TAM-8991-006

DMS-100 Family

Traffic Synopsis

All Computing-module Loads

4Q97 – Standard Release 08.01 – November 1997

NORTEL

NORTHERN TELECOM

DMS-100F Traffic Synopsis

4Q97 and up

Table of Contents

Introduction

This document (previously known as the *BCS Traffic Synopsis*) has been restructured to conform with the new NTI Software Evolution replacing the BCS application process with Product Computing-Module Loads (PCLs). The *Traffic Synopsis* is scheduled for release at each major milestone (i.e., NA001, NA002, NA003, etc.) and includes information on DMS-100F features and specific product areas such as TOPS, XPM, ISDN, SS7, FRAME RELAY, etc. This document is utilized globally and includes features for country-specific applications (i.e., Australia, China, Japan, Mexico, U.K., etc.).

This document is primarily directed to Traffic Administration, Dial Assigning, Engineering and Operator Services and includes ISDN and SS7 Features applicable to these groups. It is a summary of the Traffic-affecting items in the Product Computing-Module Load (PCL) Release Document and is intended to reduce the Traffic Department's preparation time and effort required for implementing a software change application.

This synopsis is written in conjunction with a similar document issued covering Maintenance items. The format of this document is the same as used in the maintenance document. Many of the items are both Traffic-affecting and Maintenance-affecting; therefore, this document is similarly designed in order to make cross-referencing between departments as simple as possible.

The synopsis is divided into four major sections called ‘SW’ (SWitch Traffic items), ‘LN’ (LiNe Traffic items, ‘TRK’ (TRunK Traffic items) and ‘SF’ (Service Features). These sections may be separated and given to the appropriate Traffic groups for action.

Each major section is further divided into two sub-sections called "NOW" and "LATER."

The "NOW" sub-sections identify changes that affect the Traffic sensitive operations immediately upon the new software load insertion. This includes changes to Commands, Log Messages, OMs, Data Tables, TOPS Keystroke and Screen changes. It also includes Traffic features that have a significant impact on Traffic performance results.

The "LATER" sub-sections identify changes that have an indirect impact on Traffic or require activation or datafill (translations preparation activity) after the new software load insertion (including those required for activation of network maintenance items).

Within each sub-section, the features are identified by the Software Layer, and NTI activity number and feature title. An attempt to define the application or office type for each feature has also been included.

Since there are differences in Organization Structure from one operating company to another, no attempt has been made to assign Traffic Group responsibilities for implementing or acting upon any of the Traffic components, i.e., Translations, Dial Assignment, OMs and so on.

The recommended first step in using the synopsis is to identify and highlight the features that apply to the office to which the new software load will apply.

The next step is to review the feature changes described in the synopsis which apply to the office that is to receive the software module insertion. After the insertion and testing have

been completed, try using any of the non-service affecting commands available at the Traffic MAP terminal; set-up and review any new OMs; and if LOGUTIL is operable from the Traffic terminal, open it and review any new log reports that relate to Traffic or have the network maintenance group arrange for the reports to be sent to the Traffic printer. Finally, arrange for the activation of any new Traffic features by preparing the appropriate translations forms detailing the datafill of any new tables or fields as required and forwarding to the appropriate network maintenance forces for action including, of course, those translations required to implement any new or changed maintenance features or elements.

The *Traffic Synopsis* is intended to be a summary of the Feature Release Document. The Feature Release Document provides detailed information on Functional Description changes (FN Updates); Log message changes (LG updates); Data Schema changes (DS updates); Command changes (MM updates); OM changes (OM updates); and Service Order changes (SO updates) listed by NTI activity number.

Depending on the organization of the particular operating company, it should be determined who in the organization receives the Feature Release Documents and either make arrangements to obtain copies of the particular sections outlined in the synopsis or arrange for direct issuance of the Release Documents to the appropriate Traffic Organization.

For ease of reference from the *Traffic Synopsis* to the Release Document, the NTI Feature Identification number is given with each feature in the *Traffic Synopsis*.

Should any conflicts arise between this document and the Feature Release Document, the Feature Release Document shall be the final authority.

The content of this document is subject to change without notice. Northern Telecom reserves the right to add, delete, or change features.

Executive Summary

This new release introduces a number of new features to the DMS family of switches, as well as several changes and enhancements to existing features.

Many other features are described in this *Traffic Synopsis* document. Every attempt has been made to create as complete and accurate a *Traffic Synopsis* document as possible. However due to the use of preliminary release information in preparing this document, some differences may occur between this document and the new software load. In case of any difference between this synopsis and the Release Documents, the Release Documents will be taken as correct.

Please direct questions or problems concerning the SYNOPSIS documents to 919-859-7745.

NTI Feature Contents

SW-NOW

This section identifies changes and/or additions to switch functions that are Traffic sensitive or affecting, which occur immediately upon the new software load insertion. This includes changes or additions to commands, data schema, logs, OMs, and service orders, which may affect Traffic activity.

BASE 09

CEU 08

NA008 PRODUCT

TELECOM 08

LAYER		SW-NOW
BASE 09		
		APPLICATION
ACTID	FEATURE TITLE	MTM
CM0902	SR60 Transient Mismatch Support	

Description

This feature allows the mismatch handler to more effectively address transient mismatches in SuperNode and SuperNode SE Series 60 switches.

A Series 60 burst mode write operation can cause a type of mismatch referred to as a matcher transient mismatch (MTM). An MTM has no detrimental effects and is an expected event. This feature changes the mismatch handler so that MTMs are recognized. MTMs are not handled in the same way as other transient mismatches.

Unless the number of MTMs reaches an alarm threshold, no action is required.

Command Changes

SR60 Transient Mismatch Support introduces the command MMSYNC to the CM menu.

The MMSYNC command is used to perform the following functions:

- clear MTM counts
- determine the MMsync alarm and drop synchronization thresholds for MTM
- determine the current MTM count
- determine if the MMsync alarm or drop synchronization thresholds for MTM have been exceeded
- set the MMsync alarm threshold for MTM

Data Schema Changes

NONE

Log Message Changes

SR Transient Mismatch Support introduces the following log changes:

- Makes log report MM101 obsolete.
- Creates new log MM102 to report MTM.
- If the MTM is below the MMnoSy alarm threshold, the MM110 log is generated, but does not contain a card list.
- If the MMnoSy alarm threshold for MTM is reached, the MM111 log is generated.

Log report: MM102

A new MM102 log report is generated to report Matcher Transient Mismatches.

The MM102 mismatch log is generated for every matcher transient mismatch that occurs, and it contains detailed information about the analysis performed by the mismatch handler, the location of the mismatch, the contents of all processor registers and the mismatch result and condition. The format of the log is identical to the MM100 log.

As shown in the examples below, the only portion of the log that is affected by this feature is the header that contains the mismatch result, condition, and recovery fields and the log number, that is changed to MM102. For Matcher Transient Mismatches (MTM) the mismatch result is ‘Matcher Transient Mismatch’, and the mismatch condition is either ‘Fully Handled’ or ‘Matcher Transient Threshold Exceeded’ depending on whether the threshold for MTMs has been exceeded or not.

The format of the log is identical to the existing MM100 log, and the differences from the MM100 are listed below.

Example

The following is an example of the header portion of the MM102 log that is generated when the number of MTMs is under the DPSYNC threshold:

```
BDEV08AJ      MM102 APR13 04:46:43 0200 TRAN MISMATCH
Mismatch number 3, Activity: Start: CPU 1, Final: CPU 1
Mismatch result: Matcher Transient Mismatch
Mismatch condition: Fully Handled
System recovery action: No recovery required.

CPU 0                          CPU 1
Data is valid.                 Data is valid
(remaining portion of the log is identical to the existing MM100)
```

When the DPSYNC threshold is exceeded and the switch drops sync, the following MM102 log appears:

```
BDEV08AJ      MM102 APR13 04:46:43 0200 TRAN MISMATCH
Mismatch number 3, Activity: Start: CPU 1, Final: CPU 1
Mismatch result: Matcher Transient Mismatch
Mismatch condition: Matcher Transient Threshold Exceeded
System recovery action: Manual action required to resync the CPUs.

CPU 0                          CPU 1
Data is valid.                 Data is valid

(remaining portion of the log is identical to the existing MM100 log)
```

Calls to add_log() and add_report_type() for the MM102 log are made in module CMMTCKE in section CMMTCKUT.

Log report: MM110 Log report

The MM110 log is generated following a successful completion of Mismatch analysis. It indicates that the CPUs were returned to in-SYNC operation in a healthy state.

Due to the changes introduced by this feature, it is now possible to generate a MM110 log with no cards in the cardlist.

This situation occurs when the MM110 log is generated for a new type of mismatch called the Matcher Transient Mismatch (MTM). Also, when there are no cards in the cardlist, the MMSYNC alarm associated with this log is not raised as long as the MMSYNC threshold is not exceeded.

No new fields have been added to this log and no field descriptions have been modified. Therefore, all field descriptions are the same as before.

Example

The following is an example of the actual log as it is generated right now.

```
BDEV08AI       MM110 APR09 19:26:26 3400 INFO MM RECOVERY
        Mismatch 3:  CM 0, Suspect CPU 1
        System recovery complete, CPUs in-SYNC

        Suspect:
         Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
         HOST  00  A00  DPCC:00   00  MEM :00:1:0    23       9X14EA FRNT
         HOST  00  A00  DPCC:00   00  CPU :00:1:0    20       9X10AA FRNT
         HOST  00  A00  DPCC:00   00  MEM :00:0:0    15       9X14EA FRNT
         HOST  00  A00  DPCC:00   00  CPU :00:0:0    19       9X10AA FRNT
```

With the changes made to the log as part of this feature, an example of the MM110 is:

```
BDEV08AI       MM110 APR09 19:26:26 3400 INFO MM RECOVERY
        Mismatch 3:  CM 0, Suspect CPU 1
        System recovery complete, CPUs in-SYNC

        Suspect:
         Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
                  No cards in cardlist
```

Format

The following is the current format of the MM110 log:

```
1: MM110 date time       seqno   INFO MISMATCH_RECOVERY
2: Mismatch <mm_no>: CM <cm_number>, Suspect CPU <cpu_numb>,
3: <recovery status, <CPU status>
4: <optional message>
5: Suspect:
6: SITE            FLR    RPOS   BAY-ID SHF    DESCRIPTION    SLOT   EQPEC
7: <card list element>
8: <optional card list element>
9: <optional card list element>
10: <optional card list element>
```

The above format is still valid for the case where the MM110 is generated for mismatches other than matcher transient mismatches.

For MTMs, the following format is used:

```
1: MM110 date time       seqno          INFO MISMATCH_RECOVERY
2: Mismatch <mm_no>: CM <cm_number>, Suspect CPU <cpu_numb>,
3: <recovery status, <CPU status>
4: <optional message>
5: Suspect:
6: SITE FLR RPOS BAY-ID SHF DESCRIPTION SLOT EQPEC
7: No cards in cardlist.
```

The MMSYNC alarm is not associated with the log that appears with the second format above as long as the MMSYNC threshold is not exceeded.

If the MM110 log contains a cardlist, then the next level of support is contacted to determine if any cards need to be replaced or returned to service. This is the same action that was required prior to this feature. If the MMSYNC alarm is raised in association with an MM110 log with a nil cardlist, then the suggested action is to contact the next level of support.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER		SW-NOW
BASE 09		
		APPLICATION
ACTID	FEATURE TITLE	SOC
SC0803	Real Time Usage Access	

Description

This feature provides an interface to the software optionality control (SOC) utility that can be used by DMS real-time software that wishes to use SOC to count events.

Event usage options (SOC options containing one or more event usage features) are initialized at initial program load (IPL) with a hard limit of zero. The option and its features are inactive, that is, event usage cannot be pegged, if the limit is zero. The hard limit is overwritten during the processing of a SOC content file which contains an initial limit value. An event usage option can be activated by assigning its monitored limit.

Command Changes

Option and feature event usage counts are displayed using the SOC command SELECT.

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

Event usage features can be included in a SOC option according to the following rules:

- All event usage features in a SOC option must have identical units.
- Event usage features and state features can coexist in a SOC option. This would be a dual option consisting of both state and event usage features.
- Features consisting of a state component and an event usage component (dual features) can only be contained in a dual option.
- Event usage features and resource usage features cannot coexist in a COC option.

Event usage options and features cannot have any dependencies or exclusions.

Event usage counts do not survive reboots.

During a one-night process (ONP), any event usage that is pegged during the transfer of tables SOCOPT and SOCFEAT is lost.

A soft limit or a hard limit other than zero cannot be assigned to an event usage option.

LAYER		SW-NOW
CEU 08		
		APPLICATION
ACTID	FEATURE TITLE	IDDD
AX0113	United Kingdom International Direct Digit Dialing (IDDD) Compliance for Overlap	

Description

Currently British Telecom User Part (BTUP) on the DMS100E can send 24 digits in an Initial and Final Address Message (IFAM). The IUP specifications state that the maximum is 20 in an IFAM. The 24-digit capability is needed for IDDD calls. So if more than 20 digits are to be outpulsed in an IFAM, this feature breaks it up into an Initial Address Message (IAM) and Final Address Message (FAM) and force overlap outpulsing.

To achieve this, the BTUP-ENBLOC protocol is enhanced to support overlap outpulsing if there are more than 20 address digits.

New functionality in BTUP provides support for 24 digits CalleD Party Address (CDPA) for IDDD. BTUP can support those many digits by going to OVERLAP mode if MAX_OUTPULESD_DIGS is set to more than 20.

An IAM with 20 digits and a FAM with the remaining digits is sent out instead of an IFAM if the number of digits in CDPA is more than 20 and less than or equal to MAX_OUTPULSED_DIGS.

Treatment being set to *reorder* results when the number of digits in CDPA is greater than MAX_OUTPULSED_DIGS.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The maximum number of digits BTUP can support in DMS 100E is 24, including network access digits.

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6591	Flex Call Transfer to UCD Queue	

Description

The Flex Call Transfer to Uniform Call Distribution (UCD) Queue features provides for interworking between Flexible Calling (FC) and UCD queues. It enables Intergrated Services Digital Network subscribers to transfer calls or conferences to UCD queues, include UCD queues in FC conferences, and include UCD queues in an FC three-way call chain.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

With explicit transfer, an FC subscriber can transfer a non-conference call to a UCD agent or UCD queue. If the UCD queue is full, the FC subscriber receives busy treatments.

Bridging

FC subscribers can call a UCD agent and bridge it into a conference. If the UCD agent is busy and the call goes to the UCD queue, the UCD queue can be bridged into the conference and the conference receives audible ringing from the UCD queue.

