions, and network configuration information.

If there is no content for this section, put NONE.

Example:

This section provides information on deleting datafill in table C7AFTPC.

11.1.1.8 Translation verification tools

The following example shows the output from <ToolName> when it is used to verify <abbreviated name of table>.

<abbreviated name of table> does not use translation verification tools.

List the tools that can be used to verify that the tables have been datafilled correctly.

Give an output example showing the call progression of the functionality through all necessary tables using these tools.

11: Data schema changes (DS)

11.1 Table information

11.1.1 Table name: IBNRTE, IBNRT2, IBNRT3, IBNRT4

Integrated Business Network Route

11.1.1.1 Functional description

Not Applicable.

11.1.1.2 Datafill sequence and implications

Current datafill order unchanged.

11.1.1.3 Table size

No Change.

Table 1 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory

11.1.1.4 Table fields

The following table lists fields for table IBNRTE.

Table 2 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OPTIONS = ATGS	NEW	MAX_ATMPT	1-50	Option ATGS (Alternate Trunk Group Selection) when datafilled provides the activity functionality to select alternate route in the route list provided ATGS SOC is turned ON. The sub-field MAX_ATMPT gives the number of attempts that will be made to select a route. Datafill of ATGS options is independent of ATGS SOC.

11.1.1.5 Datafill example

The following example shows sample datafill for table IBNRTE:

```
TABLE: IBNRTE

 RTE                                                              RTELIST
                                                                  OPTIONS
-----------------------------------------------------------------------------
911 (N N N N N E911OGES 0) (N N N N N AL5ESOG 0) $
                                                          (    ATGS  2)$
```

11.1.1.6 Table release history update

The following new field was added to the Table:

- OPTION, with ATGS as the only acceptable value. This option has a sub-field MAX_ATMPT with values ranging from 1 to 50.

11.1.1.7 Supplementary information

Similar changes will be applicable for table IBNRT2, IBNRT3, IBNRT4.

11.1.1.8 Translation verification tools

The following example shows the outputs from TRAVER when it is used to verify IBNRTE.

When the Call is made for the first time, the call would terminate on the first route element in Table IBNRTE, if it is available. “Figure 1 TRAVER Example 1” on page 372 depicts this situation.

Figure 1 TRAVER Example 1

```
>traver l 2461170 9911 b
TABLE KSETLINE
HOST 00 1 01 05 1 DN Y 2461170 BNR 0 0 919 (3WC) (LNR) $ MBS
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE KSETFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
BNR 0 0 0 UNREST ( XLAS BNRXLA BNRFEAT BNRDIG)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
BNR NXLA BNRXLA BNRFEAT 0 BNRDIG
TABLE DIGCOL
BNRDIG 9 POTS Y
TABLE IBNXLA: XLANAME BNRXLA
BNRXLA 9 NET N N 1 Y POTS N N GEN ( LATTR 4 919_IBN1_4 NLCA_LATA1_0)
( EA MCI Y 0)$ $
TABLE DIGCOL
POTS specified: POTS digit collection
TABLE LINEATTR
4 IBN NONE NT 0 0 NILSFC 0 NIL NIL 00 919_IBN1_4 NLCA_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
919_IBN1_4 NSCR 919 IBN1 NONE N $ $
TABLE RATEAREA
NLCA_LATA1_0 NLCA NIL LATA1 $
TABLE STDPRTCT
IBN1 ( 1) ( 0) 2
. SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
DOCUMENTATION.
 . 911 911 T DD 0 IBNRTE 911 3 3 NONE
 .  . TABLE IBNRTE
 .  . 911  N N N N N E911OGES 0
 .  .      N N N N N AL5ESOG 0
 .  . ATGS IS TURNED ON: Alternate Routes will be used.
 .  . EXIT TABLE IBNRTE
. SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   NONE OVRNONE  N
TABLE HPCPATTN
TUPLE NOT FOUND
                                                          cont ...
```

```
LNP00100 SOC Option is IDLE.
TABLE LATAXLA
TUPLE NOT FOUND
ASSUMED TO BE DEFAULT INTRALATA, INTRASTATE, STD
AIN Info Collected TDP: no subscribed trigger.
AIN Info Analyzed TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

INVALID TRUNK GROUP CLLI: E911OGES, OR GROUP TYPE: ES NOT SUPPORTED

DIGIT TRANSLATION ROUTES

INVALID TRUNK GROUP CLLI: E911OGES, OR GROUP TYPE: ES NOT SUPPORTED
1 E911OGES

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 ATB

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

Whenever the SOC for ATGS is turned ON and the ATGS option is datafilled in the selected route list, the output of the traver will show just one route element, which will be the first one to be searched for available members, instead of displaying all the route elements in a sequential order.

The next call would start searching from the second element onwards and would terminate on the second element, if it is available. “Figure 2 TRAVER Example 2” on page 374 depicts this situation.

Figure 2 TRAVER Example 2