TRANSFER option

If the TRANSFER option is assigned to a FC subscriber, that caller can transfer calls to a UCD agent or a UCD queue.

Regardless of the datafilled maximum conference size, and FC conference made up of just three parties bridged together (for example, the controller, one conference participant, and the UCD agent) can transfer a conference participant to the UCD agent. Note that if the TRANSFER option is assigned, both explicit transfers (pressing TRANSFER or XFER key) and implicit transfers (the controller going on-hook) are possible. If the UCD agent is busy and the call goes to the UCD queue, the conference participants can still be transferred into the UCD queue. If the TRANSFER option is not assigned, pressing the TRANSFER or XFER key has no effect; when the controller goes on-hook, the conference drops.

In addition, regardless of the datafilled maximum conference size, any FC conference made up of three parties not bridged together (for example, the controller consulting with the UCD agent while the conference participant is on hold) can transfer calls to a UCD agent. Note that for this call scenario, only explicit transfer is possible. If the UCD agent is busy and the call goes to the UCD queue, the conference participants can still be transferred into the UCD queue.

If the controller drops out of a conference with four or more parties bridged together and no one answers the call, the conference is dropped because there is no controller for the conference. However, if any of the bridged calls is answered, the conference “floats.”

DROP option

If the DROP option is assigned to an FC subscriber, the UCD agent or the audible ringing from an UCD queue call can be dropped from the conference. If one or more parties are added to the conference after the UCD agent, and it is required to drop the UCD agent, all parties added after the UCD agent must be dropped to get back to the UCD agent in the conference.

Restrictions/Limitations

NONE

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6592	Flex Call Interworking with Attendant Console	

Description

The Flex Call Interworking with Attendant Console feature enables ISDN Flexible Calling (FC) subscribers to bridge an attendant console onto a conference and transfer conferees to an attendant for assistance.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

BRIDGING

FC subscribers can call an attendant console and bridge the attendant into a conference. If the attendant is busy and the call goes to the attendant queue, the attendant queue can be bridged into the conference and the conference receives audible ringing from the attendant queue.

TRANSFER option

If the TRANSFER option is assigned to an FC subscriber, that caller can transfer calls to an attendant. Regardless of the datafilled maximum conference size, any FC conference made up of just three parties bridged together (that is, the controller, one conference participant, and the attendant console) can transfer a conference participant to the attendant. Note that if the TRANSFERs option is assigned, both explicit transfers (pressing the XFER key) and implicit transfers (the controller going on-hook) are possible. If the attendant is busy and the call goes to the attendant queue, the conference participants can still be transferred into the attendant queue.

In addition, regardless of the datafilled maximum conference size, any FC conference made up of three parties not bridged together (for example, the controller consulting with the attendant console while the conference participant is on hold) can transfer calls to an attendant. Note that for this call type, only explicit transfer is possible. If the attendant is busy and the call goes to the attendant queue, the conference participants can still be transferred into the attendant queue.

If the TRANSFER option is not assigned and the controller goes on-hook, the add-on leg (that is, the controller to attendant console leg) drops, and the conference participant is left on hold. In this case the controller must go back off-hook to return to the original two-way call.

If the controller drops out of a conference with four or more parties bridged together, the conference is dropped because there is no controller for the conference.

DROP option

If the DROP option is assigned to an FC subscriber, the attendant console or attendant queue can be dropped from the conference if it was the last party bridged into the conference.

Restrictions/Limitations

NONE

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6633	ISDN Parameter Downloading Notification – CM	

Description

ISDN Parameter Downloading Notification – CM provides a mechanism by which terminal-related data may be downloaded to ISDN terminals from switch provisioned data tables. ISDN Parameter Downloading Notification – CM sends a Q.931 NOTIFY message from the switch to an ISDN NI-2 initializing terminal, whenever this is a change to any of the downloadable data associated with that terminal.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NOTIFY messages are sent in response to ISDN parameter downloading-related data changes made by the Service Order System (SERVORD), the table editor, or the Data Modification Order Processor (DMOPRO).

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Since DMS-100 switches are required to perform downloading of parameters independently of call processing, the DMS-100 switch downloads data to terminals that request the download but places the terminal in a call processing busy state while doing the download. This precludes interacting with call handling and other feature interactions.

The average processing time for call processing requests occurring while downloading requests are being processed is required not to increase more than 5% over the average processing time when no downloads are being processed. For switch architectures in which all the resources used by call processing and parameter downloading are the same, downloading is required not to use up more than 5% of the resources under conditions where call processing requests may be delayed or rejected. This requirements is required to be met, while at the same time meeting the requirements for response time and volume of requests.

If Call Forwarding is active on an ISDN terminal when a download occurs, the forwarding works as follows:

- Call Forward Busy, if active, will continue to forward calls.
- Call Forward No Answer will not forward calls because the terminal is busy.
- Call Forward Variable will continue to forward calls.
- Message waiting works with either Call Forward Busy or Call Forward No Answer; therefore, it will continue to operate only in busy cases.

This feature provides functionality to the following features:

- AF6632, ISDN Parameter Downloading – FPE & Messaging
- AF6634, ISDN Service Keywords and Descriptions Table
- AF7027, Interface Changes to CNA

Restrictions/Limitations

NONE

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6641	NI-1/NI-2 Interface Identification	

Description

The NI-1/NI-2 Interface Identification feature introduces National ISDN 2 (NI-2) logical terminal identifies (LTID), which can support terminals with NI-2 capabilities. This feature provides the following functionality:

- Provides support for NI-2 LTIDs.
- Distinguishes ISDN interfaces containing National ISDN 1 (NI-1) LTIDs from those containing MI-2 LTIDs

  Note: *Due to differing capabilities, LTIDs introduced in NA007 or earlier (referred to as NI-1 LTIDS) cannot coexist with NI-2 LTIDS on the same ISDM interface.*
- Provides the ability to restrict the number of non-initializing terminals (NIT) that can be supported by an NI-2 default LTID

The NI-1/NI-2 Interface Identification feature requires SOC option NI000051 to be activated.

Command Changes

This feature provides a way to provision a NI-2 logical terminal using the Servord SLT ADD command. The CS prompt is enhanced to accept a new value of NI-2 which enables a NI-2 LTID to be defined. The NI-2 LTID is capable of supporting the AG capability.

The ‘Option’ prompt for the NI-2 Logical Terminal is enhanced to support the TERML parameter. An error message is displayed if this parameter is defined for a NI-2 initializing LTID.

The restrictions that apply to NI-2 LTIDs are similar to the 2B LTIDs defined in NA007. Attempts to change a NI-1LTID to a NI-2 LTID (and vice-versa) using the Servord CHA command are blocked. The value of TERML may be changed using Servord.

The QLT (query logical terminal) command is modified to list NI2 and TERML as possible output values when using the command to query an NI-2 LTID.

The QLEN (query line equipment number) command is modified to list NI2 as a possible output value when using the command to query a LEN associated with an NI-2 LTID.

Data Schema Changes

NI-1/NI-2 Interface Identification adds the following entries to refinement OPTION in table LTDEF (Logical Terminal Definition) for basic rate access functional sets (subfield LTCLASS is set to BRAFS). Table LTDEF is datafilled through SERVORD.

- The NITYPE entry specifies whether the LTID is NI-1 or NI-2 compliant.
- The TERML entry specifies the number of NITs that can be associated with an NI-2 default LTID.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NI-1/NI-2 Interface Identification provides the capability to provision an NI-2 LTID using the SERVORD SLT ADD command. The CS (circuit-switched service) prompt is enhanced to accept a new value of NI2, which defines an NI-2 LTID.

The OPTION prompt for the SLT ADD and SLT CHA commands is enhanced to support the TERML parameter. This parameter specifies the number of NITs supported by an NI-2 default LTID. An error message is displayed if this parameter is defined for an NI-2 fully initializing terminal (FIT).

AMA Changes

NONE

Notes

NI-2 LTIDS can be provisioned only on remote cluster controller 2 (RCC2), ISDN line trunk controller (LTCI), and ISDN line group controller (LGCI) peripherals.

Alarms

NONE

Interactions

This feature has a dependency on NA008 feature AF6689 Interface Configuration Base and AF6660 B Channel Manager CM. SOC is handled by feature AF6761.

This feature is part of a group of features used by many features including but not limited to:

- AF6642 Associated Groups

- AF6785 2BD Integrated Terminal
- AF6603 Call to Call Transfer CM
- AF6619 ACB/AR Access for ISDN Terminals
- AF6693 Call to Call Transfer XPM
- AF6622 NI2 Call Forwarding
- AF6901 NI2 Call Forwarding Provisioning
- AF6593 Simultaneous Prov of FC3 and FC6

Restrictions/Limitations

The following limitations and restrictions apply to NI-1/NI-2 Interface Identification:

- An NI-1 LTID cannot be changed to an NI-2 LTID using the Service Order System (SERVORD) SLT (set logical terminal) command with the CHA (change) subcommand. The NI-1 LTID must be detached using the SLT command with the DET (detach) subcommand, and redefined and reattached using the SLT command with the ADD (add new logical terminal) and ATT (attach logical terminal) subcommands.
- NI-1 and NI-2 LTIDs cannot coexist on the same interface, with the exception of packet terminals. Packet terminals can coexist with NI-2 LTIDs.
- The TERML option restricts the number of NITs that can be associated with an LTID. In effect, this translates to the number of NITs that the LTID can call process. The TERML option does not restrict the number of terminal endpoint identifiers (TEI) that can exist on the loop in a layer 2 mode.

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6642	ISDN Support for Associated Groups for LTID	

Description

This feature introduces the concept of Associated Groups (AG). This feature supports two AGs on an interface. This feature does not allow grouping of directory number/call types (DN/CT) across logical terminal identifiers (LTID).

This feature provides the ability to place all the DN/CTs assigned to a 2B channel LTID or to an NI-2 LTID in an AG. It also provides the ability to place all the voice DNs or CMD DNs or a 2B channel LTID or an NI-2 LTID in an associated group.

Command Changes

A 2B or a NI-2 LTID can be defined to have the AG capability using the Servord SLT ADD or CHAnge command. The ‘Option’ prompt for the 2B and NI-2 Logical Terminals is enhanced to support the AG capability.

The following tools are enhanced to display the AG information:

- Query LTID (QLT) - This tool is enhanced to display the AG information for the queried LTID.

- The following is an example of how QLT is updated to display AG information, (Logical Terminal Identifier: NI2, Associated Group: 2, Associated Group Calltype: AG_VI):

```
>qlt isdn 1000
------------------------------------------------------------------------------
LTID:  ISDN     1000
SNPA: 613
DIRECTORY NUMBER:     7235010
LT GROUP NO: 0
LTCLASS:  BRAFS    DEFAULT LOGICAL TERMINAL: N
EKTS: N   CACH: N
CS: NI2 PS: N
ELN: N
AGA: 2  AG_VI
VERSION: FUNCTIONAL  ISSUE: 2
LEN: HOST  01 0 00 04    TEI: DYNAMIC
CUSTGRP:             BNR  SUBGRP: 0  NCOS: 0  RING: Y
LINE CLASS CODE: ISDNKSET
MAXKEYS: 64
OPTIONS:
SFC VI $ $ N CMD BOTH $ $ N
CRBL 2 2
   KEY       DN
   ---       --
     1       DN             7235010
   KEY     FEATURE
   ---     -------
     1         CRBL  2  2
     1          DBC   DBC_SP
     2          AFC    DBC_SP
     3          AFC    DBC_SP
     4          AFC    DBC_SP
------------------------------------------------------------------------------
```

- Query DN (QDN) - This tool is enhanced to display the AG information for the queried DN that is attached to a LTID.

  The following is an example of how QDN is updated to display AG information, (Associated Group: 2, Associated Group Calltype: AG_VI):

```
> qdn 7235010
------------------------------------------------------------------------------
DN:     7235010
TYPE: SINGLE PARTY LINE
SNPA: 613   SIG:  N/A    LNATTIDX: N/A
LTID: ISDN     1000
LTCLASS:  BRAFS
AGA: 2  AG_VI
LINE CLASS CODE:   ISDNKSET
KEY:  1
CUSTGRP:              BNR  SUBGRP: 0  NCOS: 0  RING: Y
OPTIONS:
SFC VI $ $ N CMD BOTH $ $ N
CRBL 2 2 AFC 6
------------------------------------------------------------------------------
```

Data Schema Changes

ISDN Support for AGs for LTID uses option AGA (Associated Group Assignment) assigns AGs. The feature maps the associated groups to ISDN LTIDs in table LTDEF. Additional fields identify the associated group number and the associated group call type.

Log Message Changes

NONE

OM Changes

NONE

Service Order

A 2B channel LTID or an NI-2 LTID can be defined to have the AG capability using SERVORD SLT ADD or SLT CHAnge command.

The Option prompt for the 2B channel LTID and the NI-2 LTID is enhanced to support the Associated Group capability (AGA).

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

ISDN Support for Associated Groups for LTID depends on:

- AF6641 NI-1 and NI-2 Interface Configurations
- AF6691 ISDN BRI Interface Configurations Phase I XPM AG

Restrictions/Limitations

The following limitations and restrictions apply to ISDN Support for Associated Groups for LTID:

- AGs are supported on an LTID basis.
- AGs across LTIDs are not allowed.
- The maximum number of 2B channel LTIDs allowed on an interface continues to be one.

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	MADN
AF6646	MADNEKTS CACH–Table Control	

Description

The Multiple Appearance Directory Number (MADN) electronic telephone set (EKTS) Call Appearance Call Handling–Table Control feature adds the following capabilities:

- A new call arrangement of Multiple Appearance Directory Number called MADN Call Appearance Call Handling (MADN CACH).
- A MADN CACH DN can have 1–16 call appearances (CA).
- Each MADN CACH CA can have 1–32 members.
- Only ISDN BRAFS terminals with both EKTS and CACH options can support more than one CA of a given MADN CACH DN.
- When on CA of a MADN CACH DN is busy, calls can originate and terminate to the other idle CAs of the same MADN CACH DN.
- Calls terminating on a MADN CACH DN are offered to the first available CA depending on the CA search order.
  - — The terminating CA search order of a MADN CACH DN defaults to a sequential search from 1–16.
  - — Service order functionality is provided to dynamically change the terminating CA search order through the SERVORD CAPSORD command.

Command Changes

See feature AF6648, CACH Query Commands, in the ***LN-NOW*** section in this document, for user interface changes required by the CACH capability.

Data Schema Changes

The following tables are modified: MDNGRP, IBNLINES, KSETLINE, and DNINV. The CAPS table is new. All are affected by MADN/EKTS CACH–Table Control.

Table MDNGRP Changes

The tuples in Multiple Appearance Directory Number Group Table are modified as follows:

- The table key field (MDNKEY) was expanded to include the new value Call Appearance (CA).
- The MDNTYP field now allows the new value CACH.
- A new refinement of the RESULT field contains data specific CACH MDNGRP types.

— The Call Appearance Reservation (CARES) field

— Primary Call Appearance (PCA) field

One of the following tables must be datafilled before table MDNGRP:

- IBNLINES
- KSETLINE

Table MDNGRP is datafilled internally when a tuple is added to tables IBNLINES or KSETLINE. Group options are written via SERVORD. The following example shows MDNGRP tuples:

```
613 621 5920 0 2 SCA SILENCE Y 30 N PRIVATE MANUAL $
909 952 9342 0 2 MCA $
613 621 2054 0 2 SCA SILENCE Y 30 N PRIVATE MANUAL $
909 951 9371 0 3 EXB TONE Y 3 Y NONPRIVATE $
909 952 9301 0 3 SCA TONE Y 5 Y PRIVATE MANUAL $
613 621 5000 1 4 CACH SILENCE NULL Y Y 30 N PRIVATE MANUAL $
613 621 5000 2 8 CACH TONE    DTM N N $
```

Table IBNLINES Changes

IBN Line Assignment table is modified to display the CA after the MDNTYP field for all MDN results. The MDNTYP field for the same refinement can now allow the new CACH value to be input. Following is an example of the new table output:

```
HOST 06 1 05 29 0 DT MDN IBN 9529301 CGA 1 0 909 SCA  0 Y Y (3WC) $
RCU0 00 0 15 31 0 DT MDN IBN 9519301 CGA 0 0 909 SCA  0 Y Y (3WC) $
HOST 00 0 01 29 0 DT MDN IBN 9519371 CGA 0 0 909 EXB  0 Y Y (3WC) $
HOST 01 0 08 29 0 DT MDN IBN 9529371 CGA 1 0 909 CACH 1 Y Y $
HOST 01 1 02 30 0 DT MDN IBN 9529371 CGA 1 0 909 CACH 2 Y Y $
```

Table KSETLINE Changes

The Business Set and Data Unit Line Assignment Table is a read-only table and is updated via the SERVORD commands. This table is modified to display the CA and PCA after the DN for MADN type results. Datafill of the table KSETLINE is done through the Service Order System (SERVORD) facility. An example follows:

```
KSETLINE
RCU0 00 0 13 08  2 MDN  MCA 0 N Y 9529342 CGA 1 0 909 (3WC) $
RCU0 00 0 13 08 14 MDN  SCA 0 Y Y 9529304 CGA 1 0 909 (MCH) $
HOST 00 0 00 25  2 MDN  MCA 0 N Y 9529341 CGA 1 0 909 (3WC) $
HOST 00 0 00 25  3 MDN CACH 1 N Y 9529302 CGA 1 0 909 (3WC) $
ISDN 1 1           MDN CACH 2 N Y 9529302 CGA 1 0 909 (3WC) $
ISDN 1 2           MDN CACH 1 N Y 9529302 CGA 1 0 909 (3WC) $
```

Table DNINV Changes

The Directory Number Inventory table is modified to include a new CA field that is always 0 for non–CACH and indicates the primary CA (PCA) if CACH. The GRP_SIZE field of the DIRECTORY NUMBER MDN RESULT is altered to contain the total number of members in the CACH DN group. Datafill of the table DNINV is done through the Service Order System (SERVORD) facility.

An example follows:

```
DNINV
613     621       5962 MDN SCA           2   0
613     621       5963 MDN SCA           3   0
613     621       5964 MDN SCA           1
613     621       5965 MDN SCA           1   0
613     621       5966 MDN SCA           1   0
613     621       5967 MDN CACH      55   1
613     621       5968 MDN CACH      10   1
613     621       5969 D BLDN
613     621       5970 D BLDN
613     621       5971 L EKTS        1
613     621       5972 L EKTS        2
613     621       5973 L EKTS        3
613     621       5974 L EKTS        4
613     621       5975 L EKTS        5
613     621       5976 L EKTS        6
```

New Table CAPS

The new Call Appearance Sequence table displays the DN and CAPS order. It can only be modified by the Servord CAPSORD command. Default values for the CAPS table are created when the Servord NEW or ADO commands are used to create CACH DN.

Table CAPS specifies the sequence of call appearances in which calls to the Directory Number/ Call Type (DN/CT) are to be attempted if each previous call appearance cannot accept the call. The first field in each compound value represents the number in the sequence, and the second field, the call appearance number. New field names are DNKEY and CADATA. The table CAPS is datafilled after the table MDNGRP.

```
>Table CAPS
DNKEY                   CADATA
-------------------------------------------------------------------------------
919 867 5309            (1 3) (2 2) (3 1) (4 5) (5 4) (6 0) (7 0) (8 0) (9 0)
                        (10 0) (11 0) (12 0) (13 0) (14 0) (15 0) (16 0)
919 867 5310            (0 0)
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

See feature AF6647 in the ***SW-NOW*** section of this document for service order changes required by the CACH capability.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature (i.e. AF6646) only addresses the Table Control functionality required to implement EKTS CACH capability.The following activities address any related feature interaction:

- AF6633 - ISDN Parameter Downloading
- AF6638 - CACH Call Processing and Feature Interactions
- AF6647 - CACH Service Orders
- AF6648 - CACH Query Commands
- AF6649 - Call Appearance Reservation (CARES)
- AF6715 - EKTS CNA changes

This feature is also a part of a group of features used by the features listed above plus AF6632, ISDN Parameter Downloading FPE and MSGIN.

The entire MADN CACH functionality is implemented in five separate features as follows:

- AF6638–MADN/EKTS CACH–Call Processing
- AF6646–MADN/EKTS CACH–Table Control
- AF6647–MADN/EKTS CACH–Service Order
- AF6648–MADN/EKTS CACH–Queries
- AF6649–MADN/EKTS CACH CAll Appearance Reservation

Restrictions/Limitations

The following limitations and restrictions apply to MADN/EKTS CACH–Table Control:

- To have more than one CA, the set must be a BRAFS ISDN EKTS CACH set.
- The following sets support a maximum of one call appearance of a DN for each set:
  - IBN 2500
  - MBS
  - ISDN basic rate access functional set (BRAFS) EKTS (non–CACH)
- No new provisioning restrictions. Pre–existing limitations include the following:
  - a maximum of 16 members of any CA group (MADN group) on the same extended peripheral module (XPM)
  - a maximum of 32 total members on the same XPM.

- Primary CA limitations. The CACH controller cannot be deleted (using the OUT command) unless the following conditions are met:
  - — Another ISDN EKTS terminal must be available that can take the place of the CACH controller. The first member of the group must be an ISDN EKTS. The OUT or DEO command finds the new terminal that can be the first member of a CA group. However, in accordance with existing MDN code, this new member is not automatically designated as primary.
  - — To assign features to the DN, the new controller (primary member) must be designated as primary by using the CHF command on CA 1 for the DN which then allows features to be added. This is not done automatically by provisioning (SERVORD or table control).
- Primary members of CAs other than the primary CA group are treated as secondary members for the purpose of feature assignment. Only the CACH controller is assigned features that apply to the entire CACH DN.

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	MADN
AF6647	MADN/EKTS CACH–Service Order	

Description

The Multiple Appearance Directory Number (MADN) Electronic Keyset Telephone System (EKTS) Call Appearance Call Handling (CACH)–Service Order feature allows an EKTS/MADN directory number (DN) to be sub-divided into as many as 16 call appearances of the same DN. Each of these appearances is called a MADN CACH group. The MADN/EKTS CACH–Service Order feature addresses the service order aspects of the MADN/EKTS CACH feature, including adding new call appearances and specifying selection order.

Command Changes

This feature allows the user to change the terminating Call Appearance selection order from the initial default search order with the new CAPSORD SERVORD command. See feature AF6648, CACH Query Commands, in the ***LN-NOW*** section of this document for user interface changes for the MADN/EKTS CACH capability.

Also new are several MADN/EKTS CACH Servord error messages in response to commands NEW, ADO, CAPSORD, OUT, DEO, and CHF:

- To have more than one Call Appearance per Terminal, the terminal type must be a BRAFS ISDN EKTS CACH Terminal.

  ```
  This terminal type does not support Multiple MADN CACH Call Appearances.
  ```

- Servord enforces that the CA_NUM equals the total number of CAs for the MADN/EKTS CACH Group.

  ```
  The CA_NUM does not equal the total number of CAs datafilled.
  ```

- The Primary CA cannot be removed until all Secondary CA(s) have been removed.

  ```
  The Primary CA cannot be removed until all Secondary CAs are removed.
  ```

- The Servord user attempts to remove the CACH Controller without an existing BRAFS ISDN EKTS CACH Secondary member within the Primary CA.

  ```
  The CACH Controller can be removed only if there is a BRAFS ISDN EKTS CACH Secondary
  Member.
  ```

- If the MADN/EKTS CACH Group has not been created (i.e., non-MADN DN), the Servord user must specify NEWCA as ‘Y’.

  ```
  The MADN EKTS CACH Group does not exist. Please specify NEWCA as Y.
  ```

- Servord prevents the assignment of more than 16 CAs per MADN/EKTS CACH Group.

  ```
  The maximum number of 16 Call Appearances have been exceeded.
  ```

- The conversion of the MADN CACH call arrangement to another MADN call arrangement (and vice versa) is not supported.

  ```
  This MADN CACH type conversion is not supported.
  ```

- The value of the CA number is not datafilled.

  ```
  Invalid CA number.
  ```

- If the Servord user exceeds the maximum number of 32 members per CA.

  ```
  ATTEMPT TO EXCEED MAXIMUM GROUP SIZE LIMIT OF 32. FAILED TO CREATE KSETLINE
  ```

- The Servord user tries to associate a Primary member to an existing CA that already has a Primary Member.