```
>traver l 2461170 9911 b
TABLE KSETLINE
HOST 00 1 01 05 1 DN Y 2461170 BNR 0 0 919 (3WC) (LNR) $ MBS
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE KSETFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
BNR 0 0 0 UNREST ( XLAS BNRXLA BNRFEAT BNRDIG)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
BNR NXLA BNRXLA BNRFEAT 0 BNRDIG
TABLE DIGCOL
BNRDIG 9 POTS Y
TABLE IBNXLA: XLANAME BNRXLA
BNRXLA 9 NET N N 1 Y POTS N N GEN ( LATTR 4 919_IBN1_4 NLCA_LATA1_0)
( EA MCI Y 0)$ $
TABLE DIGCOL
POTS specified: POTS digit collection
TABLE LINEATTR
4 IBN NONE NT 0 0 NILSFC 0 NIL NIL 00 919_IBN1_4 NLCA_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
919_IBN1_4 NSCR 919 IBN1 NONE N $ $
TABLE RATEAREA
NLCA_LATA1_0 NLCA NIL LATA1 $
TABLE STDPRTCT
IBN1 ( 1) ( 0) 2
. SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
DOCUMENTATION.
 . 911 911 T DD 0 IBNRTE 911 3 3 NONE
 .  . TABLE IBNRTE
 .  . 911  N N N N N E911OGES 0
 .  .      N N N N N AL5ESOG 0
 .  . ATGS IS TURNED ON: Alternate Routes will be used.
 .  . EXIT TABLE IBNRTE
. SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   NONE OVRNONE  N
TABLE HPCPATTN
TUPLE NOT FOUND
                                                          cont ...
```

```
LNP00100 SOC Option is IDLE.
TABLE LATAXLA
TUPLE NOT FOUND
ASSUMED TO BE DEFAULT INTRALATA, INTRASTATE, STD
AIN Info Collected TDP: no subscribed trigger.
AIN Info Analyzed TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

INVALID TRUNK GROUP CLLI: AL5ESOG, OR GROUP TYPE: ES NOT SUPPORTED

DIGIT TRANSLATION ROUTES

INVALID TRUNK GROUP CLLI: AL5ESOG, OR GROUP TYPE: ES NOT SUPPORTED
1 AL5ESOG

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 ATB

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

The message that ATGS is ON is displayed only if the option ATGS is present in that tuple and SOC for ATGS is turned ON. If more than one tuple is used, then this message will be displayed for all those tuples in which ATGS is present. This is depicted from “Figure 3 TRAVER Example 3” on page 376.

The following example shows sample datafill for table IBNRTE used for the “Figure 3 TRAVER Example 3” on page 376:

```
TABLE: IBNRTE

 RTE                                                          RTELIST
                                                              OPTIONS
-----------------------------------------------------------------------
9 (N N N N N AT6ESOG 0) (N N N N N AL5ESOG 0) $
                                                    (    ATGS  2)$
911 (N N N N N E911OGES 0) (N N N N N AL5ESOG 0) (T IBNRTE 9) $ $
```