  ```
  A primary member already exists on MDN grp. Please specify primary as N.
  ```

Data Schema Changes

See feature AF6646, CACH Table Control, in the ***SW-NOW*** section of this manual, for data schema changes required by the MADN/EKTS CACH capability.

Log Message Changes

See feature AF6638, CACH Call Processing, in the ***SF-NOW*** section of this manual, regarding logs for the MADN/EKTS CACH capability.

OM Changes

See feature AF6638, CACH Call Processing, in the ***SF-NOW*** section of this manual, for OM changes for the MADN/EKTS CACH capability.

Service Order

The MADN/EKTS CACH–Service Order feature defines and implements MADN CACH for the SERVORD functionalities. The functionalities include:

- extending the existing MADN SERVORD to support the concept of MADN CACH to provision of a MADN CACH group.
- extending the existing MADN SERVORD to validate the MADN CACH-related information entered by the SERVORD user.
- creating a new SERVORD command (CAPSORD) to change the terminating call appearance selection order.

The Servord MADN/EKTS CACH functionality extends the number of existing Servord MADN fields to include four additional MADN/EKTS CACH fields:

- NEWCA field creates a new MADN CACH Call Appearance Group.
- CA_NUM field associates a MADN/EKTS CACH member to a Call Appearance.
- CARES_TYPE, the current Call Appearance Reservation (CARES) assignment type associated with the CA, displayed by Servord. For further information about the CARES feature, please reference feature AF6649 in the ***SW-LATER*** section of this manual.
- VALID_CA_NUM field is prompted if the Servord user inputs an invalid Call Appearance number for the ADO command.

AMA Changes

See feature AF6638, CACH Call Processing, in the ***SF-NOW*** section of this manual, for AMA changes required by the MADN/EKTS CACH capability.

Notes

NONE

Alarms

NONE

Interactions

Additional related functionality sub-components for the ISDN EKTS MADN CACH is provided in NA008 under the following activities:

- AF6638: EKTS MADN CACH Call Processing
- AF6646: EKTS MADN CACH Table Control
- AF6647: EKTS MADN CACH Servord
- AF6648: EKTS MADN CACH Query Commands
- AF6649: EKTS MADN CACH CARES
- AF6715: EKTS MADN CACH CNA

Feature AF6646 is required for this feature to function properly.

The following features are incompatible (or blocked) with MADN/EKTS CACH:

- Anonymous Caller Rejection
- Automatic Call Back
- Automatic Recall
- Calling Name Delivery
- Call park
- Call Pickup
- Call Waiting
- Customer Originated Trace
- Directed Call Park

- Directed Call Pickup with Barge-in (This feature cannot be provisioned on the CACH controller).
- Distinctive Ringing/Call Waiting
- Key Short Hunt
- Message Center on EBS Set Msg Indication Key
- Message Waiting Indication
- Secondary Member CF Programing
- Selective Call Acceptance
- Selective Call Rejection
- Series Completion
- Spontaneous Call Waiting ID

The following features can be provisioned to the MADN CACH controller only:

- Bulk Calling Line Identification
- Call Forward Busy
- Call Forward Don’t Answer
- Call Forward Don’t Answer Variable Timer
- Call Forward Universal
- Leave Message (only if the primary call appearance CARES type is NULL)
- Message Waiting (only if the primary call appearance CARES type is NULL)

Attendant Camp-on and MBS Camp-on features that provide the end user with the ability to notify a busy station of an incoming call and be notified when the busy station becomes idle. These features are assignable to attendant consoles and Meridian Business sets. If a camp-on agent attempts to transfer to call to a busy station, the agent can activate the camp-on feature to notify the busy station. When the busy station becomes idle, the camp-on agent is notified and can attempt again to transfer the call.

When a MADN CACH DN is busy, all call appearances available for call termination are busy. If a camp-on agent activates the camp-on feature for a busy MADN CACH DN, the camp-on agent is notified when the first call appearance (CA1) of the MADN CACH DN becomes idle.

Restrictions/Limitations

The following limitations and restrictions apply to MADN/EKTS CACH–Service Order:

- To have more than one call appearance to a set, the set must be a basic rate access functional signaling (BRAFS) integrated services digital network (ISDN) EKTS CACH set.
- The following sets support a maximum of one call appearance of MADN CACH DN to a set:
  - IBN 2500
  - MBS

— ISDN BRAFS EKTS non-CACH (EKTS Basic ISDN Terminal)

- When utilizing the NEW or ADO SERVORD command, SERVORD does not allow the CA_NUM to exceed the total number of call appearances (CA) for the MADN/EKTS CACH group.
- The CA numbering assignment is a sequential order, (1–16). The next available CA number is transparent to the SERVORD user; therefore, the SERVORD user is unable to choose the next available CA number.

If any *holes* exist in the call appearance sequential order because of deleting existing CAs, these holes are filled first before going to a higher number. For example, if call appearances 1–5 have been created and the SERVORD user removes CA 2 by deleting all of its members, call appearances 1, 3, 4 and 5 are remaining assigned CAs. If the SERVORD user then creates a new CA with the NEWCA prompt, call appearance 2 is created to complete the sequential order of 1–5 before assigning 1–16.

- The SERVORD user cannot change a MADN/EKTS CACH CA number.
- The primary CA (CA 1) cannot be removed until all secondary CAs have been removed.
- IN NA008, the ability to change the existing MADN non-CACH Call Arrangement (SCA, MCA, EXB) to CACH is blocked. In addition, the ability to change the CACH Call Arrangement to either SCA, MCA or EXB is blocked. The CHF command CACH call arrangements that are blocked are listed as follows:
  - — changing from CACH to SCA
  - — changing from CACH to MCA
  - — changing from CACH to EXB
  - — changing from SCA to CACH
  - — changing from MCA to CACH
  - — changing from EXB to CACH

For example, if the SERVORD user wants to change the existing MADN SCA group to a MADN CACH group, the SERVORD user must first remove the entire MADN SCA group by deleting all of its members, and rebuilding it as a MADN CACH group.

- CACH control restrictions:
  - — Feature provisioning is applicable to CACH Controller.
  - — The CACH controller cannot be removed or deleted unless there is another ISDN secondary member which can become the primary member for this CA and the CACH controller.

    Note: *The ISDN secondary member must be in the same CA as the CACH controller.*
  - — The CACH controller can be an EKTS basic ISDN terminal or EKTS ISDN terminal.

    Note: *The EKTS basic ISDN terminal cannot support multiple call appearances of the same MADN/EKTS CACH DN because an EKTS basic ISDN terminal identifies its DN assignments by the 10-digit DN. An EKTS ISDN terminal (CACH) uniquely identifies its DN assignments by the key number; therefore, an EKTS basic ISDN terminal cannot uniquely distinguish between multiple*

CAs.

Note: *In NA008, call appearance 1 is the primary CA. The CACH controller is located within the primary CA.*

- The first MADN/EKTS CACH member must be an ISDN terminal type, either National ISDN-1 (NI-1) or National ISDN-2 (NI-2) type.
- SERVORD blocks the provisioning of another CA (within the same MADN/EKTS CACH DN) for each EKTS Basic ISDN terminal.
- Each ISDN logical terminal identifier (LTID) must be provisioned with EKTS before assigning a MADN/EKTS CACH DN to the set.
- Block changing of the LTID CACH bool from Y to N if more than one Call Appearance of the same MADN CACH Group is provisioned.
- The following are Suspend option (SUS) restrictions:
  - — When option SUS is assigned to the CACH controller this option is assigned to all members in the MADN CACH group.
  - — When option SUS is assigned to any secondary call appearance primary member, then the Suspend option is assigned to all members in the MADN CACH group. However, a message indicating that this option will be provisioned to all MADN CACH members is displayed.
  - — When option SUS is assigned to any MADN CACH secondary member (non-primary) the option is assignable only to that particular MADN CACH member.
- The SERVORD restore service (RES) command restores all MADN CACH members by removing the SUS line option.
- SERVORD blocks the SERVORD change directory number (CDN) command for MADN CACH DNs only.
- Servord will enforce the primary call appearance (PCA) to have a CARES value of NULL. The PCA's CARES value of NULL cannot be changed. However, the secondary call appearances can have their CARES value changed.

LAYER **SW-NOW**
NA008 PRODUCT

APPLICATION

ACTID	FEATURE TITLE	
AF6656	3 Stage Release Support	CM-BCM

Description

This feature modifies the messaging between the computing (CM) and the extended peripheral module (XPM) in order to enable the system software to inform the CM-B channel Manager (CM-BCM) of B-channel availability.

This feature provides the functionality to keep the CM based B-channel database in sync with the XPM B-channel Manager. It provides the extra messaging required to inform the CM when the B-channel is released and is actually available for future use. The XPM, upon receiving the final release message from the user, sends an extra message to the CM indicating that the B-channel has been released and is available for future calls. This extra messaging affects other call-related activities such as call reject.

This feature works in conjunction with feature AF6660 (see the ***SW-NOW*** section of this manual) which uses the B-channel availability information supplied by this feature as part of its management of B-channel contention.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

3 Stage Release Support is only available on NI-2 (National ISDN-2) terminals.

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	NWM
AF6713	Network Management Code Control Redesign	

Description

Network Management Code Control Redesign alters the underlying functionality of network management (NWM) code controls so that when a code is applied to a ten-digit directory number (DN) that involves an ambiguous NPA and NXX, the corresponding seven-digit call is successful.

Network Management Code Control Redesign has redesigned the way NWM applies code controls to a non-area code (NAC) or Area Code (ACODE).

NWM code controls ACODE and NAC no longer add, modify, or delete the tuple entries in subtable HNPACONT.HNPACODE.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AMA
AF6840	Advanced Intelligent Network SSP: AIN 0.2 AMA	

Description

This feature, Advanced Intelligent Network (AIN) service switching point (SSP): AIN Service Enablers (0.2) automatic message accounting (AMA) provides enhancements to Bellcore AMA format (BAF) recording for AIN. These enhancements apply to AIN Service Enablers (release 0.2) as well as AIN Essentials (release 0.1).

AIN is an existing service-control architecture that is engaged during basic call processing when a designated condition is encountered. The designated condition could be that a certain event has occurred and pre-specified criteria are satisfied. Once engaged, AIN pre-defined logic uses a common set of service-independent functions to direct subsequent call processing actions. After the AIN service control functions are completed, basic call processing resumes.

The DMS-100 switch currently produces BAF records for AIN calls as specified by the AMA requirements for AIN Primer, Essentials, Service Enablers, and normal switch-based requirements. The general rule is as follows: the presence of an AMA service logic program identification (AMAslpID) parameter in a response message overrides switch-based AMA and invokes AIN AMA recording. In other words, switch-based AMA data (for example, call type and service feature code) are mapped into the AIN AMA structure (structure codes 0220 and 0221). Additional AMA information provided by the service control point (SCP) as well as AMA information encountered in SSP translations, can be appended to the base AMA structure in modular form. When the SCP response message does not contain an AMAslpID parameter, normal switch-based AMA recording applies to the call.

AINSSP: AIN 0.2 AMA adds the AMA requirements for the following Service Enablers triggers and next event lists (NEL). The three triggers are as follows:

- O_Called_Party_Busy
- O_No_Answer
- Specific feature code

The three NEL events are as follows:

- T_Busy
- T_No_Answer
- Network_Busy

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

AIN AMA Processing

The DMS100 currently produces BAF records for AIN calls as specified by the AMA requirements for AIN Primer, Essentials and Service Enablers and normal switch-based requirements. AIN AMA supports the Multiple Record Paradigm as defined by BellCORE.

The general rule is as follows; The presence of an AMAslpID (AMA Service Logic Program Identification) parameter in a response message overrides switch-based AMA, and invokes AIN AMA recording. In other words, switch-based AMA data (e.g. Call Type) are mapped into the AIN AMA Structure (Structure Codes 0220 and 0221). Additional AMA information provided by the SCP as well as AMA information encountered in SSP translations may be appended to the base AMA structure in the form of module codes. If the SCP response message does not contain an AMAslpID parameter, normal switch-based AMA recording applies to the call.

AIN Service Enablers AMA Recording Requirements

AIN Essentials and a sub-set of AIN Service Enablers and their AMA requirements have been implemented in previous software releases. Feature AF6840 adds the AMA requirements for the following new Service Enablers:

- New triggers
  - O_Called_Party_Busy
  - O_No_Answer
- New NEL events
  - T_Busy
  - T_No_Answer
  - Network_Busy

The DMS currently produces BAF records for AIN calls as specified by the AMA requirements for AIN Primer, Essentials and Service Enablers and normal switch-based requirements. The general rule is as follows: the presence of an AMAslpID (AMA Service Logic Program Identification) parameter in a response message overrides switch-based AMA and invokes an AIN AMA recording. In other words, switch-based AMA data (e.g. Call Type) are mapped into the AIN AMA Structure (Structure Codes 0220 and 0221). Additional AMA information provided by the SCP as well as AMA information encountered in SSP translations may be appended to the base AMA structure in the form of module codes. If the SCP response message does not contain an AMAslpID parameter, normal switch-based AMA recording applies to the call.

New AIN AMA Recording Parameters

The response message sent from the SCP can contain optional parameters that are utilized by the SSP billing function.

Note: *This affects pre-NA008 AIN AMA functionality as well.*

The AMAMeasure parameter is sent to the SSP in the SCP message Send_To_Resource. Values of “connectTimeRecordedDestinationSSP” or “connectTimeRecordedDestinationSCP” indicate that the SSP is to measure the duration time the call is connected to an Intelligent Peripheral (IP) or an internal SSP resource. This timing for a connection to an IP starts when the SSP receives a CONNect message from the IP and ends when one of the following events occurs:

- On-hook from calling party
- SSP sends a clearing message
- SSP receives a clearing message

When timing for connection to an internal resource is to be recorded, the SSP measures the duration time associated with the actual connection of the calling party to the internal resource.

When the value of the AMAMeasure parameter in the Send_To_Resource message is “connectTimeRecordedDestinationSSP“ (and an AMAslpID was sent), the SSP records the duration timing in the Resource Timing Module (MC 290).

When the value of the AMAMeasure parameter is “connectTimeRecordedDestinationSCP“, the SSP returns the timing information to the SCP in the AMAMeasurement parameter of the Resource_Clear message. The AMAsplID is not needed for this timing to take place and be returned to the SCP.

Additional AMA Requirements Implemented in NA008

This section provides details on the new completion indicator values and default routing.

New Completion Indicator Values

Four new values for the Completion Indicator field (BAF Table 280) are used when AMA generates records with AIN Structure codes of 0220 and 0221. These new values affect AMA for AIN Essentials as well as AIN Service Enablers.

The new values and their population criteria are listed below:

- 9 – “AIN Pre-final route record - final call disposition completed”
  - — When the SSP receives an off-hook indication from the terminating access facility and ‘final routing’ number for this record is not available.
- 10 – “AIN Pre-final route record - final call disposition not completed”
  - — When the SSP does not receive an off-hook indication from the terminating access facility or is not able to complete the call for any reason and ‘final routing’ number for this record is not available.
- 11 – “Not Completed, AIN SCP requested release time (Disconnect message received)”
  - — If the Disconnect message is received in the response message of a Transaction initiated by a originating or terminating BCM trigger, and an AMAslpID parameter is received.
- 14 – “AIN Pre-final route record - NEL follows”
  - — When the final routing cannot be determined for a single route because the NEL follows in the call portion, and multiple NEL records are generated with multiple call disposition.

The addition of these new Completion Indicator values provides a more accurate representation of true call disposition.

Default Routing

If default AIN routing is invoked (due to some error conditions), a Structure Code 0220 record is generated and the AMAslpID (BAF Table 77) is populated with the value of AIN default routing ‘900000000’. This affects AIN Essentials and Service Enablers.

Message Protocols

Two new TCAP parameters are introduced: AMAMeasure and AMAMeasurement.

AMAMeasure

The AMAMeasure parameter is accepted from the SCP message Send_To_Resource. This is used to notify the SSP that duration timing of the resource connection must be done. It also indicates that either the Resource Timing module (MC 290) is to be appended to the AMA record (value = “connectTimeRecordedDestinationSSP”) or that the timing info is to be sent back to the SCP in the Resource_Clear message (value = “connectTimeRecordedDestinationSCP”.

AMAMeasurement

The AMAMeasurement parameter is added to the Resource_Clear message. This contains the resource connection duration timing being sent back to the SCP. The field AMATimeGuard is part of the AMAMeasurement parameter as well. AMATimeGuard indicates the validity of the timing measurement.

Notes

NONE

Alarms

NONE

Interactions

SMDR recording functions, as it does today, with any new AIN triggers or events.

Restrictions/Limitations

NONE

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AIN
AF6850	AIN 0.2 Response Compliance for Service Enablers (CCM)	

Description

AIN 0.2 Response Compliance for Service Enablers (CCM) is part of a group of activities designated to upgrade the service control point (SCP) query and response messages. During the processing of a call by a service switching point (SSP), criteria checking is applied at detection points to determine when the call requires AIN processing. When this criteria is met, a transaction capabilities application part (TCAP) message is formulated and sent to the SCP. The SCP service logic creates a response that is returned to the originating SSP.

AIN 0.2 Response Compliance for Service Enablers (CCM) introduces the response parameter, GenericAddressList. The Generic AddressList parameter is returned in an Analyze_Route type response. The return of a generic address in any response message is new. When an Analyze_Route message with a GenericAddressList parameter is returned, the SSP stores each generic address based on type of address. This functionality occurs when the AIN Service Enablers software optionality control (SOC) AIN00220 is in the ON state. When the AIN Service Enablers SOC AIN00220 is in the IDLE state, the SSP does not store generic addresses. Data from generic address is unavailable when the SSP does not store the returned generic addresses.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Although GR-1298-CORE does not define feature interactions for GenericAddressList or GenericAddress, AIN 0.2 Response Compliance for Service Enablers (CCM) inherently introduces an interaction with multi-location business group (MBG). MBG uses the DIALED_NUMBER generic address parameter (GAP) in the implementation of its wide are centralized (CENTReX) private branch exchange (PBX). During the processing of a call that originates over an ISDN user part (ISUP) trunk, the criteria for an Info_Analyze detection point can be met. When the SCP returns to Analyze_Route message containing a GenericAddressList, the generic address of the DIALED_NUMBER is used by MGG when it is active on the call.

Restrictions/Limitations

For the AIN 0.2 Response Compliance for Service Enablers (CCM), the GenericAddressList parameter population for integrated services digital network (ISDN) originating facilities is not supported.

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	LNP
AJ4411	LNPSSP: Feature Interaction LNP on Attendant Console	

Description

Feature Interaction LNP on Attendant Console (AC) implements standard AC and DMS switch features for use with Local Routing Number - Local Number Portability (LRN-LNP). LRN-LNP enables subscribers to change their local service providers without changing their public directory numbers.

The operating company can use all DMS switch features with LRN-LNP and AC. AC features that do not interact with LRN-LNP work as normal.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

This feature supports only Nortel Meridian Digital Centrex ACs.

Alarms

NONE

Interactions

LNP on Attendant Console depends upon feature AJ4091, Triggering LNP on Attendant Console, which implements the LNP triggering. The following lists the AC features that interact with LRN-LNP and, therefore, with the public network:

- Attendant Conference
- Attendant Console to ACD
- Attendant Console to UCD
- Attendant Call Detail Entry
- Attendant Extended Calls to CFB/CFNA
- Autodial
- Automatic Recall
- Authorization Codes
- Conference
- Delayed Operation
- MAP Display for Attendant OMs
- Night Service, Fixed
- Night Services, Flexible
- No Answer Recall
- Peg Counts on Listed DNs on AP
- Release Upon Completion of Dialing
- Secrecy
- Speed Call
- Straightforward Outward Completion
- Through Dialing

Hardware requirements

LNP on Attendant Console supports only Nortel Meridian Digital Centrex attendant consoles.

Restrictions/Limitations

The following limitations and restrictions apply to AC:

- Network Attendant services are not addressed.
- Mini ACs are not addressed.
- Stand-alone customer groups are portable only as whole groups, that is, with all their members included. To port a customer group with a family dependency, the craftsperson first converts the whole group to a stand-alone group.

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	EADAS
AJ4423	EADAS Conversion to Use OM Tuple Sequence Maintenance	

Description

EADAS (Engineering and Administrative Data Acquisition System) is an off-board microcomputer based system that provides near real time data collection and surveillance from central office switching systems. It is one of several machines that customers can deploy in their Operations System Support (OSS) network. This feature deals with EADAS/DC (Data Collection) and the internal buffers used for collection of the Operational Measurements (OM) data.

Feature AR1856, Maintain OM Tuple Sequencing Over ONP, introduced functionality that allows retention over an ONP of the numeric index used to access various OM tuples in an OM group. Feature AJ4423 converts the DMS EADAS software, used to report the OMs to the downstream EADAS machine, to use the OM tuple sequence retention functionality of feature AR1856.

Command Changes

The only change to the user interface is the output of the EADASHOW command.

The RECORD_ID field has been replaced by two new fields, RECORD and OM_KEY.

- RECORD displays the number of the record in the EADAS section.
- OM_KEY displays the number of the OM tuple in the group corresponding to the EADAS record number.

In case the craftsperson has been in the habit of using the OM tuple number and record ID interchangeably, the output of the EADASHOW command is enhanced so that records are displayed with a new field containing the OM tuple number. In so doing, not only is a cross reference provided between OM tuple numbers and EADAS record IDs, but the fact that these identifiers are not always the same is highlighted. However, the command syntax is not altered in any way.

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

EADAS Conversion to Use OM Tuple Sequence MTCE Over ONP provides benefit over an ONP only if the following conditions are met:

- OMKEYWORD, feature AR1856, must be present on the dump side.
- EADAS machine must have been aligned with the dump side prior to ONP.

This feature provides benefit during normal (non-ONP) operation with the following exception. Tuple positions are not tracked during normal operation by OMKEYORD if they belong to an OM group that does not use OM_REALLOC when reassigning a tuple. Since these tuple positions are not necessarily reported accurately by OMKEYORD during normal operation, this feature does not necessarily report these tuples to the EADAS machine with the correct record ID. However, even these tuples are reported correctly over an ONP given that the ONP conditions are met.

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AIN
AJ4583	AIN ACG Enhancements for AIN 0.2 Requirements (CCM)	

Description

Automatic code gapping (ACG) is designed under the activities AG3290 and AR1612 to implement the network congestion control. When a call encounters an AIN trigger, the ACG control lists are checked to determine when to block the SCP query to prevent service control point (SCP) overload. An ACG control list is a SCP-initiated control list or a service management system (SMS) initiated control list. An ACG database includes the SCP-initiated control list and SMS-initiated control list.

This feature enhances AIN ACG by:

- Increasing the number of SMS and SCP control list entries from a maximum of 64 to 256.
- Decreasing the ACG restart re-load real-time impact.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

AIN ACG is further enhanced in NA008 under activity AR2412, AIN 0.2 ACG (CNA). See the ***SW-LATER*** section in this manual.

This feature has an impact on the NA008 AIN Essentials product. All of the functionality described in this document applies to the NA008 AIN Essentials product.

Restrictions/Limitations

NONE

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISUP
AJ4587	ISUP FAC Message	

Description

The use of network-wide features that interact with external switches and off-board processors is increasing. Increased interaction creates the need for a signaling system 7 (SS7) message type to send information that is not suitable for existing message types. The ISDN user part (ISUP) facility (FAC) message satisfies the need for a suitable SS7 message type.

The ISUP FAC message is sent from a switch where a call begins or ends. When there is a secondary switch between the two, the message is passed to its destination unchanged.

When the ISUP FAC message is received on a switch that contains only basic call control, the message is processed as follows:

- When it is a tandem or intermediate switch, the message is passed along unchanged.
- When the switch is the originating or terminating office, the response from a reset circuit (RSC) is sent to the network.

The ISUP FAC message is bidirectional, but it is only valid in certain call states and does not change the state of the call. It does not accept the message before a continuity check is completed, or until after a call has begun the final stages. Therefore, the ISUP FAC message is only valid after an address complete message (ACM) or an answer message (ANM) is sent or received.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AIN
AJ4589	Increase PRI FIE Size (CCM)	

Description

The current software supports facility information messages (FIE) of up to 57 bytes. AIN Service Enablers requires FIEs of up to 144 bytes; therefore, activities AJ4589 and AJ4591 are increasing the FIE size to 144 bytes.

FIEs with the operation SendTOIPResource are supported on the following Primary Rate Interface (PRI) messages:

- SETUP (outgoing)
- Disconnect (DISC) (incoming)
- Release (REL) complete (COMP) (incoming)
- Facility (FAC) (incoming and outgoing)

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	SSP/SCP
AQ1585	Monitor Resource Enhancements	

Description

When the service switching point (SSP) receives a Monitor_Resources request from the service control point (SCP), it must complete a series of checks. The checks determine when the line matches the state requested by the FacilityStatus parameter. The SSP sets up a monitor on the line when the status of the line does not match the requested state.

Note: *The MonitorTme parameter must have value other than 0. When the line status achieves the desired state, the SSP returns a Status_Reported message with the FacilitySatus parameter set to StatusMatch. When the timer expires before the line achieves the desired state, the SSP returns a Satus_Reported message with the StatusCause parameter set to time-out.*

The SSP must consider the applicability of switch-based features under the following conditions:

- The BearerCapability parameter is present in the Monitor_Resources message
- The call is established using the specified bearer capability

When the BearerCapability parameter is not present in the Monitor_Resources message, the state of the line is used to determine the response. When the BearerCapability parameter is not present in the Monitor_Resources message, switch-based features are not considered.

When a monitor is active on a line, the switch can change switch-based features that affect the status of the line. For example, a monitor is set up to determine when the line becomes busy. At some point in the call the dial cancel call waiting feature is invoked. In this situation, the SSP sends a Status_Reported message with the StatusCause parameter set to StatusMatch.

Note: *Cancel call waiting (CCW) is the only switch-based feature that is supported in NA008. It can result in a change of line status for the monitor duration.*

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

When the Bearer_Capacity parameter is present in the Monitor_resources message, a check is made to see whether any of the following switch-based features can cause the line to be considered busy:

- Suspend (SUS)
  - — Denies termination because a customer account is overdue
- Requested suspension (RSUS)
  - — Denies termination at the request of the customer (for example, the customer is on vacation)
- Denied termination
- Plug up (PLP)

For integrated business network (IBN) lines, an additional check is made for the following switch-based features:

- Make set busy (MSB)
- Do not disturb (DND)

When MSB or DND is active on a line, a call cannot complete to that line, and the line is considered to be busy.

Note: *When MSB or DND is present on the line, and the SCP requests a status of idle, a monitor is not set up to wait for a change because these features are not expected to change frequently. In this case, an UnavailableResources message is returned.*

Restrictions/Limitations

The following limitations and restrictions apply to Monitor Resource Enhancements:

- Monitor_Resources does not support multi-line hunt groups. When a Monitor_For_Change message is received for a multi-line hunt group, a Status_Reported message is sent to the SCP with a FailureCause parameter value set to UnavailableResources.
- The maximum number of monitors that can be active on a line is 5. When a Monitor_For_Change message is received that would activate a sixth monitor on a line, a Status_Reported message with a StatusCause of UnavailableResources is sent to the SCP. Features that use the internal feature queuing mechanism, like automatic call-back (ACB), can reduce the maximum number of monitors when they are already queued on the requested agent.
- For key sets (KSET) and integrated services digital network (ISDN) basic rate Meridian feature transparency (BRAMFT), the maximum number of monitors that can be active on a call waiting (CWT) key is 5. This places a limitation on the total number of monitors that can be active on the directory numbers (DN) of the set.
- The maximum number of monitors that can be active on a switch is 1000. The monitor limit is caused by the limited number of resources available on a switch.
- The maximum monitor time is 24 hours. When a Monitor_Resources message is received with a MonitorTime greater than 24 hours and a monitor is required, a Status_Reported message is sent to the SCP with the FailureCause parameter value set to UnavailableResources.

LAYER		SW-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AIN
AR2306	AIN Service Enablers Operational Measurements	

Description

The advanced intelligent network (AIN) Service Enablers operational measurements (OM) feature creates and increments OM registers to count messages passed between the service switching point (SSP) and the service control point (SCP). This feature counts call-related AIN Service Enablers messages and all AIN non call-related messages. Service Enablers messages are defined as: messages which are part of a transaction initiated by a trigger which is datafilled in table TRIGDIG or TRIGINFO with the MSGSET field equal to R02. The purpose of these message counts is to provide traffic engineering, monitoring, and maintenance capabilities.

This feature does not affect existing AIN OM groups AIN and AINACG. Group AIN is the platform for traffic and maintenance measurements for AIN Service Essentials and Enablers. Group AINACG provides measurements for the automatic code gapping (ACG) feature in the SSP for AIN Service Essentials and Enablers. There is no overlap of functionality between this feature and the AIN and AINACG groups. These existing OM groups provide measurements for specific conditions encountered in message processing, whereas this feature provides the measurements for the number and type of messages sent or received.

Separate OM registers are provided for each message type. When a message can be sent from the SSP as a result of more than one kind of trigger or event, a separate OM register is provided for each trigger and event type. An OM register is incremented each time its corresponding message is successfully sent or received. A message is considered successfully sent once it has been encoded into the transaction capabilities application part (TCAP) protocol. A message is considered successfully received once it is decoded from the TCAP protocol.

The OM registers are grouped according to the following message attributes:

- the message direction:
  - outgoing
    - an outgoing message refers to a message sent from the SSP to the SCP
  - incoming
    - an incoming message refers to a message received at the SSP from the SCP

- the relationship of the message to the call:
  - call-related
    - a call-related (CR) message refers to a message which can affect call processing.

      Note: *AIN Service Enablers OMs consider the Send_Notification, Termination_Notification and Request_Report_BCM_Event messages to be call-related.*
  - non call-related
    - a non call-related (NCR) message refers to a message which does not affect call processing
- the message trigger subscription basis:
  - subscribed
    - a subscribed message refers to a message which is sent or received in a transaction which is initiated by either of the following:
    - a trigger classified as subscribed (Off-Hook_Immediate, Off-Hook_Delay, Shared_Interoffice_Trunk, Public_Feature_Code, Specific_Feature_Code, Customized_Dialing_Plan, automatic flexible routing (AFR), O_Called_Party_Busy, O_No_Answer, Termination_Attempt)
  - office
    - an office-based message refers to a message which is sent or received in a transaction which is initiated by either of the following:
    - a trigger classified as office (Specific_Digit_String, N11)

      Note: *Triggers are classified as office or subscribed based solely on the trigger type.*

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

Five new OM groups are introduced by the AIN Service Enablers Operational Measurements feature. A total of 59 OM registers are provided.

New OM Group: AINOGOFF

This new OM group contains 10 registers which count call-related, outgoing, and office-based Service Enablers messages. The following is a list of the new register names and descriptions:

- TOIASDS
  - — Counts the number of Info_Analyzed messages sent from the SSP to the SCP as a result of a Specific_Digit_String trigger at the Info_Analyzed trigger detection point.
- TOIAN11
  - — Counts the number of Info_Analyzed messages sent from the SSP to the SCP as a result of a N11 trigger at the Info_Analyzed trigger detection point.
- EONB
  - — Counts the number of Network_Busy messages sent from the SSP to the SCP as a result of a Network_Busy event request.
- EOOCB
  - — Counts the number of O_Called_Party_Busy messages sent from the SSP to the SCP as a result of an O_Called_Party_Busy event request.
- EOONA
  - — Counts the number of O_No_Answer messages sent from the SSP to the SCP as a result of an O_No_Answer event request.
- EOOANS
  - — Counts the number of O_Answer messages sent from the SSP to the SCP as the result of an O_Answer event request.
- IOTN
  - — Counts the number of Termination_Notification messages sent from the SSP to the SCP in a transaction which was initiated by an office-based message.
- IOCIFR
  - — Counts the number of Call_Info_From_Resource messages sent from the SSP to the SCP in a transaction which was initiated by an office-based message.
- IORCLR
  - — Counts the number of Resource_Clear messages sent from the SSP to the SCP in a transaction which was initiated by an office-based message.
- IOCLOSO
  - — Counts the number of Close messages sent from the SSP to the SCP in a transaction which was initiated by an office-based message.

OMSHOW Example