Figure 3 TRAVER Example 3

```
> traver l 2461170 9911 b
TABLE KSETLINE
HOST 00 1 01 05 1 DN Y 2461170 BNR 0 0 919 (3WC) (LNR) $ MBS
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE KSETFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
BNR 0 0 0 UNREST ( XLAS BNRXLA BNRFEAT BNRDIG)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
BNR NXLA BNRXLA BNRFEAT 0 BNRDIG
TABLE DIGCOL
BNRDIG 9 POTS Y
TABLE IBNXLA: XLANAME BNRXLA
BNRXLA 9 NET N N 1 Y POTS N N GEN ( LATTR 4 919_IBN1_4 NLCA_LATA1_0)
( EA MCI Y 0)$ $
TABLE DIGCOL
POTS specified: POTS digit collection
TABLE LINEATTR
4 IBN NONE NT 0 0 NILSFC 0 NIL NIL 00 919_IBN1_4 NLCA_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
919_IBN1_4 NSCR 919 IBN1 NONE N $ $
TABLE RATEAREA
NLCA_LATA1_0 NLCA NIL LATA1 $
TABLE STDPRTCT
IBN1 ( 1) ( 0) 2
. SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
DOCUMENTATION.
 . 911 911 T DD 0 IBNRTE 911 3 3 NONE
 .  . TABLE IBNRTE
 .  . 911  N N N N N E911OGES 0
 .  .      N N N N N AL5ESOG 0
 .  .      T IBNRTE 9
 .  .  . TABLE IBNRTE
 .  .  .    9 N N N N N AT6ESOG 0
 .  .  .      N N N N N AL5ESOG 0
 .  .  . ATGS IS TURNED ON: Alternate Routes will be used.
 .  .  . EXIT TABLE IBNRTE
.  . EXIT TABLE IBNRTE
                                                          cont ...
```

```
 . SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   NONE OVRNONE  N
TABLE HPCPATTN
TUPLE NOT FOUND
LNP00100 SOC Option is IDLE.
TABLE LATAXLA
TUPLE NOT FOUND
ASSUMED TO BE DEFAULT INTRALATA, INTRASTATE, STD
AIN Info Collected TDP: no subscribed trigger.
AIN Info Analyzed TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

INVALID TRUNK GROUP CLLI: E911OGES, OR GROUP TYPE: ES NOT SUPPORTED
INVALID TRUNK GROUP CLLI: AL5ESOG, OR GROUP TYPE: ES NOT SUPPORTED
INVALID TRUNK GROUP CLLI: AT6ESOG, OR GROUP TYPE: ES NOT SUPPORTED

DIGIT TRANSLATION ROUTES

INVALID TRUNK GROUP CLLI: E911OGES, OR GROUP TYPE: ES NOT SUPPORTED
1 E911OGES
INVALID TRUNK GROUP CLLI: AL5ESOG, OR GROUP TYPE: ES NOT SUPPORTED
2 AL5ESOG
INVALID TRUNK GROUP CLLI: AT6ESOG, OR GROUP TYPE: ES NOT SUPPORTED
3 AT6ESOG

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 ATB

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

11.2 Table information

11.2.1 Table name: OFRT, OFR2, OFR3, OFR4

Office Route Tables

11.2.1.1 Functional description

Not Applicable.

11.2.1.2 Datafill sequence and implications

Current datafill order unchanged.

11.2.1.3 Table size

No Change.

Table 3 Table size

Abbreviated table name	Minimum tuples	Maximum tuples	Information on memory

11.2.1.4 Table fields

The following table lists fields for table OFRT.

Table 4 Table field descriptions

Field	New or Changed	Subfield or refinement	Entry	Explanation and action
OPTIONS = ATGS	NEW	MAX_ATMPT	1-50	Option ATGS when datafilled provides the activity functionality to select alternate route in the route list provided ATGS SOC is turned ON. The sub-field MAX_ATMPT gives the number of attempts that will be made to select a route. Datafill of ATGS options is independent of ATGS SOC

11.2.1.5 Datafill example

The following example shows sample datafill for table OFRT:

```
TABLE: OFRT

 RTE                                                              RTELIST
                                                                  OPTIONS
-------------------------------------------------------------------------
912 (N D E911OGOP 3 911 N) (N D E911OGES 3 911 N) $
                                                          (    ATGS  2)$
```

11.2.1.6 Table release history update

The following new field was added to the Table:

- OPTION, with ATGS as the only acceptable value. This option has a sub-field MAX_ATMPT with values ranging from 1 to 50.

11.2.1.7 Supplementary information

Similar changes will be applicable for tables OFRT2, OFRT3, OFRT4.

11.2.1.8 Translation verification tools

The following example shows the outputs from TRAVER when it is used to verify OFRT.

When the Call is made for the first time, the call would terminate on the first route element in Table OFRT, if it is available. “Figure 4 TRAVER Example 4” on page 380 depicts this situation.

Figure 4 TRAVER Example 4

```
>traver l 2461170 9911 b
TABLE KSETLINE
HOST 00 1 01 05 1 DN Y 2461170 BNR 0 0 919 (3WC) (LNR) $ MBS
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE KSETFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
BNR 0 0 0 UNREST ( XLAS BNRXLA BNRFEAT BNRDIG)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
BNR NXLA BNRXLA BNRFEAT 0 BNRDIG
TABLE DIGCOL
BNRDIG 9 POTS Y
TABLE IBNXLA: XLANAME BNRXLA
BNRXLA 9 NET N N 1 Y POTS N N GEN ( LATTR 4 919_IBN1_4 NLCA_LATA1_0)
( EA MCI Y 0)$ $
TABLE DIGCOL
POTS specified: POTS digit collection
TABLE LINEATTR
4 IBN NONE NT 0 0 NILSFC 0 NIL NIL 00 919_IBN1_4 NLCA_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
919_IBN1_4 NSCR 919 IBN1 NONE N $ $
TABLE RATEAREA
NLCA_LATA1_0 NLCA NIL LATA1 $
TABLE STDPRTCT
IBN1 ( 1) ( 0) 2
 . SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
DOCUMENTATION.
 . 911 911 T DD 0 OFRT 912 3 3 NONE
 .  . TABLE OFRT
 .  .  912 N D E911OGOP 3 911 N
 .  .      N D E911OGES 3 911 N
 .  . ATGS IS TURNED ON: Alternate Routes will be used.
 .  . EXIT TABLE OFRT
. SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   NONE OVRNONE  N
TABLE HPCPATTN
TUPLE NOT FOUND
```

```
LNP00100 SOC Option is IDLE.
TABLE LATAXLA
TUPLE NOT FOUND
ASSUMED TO BE DEFAULT INTRALATA, INTRASTATE, STD
AIN Info Collected TDP: no subscribed trigger.
AIN Info Analyzed TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 E911OGOP              911                 ST2P

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 ATB

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

Whenever the SOC for ATGS is turned ON and the ATGS option is datafilled in the selected route list, the output of the traver will show just one route element, which will be the first one to be searched for available members, instead of displaying all the route elements in a sequential order.

The next call would start searching from the second element onwards and would terminate on the second element, if it is available. “Figure 5 TRAVER Example 5” on page 382 depicts this situation.

Figure 5 TRAVER Example 5

```
>traver l 2461170 9911 b
TABLE KSETLINE
HOST 00 1 01 05 1 DN Y 2461170 BNR 0 0 919 (3WC) (LNR) $ MBS
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE KSETFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
BNR 0 0 0 UNREST ( XLAS BNRXLA BNRFEAT BNRDIG)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
BNR NXLA BNRXLA BNRFEAT 0 BNRDIG
TABLE DIGCOL
BNRDIG 9 POTS Y
TABLE IBNXLA: XLANAME BNRXLA
BNRXLA 9 NET N N 1 Y POTS N N GEN ( LATTR 4 919_IBN1_4 NLCA_LATA1_0)
( EA MCI Y 0)$ $
TABLE DIGCOL
POTS specified: POTS digit collection
TABLE LINEATTR
4 IBN NONE NT 0 0 NILSFC 0 NIL NIL 00 919_IBN1_4 NLCA_LATA1_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
919_IBN1_4 NSCR 919 IBN1 NONE N $ $
TABLE RATEAREA
NLCA_LATA1_0 NLCA NIL LATA1 $
TABLE STDPRTCT
IBN1 ( 1) ( 0) 2
 . SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
DOCUMENTATION.
 . 911 911 T DD 0 OFRT 912 3 3 NONE
 .  . TABLE OFRT
 .  .  912 N D E911OGOP 3 911 N
 .  .      N D E911OGES 3 911 N
 .  . ATGS IS TURNED ON: Alternate Routes will be used.
 .  . EXIT TABLE OFRT
. SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   NONE OVRNONE  N
TABLE HPCPATTN
TUPLE NOT FOUND
```

```
LNP00100 SOC Option is IDLE.
TABLE LATAXLA
TUPLE NOT FOUND
ASSUMED TO BE DEFAULT INTRALATA, INTRASTATE, STD
AIN Info Collected TDP: no subscribed trigger.
AIN Info Analyzed TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

INVALID TRUNK GROUP CLLI: E911OGES, OR GROUP TYPE: ES NOT SUPPORTED

DIGIT TRANSLATION ROUTES

INVALID TRUNK GROUP CLLI: E911OGES, OR GROUP TYPE: ES NOT SUPPORTED
1 E911OGES

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 ATB

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

The message that ATGS is ON is displayed only if the option ATGS is present in that tuple and SOC for ATGS is turned ON. If more than one tuple is used, then this message will be displayed for all those tuples in which ATGS is present. This will be the same as in case of IBNRTE traver example shown in “Figure 3 TRAVER Example 3” on page 376

Part 1 of 2

THE END