```
>omshow ainogoff active
AINOGOFF

CLASS:   ACTIVE
START:1997/06/05 16:00:00 THU; STOP: 1997/06/05 16:04:31 THU;
SLOWSAMPLES:         3 ; FASTSAMPLES:         27 ;

          TOIASDS    TOIAN11       EONB      EOOCB
            EOONA     EOOANS       IOTN     IOCIFR
           IORCLR    IOCLOSO

    0           0          0          0          0
                0          0          0          0
                0          0
```

New OM Group: AINOGSUB

This new group contains 20 registers which count call-related, outgoing, and subscribed Service Enablers messages. The following is a list of the new register names and descriptions:

- TSOAOHI
  - — Counts the number of Origination_Attempt messages sent from the SSP to the SCP as a result of a Off-Hook_Immediate trigger at the Origination_Attempt trigger detection point.
- TSICOHD
  - — Counts the number of Info_Collected messages sent from the SSP to the SCP as a result a Off-Hook_Delay trigger.
- TSICSIT
  - — Counts the number of Info_Collected messages sent from the SSP to the SCP as a result of a Shared_Interoffice_Trunk trigger at the Info_Collected trigger detection point.
- TSIAPFC
  - — Counts the number of Info_Analyzed messages sent from the SSP to the SCP as a result of a Public_Feature_Code trigger at the Info_Analyzed trigger detection point.
- TSIASFC
  - — Counts the number of Info_Analyzed messages sent from the SSP to the SCP as a result of a Specific_Feature_Code trigger at the Info_Analyzed trigger detection point.
- TSIACDP
  - — Counts the number of Info_Analyzed messages sent from the SSP to the SCP as a result of a Customized_Dialing_Plan trigger at the Info_Analyzed trigger detection point.

- TSNBAFR
  - — Counts the number of Network_Busy messages sent from the SSP to the SCP as a result of an AFR trigger at the Network_Busy trigger detection point.
- ESNB
  - — Counts the number of Network_Busy messages sent from the SSP to the SCP as a result of a Network_Busy event request.
- TSOCBCB
  - — Counts the number of O_Called_Party_Busy messages sent from the SSP to the SCP as a result of a O_Called_Party_Busy trigger.
- ESOCB
  - — Counts the number of O_Called_Party_Busy messages sent from the SSP to the SCP as a result of a O_Called_Party_Busy event request.
- TSONANA
  - — Counts the number of O_No_Answer messages sent from the SSP to the SCP as a result of an O_No_Answer trigger.
- ESONA
  - — Counts the number of O_No_Answer messages sent from the SSP to the SCP as a result of a O_No_Answer event request.
- ESOANS
  - — Counts the number of O_Answer messages sent from the SSP to the SCP as a result of a O_Answer event request.
- TSTATTA
  - — Counts the number of Termination_Attempt messages sent from the SSP to the SCP as a result a Termination_Attempt trigger.
- ESTBSY
  - — Counts the number of T_Busy messages sent from the SSP to the SCP as a result of a T_Busy event request.
- ESTNA
  - — Counts the number of T_No_Answer messages sent from the SSP to the SCP as a result of a T_No_Answer event request.
- ICIFR
  - — Counts the number of Call_Info_From_Resource messages sent from the SSP to the SCP in a transaction which was initiated by a subscribed message.
- ISRCLR
  - — Counts the number of Resource_Clear messages sent from the SSP to the SCP in a transaction which was initiated by a subscribed message.

- ISCLOSO
  — Counts the number of Close messages sent from the SSP to the SCP in a transaction which was initiated by a subscribed message.
- ISTN
  — Counts the number of Termination_Notification messages sent from the SSP to the SCP in a transaction which was initiated by a subscribed message.

OMSHOW Example

```
>omshow ainogsub active
AINOGSUB

CLASS:   ACTIVE
START:1997/06/05 16:00:00 THU; STOP: 1997/06/05 16:05:12 THU;
SLOWSAMPLES:         4 ; FASTSAMPLES:         31 ;

          TSOAOHI    TSICOHD    TSICSIT    TSIAPFC
          TSIASFC    TSIACDP    TSNBAFR       ESNB
          TSOCBCB      ESOCB    TSONANA      ESONA
           ESOANS    TSTATTA     ESTBSY      ESTNA
           ISCIFR     ISRCLR    ISCLOSO       ISTN


    0           0          0          0          0
                0          0          0          0
                0          0          0          0
                0          0          0          0
                0          0          0          0
```

New OM Group: AINICOFF

This new OM group contains 9 registers which count call-related, incoming, and office-based Service Enablers messages. The following is a list of the new register names and descriptions:

- IOAR
  — Counts the number of Analyze_Route messages received at the SSP from the SCP in a transaction which was initiated by an office-based message.
- IOCON
  — Counts the number of Continue messages received at the SSP from the SCP in a transaction which was initiated by an office-based message.
- IODISC
  — Counts the number of Disconnect messages received at the SSP from the SCP in a transaction which was initiated by an office-based message.
- IOSTR
  — Counts the number of Send_to_Resource messages received at the SSP from the SCP in a transaction which was initiated by an office-based message.
- IOCRE
  — Counts the number of Cancel_Resource_Event messages received at the SSP from the SCP in a transaction which was initiated by an office-based message.

- IOCITR
  - — Counts the number of Call_Info_To_Resource messages received at the SSP from the SCP in a transaction which was initiated by an office-based message.
- IOSN
  - — Counts the number of Send_Notification messages received at the SSP from the SCP in a transaction which was initiated by an office-based message.
- IORRBE
  - — Counts the number of Request_Report_BCM_Event messages received at the SSP from the SCP in a transaction which was initiated by an office-based message.
- IOCLOSI
  - — Counts the number of Closemessages received at the SSP from the SCP in a transaction which was initiated by an office-based message.

OMSHOW Example

```
>omshow ainicoff active
AINICOFF

CLASS:   ACTIVE
START:1997/06/05 16:00:00 THU; STOP: 1997/06/05 16:04:51 THU;
SLOWSAMPLES:         3 ; FASTSAMPLES:         29 ;

             IOAR      IOCON     IODISC      IOSTR
            IOCRE     IOCITR       IOSN     IORRBE
          IOCLOSI

    0           0          0          0          0
                0          0          0          0
                0
```

New OM Group: AINICSUB

This new OM group contains 11 registers which count call-related, incoming, and subscribed Service Enablers messages. The following is a list of the new register names and descriptions:

- ISAR
  - — Counts the number of Analyze_Route messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.
- ISCON
  - — Counts the number of Continue messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.
- ISAUTHT
  - — Counts the number of Authorize_Termination messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.

- ISFC
  - — Counts the number of Forward_Call messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.
- ISDISC
  - — Counts the number of Disconnect messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.
- ISSTR
  - — Counts the number of Send_To_Resource messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.
- ISCRE
  - — Counts the number of Cancel_Resource_Event messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.
- ISCITR
  - — Counts the number of Call_Info_To_Resource messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.
- ISSN
  - — Counts the number of Send_Notification messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.
- ISRRBE
  - — Counts the number of Request_Report_BCM_Event messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.
- ISCLOSI
  - — Counts the number of Close messages received by the SSP from the SCP in a transaction which was initiated by a subscribed message.

OMSHOW Example

```
>omshow ainicsub active
AINICSUB

CLASS:   ACTIVE
START:1997/06/05 16:00:00 THU; STOP: 1997/06/05 16:05:33 THU;
SLOWSAMPLES:         4 ; FASTSAMPLES:         33 ;

             ISAR      ISCON    ISAUTHT       ISFC
           ISDISC      ISSTR      ISCRE     ISCITR
             ISSN     ISRRBE    ISCLOSI

    0           0          0          0          0
                0          0          0          0
                0          0          0
```

New OM Group: AINNCR

This new OM group contains 9 registers which count all non call-related messages. The following is a list of the new register names and descriptions:

- NACG
  — Counts the number of Automatic_Code_Gap messages received at the SSP from the SCP.
- NAOVFW
  — Counts the number of ACG_Overflow messages sent from the SSP to the SCP.
- NAGCR
  — Counts the number of ACG_Global_Control_Restore messages received at the SSP from the SCP.
- NAGCRS
  — Counts the number of ACG_Global_Control_Restore_Success messages sent from the SSP to the SCP.
- NUPREQ
  — Counts the number of Update_Request messages received at the SSP from the SCP.
- NUPDAT
  — Counts the number of Update_Data messages sent from the SSP to the SCP.
- NMFC
  — Counts the number of Monitor_For_Change messages received at the SSP from the SCP.
- NMSUCC
  — Counts the number of Monitor_Success messages sent from the SSP to the SCP.
- NSREP
  — Counts the number of Status_Reported messages sent from the SSP to the SCP.

OMSHOW Example

```
>omshow ainncr active
AINNCR

CLASS:   ACTIVE
START:1997/06/05 16:00:00 THU; STOP: 1997/06/05 16:05:55 THU;
SLOWSAMPLES:         4 ; FASTSAMPLES:         36 ;

             NACG     NAOVFW      NAGCR     NAGCRS
          NUPREQ     NUPDAT       NMFC     NMSUCC
           NSREP

    0           0          0          0          0
                0          0          0          0
                0
```

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The following paragraph describes the interactions between AIN Service Enablers Operational Measurements and other functionalities.

Messages counted by the OM registers defined in this document are only active when the SOC order code AIN00210 is turned on.

Restrictions/Limitations

NONE

LAYER		SW-NOW
TELECOM 08		
		APPLICATION
ACTID	**FEATURE TITLE**	
AU2369	ANSI TCAP Enhancements	

Description

Feature American National Standards Institute (ANSI) transaction capabilities user part (TCAP) enhancements introduces the dialog portion, which is a new TCAP element. The dialog portion facilitates dialog information exchange between applications. The dialog portion can contain one or more of the following pieces of information:

- protocol version
- application context
- user information
- security context
- confidentiality information

This feature is backwards compatible with earlier versions of ANSI T1.114.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

Log TCAP100 is generated when dialog decoding fails.

Modified log report: TCAP100

Applications such as E800 and ACCS who use this feature *MAY* decide to issue a TCAP 100 log for dialogue portion decoding failures. This feature does not create/ modify the existing TCAP log in any way. The information contained in the log is user dependent. The application can include any REASON as well as DATA bytes as they see fit.

Example

```
CDN2 TCAP100 JUN21 15:13:55 4400 INFO TCAP UDT MESSAGE
                  REASON: BAD DIALOGUE PORTION
                  CALLED ADDR :  INDICATOR= #C3    SUBSYS= #00    SSN= #F7
                  PC: NI=2  NETTYPE=1  0A-E5-F5
                  CALLING ADDR:  INDICATOR= #C1    SUBSYS= #20    SSN= #F7
                  CLASS=0   SEQUENCE=00   OPTION=0   PRIORITY=1
                  PACKAGE TYPE: UNIDIRECTIONAL
                  DIALOGUE: E8 0B EC 09 CF 01 00 D5 02 05 04 F2 00
```

Format

```
CDN2 TCAP100 JUN21 15:13:55 4400 INFO <>
                  REASON: <>
                  CALLED ADDR :  INDICATOR= #C3    SUBSYS= <> SSN= <>
                  PC: NI=<> NETTYPE=<> <>
                  CALLING ADDR:  INDICATOR= <> SUBSYS= <> SSN= <>
                  CLASS=<> SEQUENCE=<> OPTION=<> PRIORITY=<>
                  PACKAGE TYPE: <>
                  <>
```

OM Changes

TCAP usage OM group (TCAPUSAG) and TCAP errors OM group (TCAPERRS) are affected by this feature.

Changed OM Group: TCAPERRS

Register list

- TCTPEUPT
- TCTPEITP
- TCTPESTP
- TCTPEUTI
- TCCPEUCT
- TCCPEICP
- TCCPESCP
- TCICEDII
- TCICEUOC
- TCICEUXP
- TCICEUCI
- TCRCEUCI
- TCRCEXRR
- TCRCEUXP
- TCECEUCI
- TCECEXEC
- TCECEUPC
- TCECEXPC

- TCECEIP
- TCDPEUID
- TCDPEBDP
- TCDPEMDP
- TCDPEIDP

OMSHOW example

```
102 ITEA2
0          0          0          0
0          0          0          0
0          0          0          0
0          0          0          0
0          0          0          0
0          0          0
```

New Registers

TCDPEUID

This register is incremented for every incoming TCAP message that contains a bad dialogue portion ID.

TCDPEBDP

This register is incremented for every incoming TCAP message that contains a bad dialogue portion.

TCDPEMDP

This register is incremented for every incoming TCAP message that contains a dialogue portion message with a missing mandatory part.

TCDPEIDP

This register is incremented for every incomingTCAP message that contains an inconsistent dialogue portion.

Changed OM Group: TCAPUSAG

Register list

- TCMSGOUT
- TCMSGOU2
- TCMSGIN
- TCMSGIN2
- TCUNIDIR
- TCUNIDI2
- TCQWPERM
- TCQWPER2

- TCQNPERM
- TCQNPER2
- TCCWPERM
- TCCWPER2
- TCCNPERM
- TCCNPER2
- TCRESPNS
- TCRESPN2
- TCINVKL
- TCINVKL2
- TCINVKNL
- TCINVKN2
- TCRSLTL
- TCRSLTL2
- TCRSLTNL
- TCRSLTN2
- TCRTERR
- TCRTERR2
- TCREJECT
- TCREJEC2
- TCABORT
- TCABORT2
- TCDPUSE
- TCDPUSE2

OMSHOW example

```
102 ITEA2
                0          0          0          0
                0          0          0          0
                0          0          0          0
                0          0          0          0
                0          0          0          0
                0          0          0          0
                0          0          0          0
                0          0          0          0
```

New registers

TCDPUSE

This register is incremented for every incoming/outgoing TCAP message that contains a dialogue portion.

TCDPUSE2 is the overflow register for TCDPUSE. It is incremented every time TCDPUSE overflows to 0.

TCDPUSE2 is the extension register for TCDPUSE, the dialogue portion usage register.

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

This feature is contained in the current software load, but will not work unless applications use features requiring ANSI T1.114–1996 or higher. Currently, all applications use compatible protocols.

LAYER		SW-NOW
TELECOM 08		
		APPLICATION
ACTID	FEATURE TITLE	MTP
AU2377	MTP Flow Control	

Description

This feature generates a message to inform a local user part (UP) that a remote UP cannot receive messages. The UPU message contains the destination and originating point codes, the name of the unavailable UP, and the cause of the unavailability.

When a UPU message is received, the local message transfer part (MTP) tries to inform its local UP of the remote UP's status. If the local UP is also unavailable, the local MTP discards the original message and generates a log stating that the local UP is unavailable.

All UP's must register with the MTP. The state of a UP that is not registered with the MTP is UNEQUIPPED, and all traffic to the UP is stopped. UPs that register on non-UPU users always appear as AVAILABLE. Operating company personnel can activate or deactivate this feature on any UP. Correct UP states are updated during cold, warm, and reload restarts.

A throttling mechanism prevents the network from being flooded with UPU messages. The mechanism allows only one out of every ten identical UPU messages received in a 10-s period to produce a log.

Command Changes

Command C7UP allows operating company personnel access to the commands to query status of local UPs and the activity of this feature, and to activate or deactivate this feature on any individual UP.

New command: C7UP

This command leads to a series of new commands which can be used. The commands which are available include: HELP, STATUS, ACTIVATE <SI>, DEACTIVATE <SI> AND QUIT.

New command: ACT(ivate)

This command activates UPU functionality for that particular SI. The valid SIs include: SCCP, TUP, ISDN_UP, DUP_CALL_AND_CIRCUIT, DUP_MAINTENANCE, TUP_PLUS.

If the craftsperson attempts to activate UPU functionality for a user part with functionality turned on, the following message is displayed onto the terminal:

```
<SI> already has UPU activated.
```

<SI> refers to the user part in question.

Activation of a previously deactivated UPU functional user part results in the display of the following warning message onto the terminal:

```
WARNING:  Activating UPU functionality for <SI>!
```

In order to activate this feature for a particular user part, the craftsperson must first activate it using this command with respect to the SI.

New command: DEACT(ivate)

This command de-activates UPU functionality for that particular SI. The valid SIs include: SCCP, TUP, ISDN_UP, DUP_CALL_AND_CIRCUIT, DUP_MAINTENANCE, TUP_PLUS.

If the craftsperson attempts to deactivate UPU functionality for a user part with functionality turned off, the following message is displayed onto the terminal:

```
<SI> already has UPU deactivated.
```

<SI> refers to the user part in question.

Deactivation of a previously activated UPU functional user part results in the display of the following warning message onto the terminal:

```
WARNING: Deactivating UPU functionality for <SI>!
```

Deactivation of this feature for a particular user part is performed by this command.

New command: STATUS

This command displays the local MTP user parts and their associated status. The MTP user parts displayed are: SCCP, TUP, ISDN_UP, DUP, DUP Maintenance, and TUP_Plus. As well, each user part's status with respect to whether UPU functionality has been turned on/off and whether the user part has registered either as a UPU or non-UPU user is displayed.

The State field can have any one of the following values: "AVAILABLE," "UNAVAILABLE", "UNEQUIPPED"

Definition of terms:

- AVAILABLE: the term available indicates that a user part is able to receive traffic
- UNAVAILABLE: this term indicates that a user part is unable to receive traffic.
- UNEQUIPPED: user part is not equipped on the local switch - an unregistered MTP User.

The craftsperson is not required to perform any action.

New command: HELP

This command provides the craftsperson detailed information on the use of all commands in the C7UP super-command.

The craftsperson is not required to perform any action.

Data Schema Changes

NONE

Log Message Changes

This feature creates the following logs:

- CCS140, generated by the local MTP layer when a UPU messages is received
- CCS141, generated by the MTP layer when the availability status of a local UP changes
- CCS142, generated by the local MTP when the local UP is unavailable to receive a UPU message

Log report: CCS140

The CCS140 log is generated by the MTP layer in the CM when a UPU message is received. Incoming UPU messages are throttled such that only 10% of identical UPU messages will generate this log.

Upon generation of the log, the craftsperson can investigate the status of the remote user part.

Example

```
CCS140 Jan25 9:23:12 0369 INFO User Part Flow Control
      Description                 : UPU message received
      Remote User Part            : Telephone User Part (SI: 4)
      Remote User Part State      : UNAVAILABLE (INACCESSIBLE)
      Remote Point Code           : RS000000100
```

Format

```
CCS140 mmmdd hh:mm:ss ssdd INFO User Part Flow Control
      Description                 : <event description>
      Remote User Part            : <SI name> (SI: <SI number>)
      Remote User Part State      : <state>
      Remote Point Code           : <routeset name>
```

Log report: CCS141

The CCS141 log is generated when there is a reported change in the local user part status.

It should be noted that a change in state from AVAILABLE to UNAVAILABLE causes the MTP layer to discard incoming messages destined for that local user part and generate corresponding UPU messages.

Example

```
CCS141 Jan25 10:23:55 0369 INFO User Part Flow Control
      Description                 : User Part status change
      Local User Part             : Telephone User Part (SI: 4)
      Local User Part State       : AVAILABLE
```

Format

```
CCS141 mmmdd hh:mm:ss ssdd INFO User Part Flow Control
      Description                 : <event description>
      Local User Part             : <SI name> (SI: <SI number>)
      Local User Part State       : <state>
```

Log report: CCS142

Upon receiving a UPU message, the MTP attempts to send UPU to its local UP. If the local UP is unavailable, the CCS142 log is generated indicating that a UPU is directed to an unavailable User part.

Example

```
CCS142 Jan25 12:39:12 0369 INFO User Part Flow Control
Description                           : Discarded UPU message
User Part                             : Telephone User Part (SI: 4)
Local User Part State                 : UNAVAILABLE (INACCESSIBLE)
Remote User Part State                : UNAVAILABLE (INACCESSIBLE)
Remote Point Code                     : RS000000100
```

Format

```
CCS142 mmmdd hh:mm:ss ssdd INFO User Part Flow Control
Description                     : <event description>
User Part                       : <SI name> (SI: <SI number>)
Local User Part State           : <state>
Remote User Part State          : <state>
Remote Point Code.              : <routeset name>
```

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The following restrictions and limitations apply to this feature:

- This feature functions on ITU networks.
- This feature is supported on DMS-SSP, DMS-INode, and DMS-STP products.

LAYER		SW-NOW
TELECOM 08		
		APPLICATION
ACTID	FEATURE TITLE	TRIDs
AU2379	TCAPTRID Migration to IDPOOLs–Phase I	

Description

This feature is Phase I of moving the functionality of table TCAPTRID into identifier pools (IDPOOL).

Table TCAPTRID allocates transaction identifiers (TRID) and component identifiers (COMPID) to applications. IDPOOLs improve the allocation process.

IDPOOLs dynamically allocate unique TRIDs and COMPIDs to applications. Because each TRID and COMPID is unique, IDPOOLs ensure that identifiers cannot be duplicated in a single transaction. IDPOOLs monitor and expand the pool of TRIDs and COMPIDs available as needed. IDPOOLs also perform audits to ensure that identifiers are not held for longer than required. Applications which use IDPOOLs do not use table TCAPTRID to allocate TRIDs and COMPIDs.

IDPOOLs are not available for all applications in this feature. Those features for which IDPOOLs are available automatically are converted during a One-Night Process (ONP) to use IDPOOLs.

Command Changes

NONE

Data Schema Changes

This feature creates field IDPL_IN_USE in table TCAPTRID. The field specifies whether IDPOOLs are in use for each application. This field is automatically datafilled during an ONP.

If a feature uses IDPOOLs, field NUMTRID and NUMCOMP in table TCAPTRID is set to zero. TCAPTRID table control rejects attempts to change the datafill of applications that use IDPOOLs.

The datafill of applications that do not use IDPOOLs is not affected by this feature.

Changed table: TCAPTRID

This feature describes the changes required to support applications which are using table TCAPTRID in CSP08 to engineer their transaction and component ids. It also describes the changes required for those applications which have converted the engineering of transaction and component ids over to Identifier Pools (IDPLs). IDPLs dynamically

allocate transaction and component ids as the need arises. As a result, those applications which have converted to IDPLs no longer require table TCAPTRID.

Field information

This feature provides ONP/Reformat changes for table TCAPTRID in CSP08. An additional field is added to table TCAPTRID titled IDPL_IN_USE to assist the craftperson in determining if a specific application has converted to IDPL. During an ONP all tuples are reformatted and have the IDPL_IN_USE field set accordingly.

Applications which have converted to IDPL have the following error message generated by table control when attempts are made to change either the transaction or component id datafill.

```
Application has converted to Identifier Pool Software. Modification of this tuple
is not allowed.
```

Additionally, attempts to change the IDPL_IN_USE field results in the following error message being generated by table control.

```
Application no longer engineers TCAP transaction and component Ids in table
TCAPTRID. They are dynamically allocated by Identifier Pool software.
```

Dump and restore

During an ONP, all tuples are reformatted and have the IDPL_IN_USE field set accordingly. Applications which have converted to IDPL have the NUMTRIDS and NUMCOMPS fields in table TCAPTRID reformatted to 0 during an ONP, and the IDPL_IN_USE field set to Y. Those applications which have not converted to IDPL do not have the NUMTRIDS and NUMCOMPS fields reformatted during and ONP, and the IDPL_IN_USE field set to N.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature impacts the appearance of table TCAPTRID with the addition of a new field titled IDPL_IN_USE.

Restrictions/Limitations

IDPOOLs fail if insufficient memory is available. General alarms occur to warn operating company personnel when the switch is low on memory. There is no specific IDPOOL alarm for insufficient memory.

LAYER		SW-NOW
TELECOM 08		
		APPLICATION
ACTID	FEATURE TITLE	XA-Core
XA1050	FPE Blocking Removal for XA-Core	

Description

The purpose of this feature is to:

- Make the SHARED variables in the FPE (Feature Processing Environment) Archid XA-Core friendly.
- Change the free queues used by feature queue base into multi-queues which are compatible with the XA-Core Architecture and will not cause blocking.
- Change the feature queue and MWIDC feature OMs to multi-processor OMs.
- Rewrite the feature queue audits so that audit works with multi-queues.
- Modify the routines that allocate a new call to associate the new call with the current call.
- Upgrade the interface QUTILUI to provide an option for applications to use multi-access queue.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER		SW-NOW
TELECOM 08		
		APPLICATION
ACTID	FEATURE TITLE	XA-Core
XA1052	CPBASE Resource Pool Conversion to XA-Core	

Description

The primary goal of this feature is to re-engineer the current interfaces for CPBASE pool resources by providing new interfaces which are non-blocking, or at least minimal blocking, in a multi-processor environment.

The first step is to propose a solution to removing possible software blocking contentions that occur with the pool resources in XA-Core. Because these contentions do not exist for SuperNode, serious consideration is required in terms of real-time and memory impact of the design selected. Whatever approach is taken, integrity of the SuperNode software is not impacted to the extent where current functionality is affected.

The second step is to encapsulate the existing pool resources. This prevents external applications from directly handling/manipulating the resources. That is, by forcing an outside user to go through a selected interface, the manner in which the resource is handled can be predetermined.

The key consideration for SuperNode is the real-time impact of adding a new interface. That is, the interface requires new method calls which hide current implementation pertaining to the direct handling of CPBASE resources. The amount of extra real-time it takes to invoke a method which hides an existing sequence of instructions in SuperNode may have a significant impact depending on the number of times the sequence must be executed. However, at the same time it helps control the level of blocking which can occur on the resource.

Many cases of direct manipulation for the different resources are very similar or even identical (i.e. the tasks performed on resources are the same). Therefore, the new interface, for the most part, is generic so that a similar routine or set of routines between resources can relate to one common method.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature depends on the following SOS feature for XA-Core:

- XA1006 Multi Processor Queues

Restrictions/Limitations

NONE

LAYER		SW-NOW
TELECOM 08		
		APPLICATION
ACTID	FEATURE TITLE	XA-Core
XA1055	ISUP and Translation Blocking Removal	

Description

This feature implements changes in several functional areas to remove or reduce the blocking introduced by the XA-Core shared memory architecture. This feature addresses the blocking during the translation of calls and during manipulation of ISUP trunk information.

This feature, based on an analysis of the shared variables in several utilities and functional areas, removes or reduces the blocking that will occur when processes running in parallel attempt to access the same data. This feature accomplishes this in such a way as not to introduce any external behavioral changes and as such does not introduce any new Call Processing features.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature has an effect only on multi-core platforms running processes in parallel. It allows more efficient use of the parallel processing power of the platform by reducing blocking between processes. It has no effect on single core platform.

Restrictions/Limitations

This feature is not needed on uni-core platforms. It is needed on multi-core platforms to make more efficient use of the parallel processing capability of the platform. It, however, does not remove all the blocking.

This feature needs the following features to function properly:

- AR1869, XA1005, PROTEL DIRECTIVES

LAYER		SW-NOW
TELECOM 08		
		APPLICATION
ACTID	FEATURE TITLE	XA-Core
XA1064	XA-CORE – Service Circuits Non-Blocking (Pass 1)	

Description

The purpose of this feature is to minimize blocking for callP in the SRVCRCTS area of software, for XA-Core, due to the shared memory data contention which results from the multi-processor environment.

XA-Core represents a shared memory, multi-processor DMS architecture, which allows call processing and other applications to be distributed among independent process elements (PEs) to achieve performance gains. To achieve the full performance potential of this architecture, some modification to existing software is required.

The resources controlled by service circuit software may be accessed by callP, maintenance and audits. In XA-Core, these applications will block each other when they attempt to use the shared data. The data contention in the following areas in service circuits will be minimized:

- Member data structure alignment
- State table conversion
- OM conversion to XA-Core OMs
- Global data conversion (XA-Core friendly)

Further unblocking work in the service circuits area will be done in other features.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature depends on the following features, which introduced interfaces in CSP06:

- Non-blocking sums, in feature XA1004
- OM interfaces, in feature AR1869

Restrictions/Limitations

NONE

LAYER		SW-NOW
TELECOM 08		
		APPLICATION
ACTID	FEATURE TITLE	XA-Core
XA1071	SCCP/TCAP Software Optimization for XA-Core	

Description

This base CCS7 feature is part of the TEL0008 function order code. It is an umbrella feature for XA1072.

This feature is part of the program to optimize the current DMS software for the XA-Core (extended architecture core) platform. The purpose of this feature is to fine-tune the SCCP/TCAP software to take advantage of the multi-processing XA-CORE platform. The MTP software optimization will be covered under a feature in a future release.

For platforms supporting a single processor, standard DMS configuration with an active and inactive computing module (CM), there is no impact. The changes introduced do not affect the customer's user interface.

No new funtionality is introduced by this feature.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature is an umbrella for XA1072.

Restrictions/Limitations

NONE

LAYER		SW-NOW
TELECOM 08		
		APPLICATION
ACTID	FEATURE TITLE	SPMS & DIRP_A
YR2006	Modifications for the Year 2000 for DIRP_A and SPMS	

Description

This feature modifies the following tools so that the year value can be entered and displayed as a 4-digit number:

- SPMS (switch performance monitoring system)
- DMSMON (DMS monitoring)
- AMREPORT (maintenance managers morning report)
- DIRP (device independent recording device)
- BERT (bit error rate test)
- BERP (bit error rate performance)
- ICTS (integrity check traffic simulator)
- NETPATH (network path test tool)

With this feature, the tools listed above (except for SPMS) display a 2-digit year, but are year 2000 ready.

Year values are entered and displayed as 2-digit numbers. That is, the year 2000, entered as 00 seems to be smaller than the year 1999, entered as 99. Also, the century prefix is assumed to be 19, so an entry of 00 is interpreted as the year 1900 instead of the year 2000. Because 200 is leap year and 1900 is not, day of week determinations are expected to result in errors. Date calculations over the year 1999/2000 boundary are expected to fail or produce inaccurate results. This feature addresses these problems.

Command Changes

Modifications for Year 2000 for DIRP_A and SPMS changes SPMS as follows:

- The range of valid date values for the DISPLAY command changes to “00 to 99” for 2-digit entries and “1976 to 9999” for 4-digit entries.
- The DISPLAY command prompt changes to indicate that a 2- or 4- digit year value can be entered.

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The SPMS part of this feature depends on changes implemented by feature YR2000 (YR2000 Support).

Restrictions/Limitations

Although SPMS supports 4-digit years up to 9999, the switch operating system (SOS) can only handle dates up to 2039.

SW-LATER

This section identifies changes and/or additions to switch functions that are Traffic sensitive or affecting, which require activation after the new software load insertion. These changes may include tables, log reports, OM reporting and generation, or service orders.

CEU 08

NA008 PRODUCT

TOPS 08

LAYER		SW-LATER
CEU 08		
		APPLICATION
ACTID	FEATURE TITLE	ISDN/BRI
AF6537	ETSI V5.2 Support for UK - Phase 2: ISDN/BRI	

Description

The extension of European Telecommunications Standard Institute (ETSI) V5.2 to support Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) falls into the following key areas.

V5 Protocol

The V5 protocol itself is extended in order to support ISDN. This extension is straightforward and is based on the Protocol Implementation Conformance Statement (PICS) relating to V5.

In essence, the specific ISDN support that is provided is documented in the PICS as:

- N11 – ISDN-BA Ports

The support of item requires changes in several different areas of the protocol, and are listed from a high level using the labeling convention of the PICS.

- Main Features
- Layer 2
- Layer 3
- Public Switched Telephone Network (PSTN) Protocol – Information Elements; General
- Control Protocol – Information Elements; Port Control
- BCC Protocol – Information Elements

Please refer to the Nortel Interface Specification (NIS) document for comprehensive PICS regarding V5.2 on the DMS.

OA&M

Operations, Administration, and Maintenance (OA&M) provisioning and maintenance changes necessary to support ISDN Basic Rate Access (BRA) over V5.2 affects the following areas:

- Table Control
- Servord
- Alarms
- Line Maintenance
- V5 interface maintenance

- Logs
- OMs

Command Changes

Line Maintenance

The Human-Machine Interface (HMI) applications to perform ISDN line maintenance for lines on a V5 interface shall use the same HMI for existing ISDN lines in the DMS100. However, line maintenance actions on V5 ISDN lines are limited at the MAP levels to those that do not need specific knowledge of the access node (AN) since the ISDN line card is not physically accessible by the DMS.

V5 interface maintenance

The CCS V5 MAP level commands have been extended to support the use of ISDN.

The following list provides supported commands in the LTP MAP level, in order to provide the support needed for V5 ISDN lines and C-channels, and the LTPLTA, LTPMAN, LTPISDN, and LTPDATA sub-levels:

- QUIT
  — LTP, LTPLTA, LTPMAN, LTPISDN, LTPDATA
- POST
  — LTP, LTPLTA, LTPMAN, LTPISDN, LTPDATA
- HOLD
  — LTP, LTPLTA, LTPMAN, LTPISDN, LTPDATA
- NEXT
  — LTP, LTPLTA, LTPMAN, LTPISDN, LTPDATA
- BSY
  — LTP
- RTS
  — LTP
- ALMSTAT
  — LTP
- PREFIX
  — LTP
- LEVEL
  — LTP
- FRLS
  — LTP

- FULLDN
  — LTP
- RLSCONN
  — LTPMAN
- SUSTATE
  — LTPMAN, LTPISDN, LTPDATA
- TEI
  — LTPISDN
- QLOOP
  — LTPISDN
- QLAYER (The QLAYER command is supported for layer 2. Layer 1 counters is not supported except for the ES FE peg which reflects the Performance Monitoring “Degraded” messages that are sent by the AN)
  — LTPISDN
- RLAYER
  — LTPISDN

The following list provides commands that are not supported at the LTP MAP level. Please note that no digital conference for lines monitoring is supported at this phase.

- LTP
  — DIAG, CKTLOC, LCO
- LTPLTA
  — MONLTA, TALKLTA, ORIG, LNTST, VDC, VAC, RES, CAP, LTA, BALNET, COIN, RING, GDTTST
- LTPMAN
  — LOSS, NOISE, TONEGEN, JACK, TSTRING, BAL, RLSCONN, CKTTST, SETLPBK
- LTPISDN
  — DCHCON, LTLOOPBK, DCHCON, TEST, TSTSGNLS, L1THRSH, L1BLMALM, QPHINFO, DCSIG, COLDST, SCUR, DET, THR, ALM, IMP, NSE, ILOSS
- LTPDATA
  — EQUIP, CONNECT, LOOPBK, BERT, BPVOS, BERTTIME, QL1PERF, RL1PERF, QLAYER2, RLAYER2

For the V5 MAP level, no new commands are added, but Incoming Start-to-Dial Delay (ISDD) C-channel is supported at this level and all the existing commands are supported. PM and Carrier levels of the MAP are not changed.

The response to CI commands QLEN and QLENWRK is changed to reflect the fact that no DCH is used. In other words, instead of:

```
`TEI     LTID     CS    PS BCH/ISG Bd'
```

the response for V5 lines is:

```
`TEI      LTID  CS    PS  BCH/V5'.
```

Data Schema Changes

The following sections describe the table changes implemented by this feature.

Table Control

A new line card has been created to identify the ISDN line as being on a V5 interface. This change is required since the line card is not locally accessible via maintenance and a Q3 interface is not yet supported on the DMS.

Datafill of a V5 interface and ISDN lines in Table Control is needed to accommodate the new line card type as well as identifying the ISDN communication channel over the V5 interface.

Table LTCINV

The change to this table supports the datafill of the KSETEX exec in LTCINV since ISDN lines require this exec lineup and are currently not allowed on the GPP.

An example of the datafill for this table follows:

```
TABLE: LTCINV

      LTCNAME
         ADNUM  FRTYPE FRNO SHPOS  FLOOR  ROW FRPOS  EQPEC     LOAD
                                                                  EXECTAB
                                                                 CSLNKTAB
                                                                  OPTCARD
       TONESET          PECS6X45
                                    E2LOAD
                                                                  OPTATTR
   PEC6X40                                              EXTINFO
-------------------------------------------------------------------------------
     GPP 0
          1      CGPP   0    18     0    E    3     MX85AA   GPPLOAD
                (      POTS POTSEX) (    KEYSET KSETEX) $
(1 0) (1 1) (1 2) (1 3) (1 4) (1 5) (1 6) (1 7) (1 8) (1 9) (1 10) (1 11)
(1 12) (1 13) (1 14) (1 15) $
                                         (UTR6 ) (MSGMX76 HOST) (ISP16)$

     AUS100 MX77AA MX77AA
                           BNK0NB03
                                                                       $
    6X40AC                          Y   CEXT 0  3  0  A  22  MX86AA  R
```

Table V5PROV

The change to this table supports a new C-path type - ISDD (ISDN C-channel for SAPI0).

An example of the datafil for this table follows:

```
       TABLE:  V5PROV
       V5PRID     TBCC
          CCHNLINF
      PROT1        PROT2                    LKMJALM
-------------------------------------------------------
  16     10
              (60123       1 16      (CTRL) (ISDD) $)
              (16452       3 16       (PSTN)            $)$
             (2)          (4 16) $        20
```

Table LNINV

A new V5BRI linecard has been added to the LNINV table to allow provisioning of GPP V5 ISDN lines. The V5BRI is a virtual linecard, needed to allow datafill of lines. The physical line card resides in the AN.

ISDN lines cannot be datafilled in table LNINV unless the AMC off which they reside has an ISDD C-channel defined. The same is true for PSTN lines.

Please note that the opposite direction is also checked. It is not possible to delete an ISDN C-channel from an AMC, unless there are no ISN lines defined for that AMC in table LNINV. The same is true for PSTN.

ISDN lines defined off a V5 interface (AMC) in table LNINV are moved to status ‘WORKING’. This is so even if the craftperson datafill the line as ‘HASU’.

An example of the datafil for this table follows:

```
TABLE: LNINV
TOP
LEN CARDCODE PADGRP   STATUS GND BNV MNO          CARDINFO
-----------------------------------------------------

HOST 00 0 00 01 V5BRI STDLN WORKING N NL N NIL
```

Table LTMAP

For V5.2, the parameter B1/B2 which was only valid for Bb channels is now also valid for V5.2 ISDN lines. This is because the AN has the capability of defining a B-channel as a permanent line (which is defined as a connection that goes from the AN and bypasses the LE) and, therefore, the GPP does not have access to this B channel. The B1/B2 parameter is used in order to specify on which B channel the call is set up. If no permanent line exists in the AN, this parameter is not used because the GPP has access to both B channels.

Log Message Changes

The logs for ISDN lines over V5 are the same as the logs for directly connected ISDN lines.The format has been changed to reflect the fact that the ISDN line uses V5 as opposed to a D-Channel Handler (DCH).

This feature modifies the following log reports:

- V5201
- ISDN100
- ISDN101
- ISDN102
- ISDN106
- ISDN107
- ISDN108
- ISDN109
- ISDN115
- ISDN116

The sections below illustrate each of the log reports mentioned above and the changes to the log report formats are emphasized with **bold font**.

V5201 (BCC request Rejected)

This log is generated when there is a BCC request rejection.

Two new reasons are added to indicate BCC request rejection. The reasons are related to ISDN protocol support over V5 interface.

```
CPM2AB                      V5201  APR23  11:56:155895  INFO   BCC
BCC request rejected.
Reason: Connection already present at the ISDN user port to
                    a different V5 time slot.
V5LINK No:          0      Channel7      V5id:  HOST   1      1
PORT:               GPP    3      P-Side Link5
LEN:                HOST   1      1      3      0      DN:    6216501
User port identification information element
FF FF FF FF
```

ISDN100 (Terminal Unavailable)

This log is generated when the V5 interface has detected that a terminal is unavailable for message traffic. The V5 interface name is added to the data displayed in the log.

```
CPM1B ISDN100 MAY13 12:41:33 7500 INFO Terminal Unavailable
V5I = REM1 00 1       LEN = REM1 00 1 5 2TEI = 86 EC = 0
LTID = ISDN           3
```

ISDN101 (Loop Unavailable)

This log indicates that the loop is not available for message traffic.

```
CPM1B ISDN101 MAY13 12:41:33 7500 FLT Loop Unavailable
V5I = REM1 00 1       LEN = REM100 1 5 2
```

ISDN102 (TEI Removed)

This log is generated when the V5 interface has detected a duplicated terminal endpoint identifier (TEI) on the same loop and has removed it from service.

```
CPM1B                  ISDN102 MAY13 12:41:33 7500 FLT TEI Removed
                     V5I = REM1 00 1LEN = REM1 00 1 5 2  TEI = 86
```

ISDN106 (D Chnl L1 Autonomous Failed)

This log is generated whenever Layer 1 of the specified D-channel fails and the fail flag is set.

```
CPM1B ISDN106 MAY13 12:41:33 7500 INFO D Chnl L1 Autonomous Failed
V5I = REM1 00 1       LEN = REM1 00 1 5 2    EC = 0
```

ISDN107 (TEI Autonomous Restore Failed)

This log is generated whenever a terminal endpoint identifier (TEI) fails to be restored by the system.

```
CPM1B ISDN107 MAY13 12:41:33 7500 FLT TEI Autonomous Restore Failed
V5I = REM1 00 1       LEN = REM1 00 1 5 2   TEI = 86
```

ISDN108 (TEI Autonomous Restored)

This log is generated whenever a terminal endpoint identifier (TEI) restored by the system.

```
CPM1B ISDN108 MAY13 12:41:33 7500 INFO TEI Autonomous Restored
V5I = REM1 00 1       LEN = REM1 00 1 5 2   TEI = 86
```

ISDN109 (D Chnl L1 Autonomous Restore)

This log is generated whenever Layer 1 of the specified D-channel is restored and the fail flag is cleared.

```
CPM1B ISDN109 MAY13 12:41:33 7500 INFO D Chnl L1 Autonomous Restored
V5I = REM1 00 1       LEN = REM1 00 1 5 2
```

ISDN115 (Subscription limits exceeded)

This log is generated whenever the Subscription Counters that represent the maximum allowable links for a specific set of terminal endpoint identifier (TEI) values would be exceeded by the attempted TEI assignment.

```
CPM1B ISDN115 MAY13 12:41:33 7500 INFO Subscription limits exceeded
V5I = REM1 00 1       LEN = REM1 00 1 5 2     TEI = 86    nd 1   SC = 8
```

ISDN116 (TEI has not been assigned)

This log is generated when the action identifier is a TEI value that has not previously been assigned to a terminal on the loop.

```
CPM1B ISDN116 MAY13 12:41:33 7500 INFO TEI has not been assigned
V5I = REM1 00 1       LEN = REM1 00 1 5 2   TEI = 86
```

OM Changes

All existing OMs for ISDN are supported. Naming of these OMs is different owing to the fact that the existing OM group is based on the DCH.

This feature creates one new OM group: V5BRA (V5 ISDN Basic Rate Access).

This OM group provides information concerning V5 ISDN D-channels so that the operating company administrators can verify normal transit of information (frames) on the links between the AN and the NT1. V5BRA provides one tuple for each V5 interface defined in table GPPTRNSL.

This group contains 15 types of registers which count the following BRA D-channel events:

- Two registers which count the number of received and transmitted SAPI 0 frames
- Two registers which count the number of received and transmitted SAPI 16 frames
- Two registers which count the number of received and transmitted SAPI 63 frames
- One register which counts the number of frames which were received with CRC errors
- One register which counts the number of frames which were discarded
- One register which counts the number of frames to be transmitted that were discarded
- Two registers which count the number of link resets by an V5 interface/Far-end-device (peer)
- Two registers which count the number of received and transmitted reject frames
- Two registers which count the number of received and transmitted RNR (Receiver Not Ready) frames

The new register names and descriptions are:

- VbRtxdsc
  — Number of frames to be transmitted that were discarded
- VbRcrc
  — Number of frames received with CRC errors
- VbRrxdsc
  — Number of frames received which were discarded
- Vbrs0tx
  — Number of SAPI0 frames transmitted
- Vbrs16tx
  — Number of SAPI16 frames transmitted

- Vbrsatx
  — Number of SAPI63 frames transmitted
- Vbrs0rx
  — Number of SAPI0 frames received
- Vbrs16rx
  — Number of SAPI16 frames received
- Vbrsarx
  — Number of SAPI63 frames received
- Vbrlkrei
  — Number of link resets by the V5 interface
- Vbrlkrep
  — Number of link resets by the peer
- Vbrrnri
  — Number of RNR (Receiver-not-ready) frames sent to the V5 interface
- Vbrrnrp
  — Number of RNR frames sent to the peer
- Vbrrejtx
  — Number of reject frames transmitted
- Vbrrejrx
  — Number of received reject frames

OMSHOW Example

```
>omshow V5BRA active
V5BRA

CLASS:   ACTIVE
START:1996/05/07 18:30:00 SUN; STOP: 1995/05/07 18:35:06 SUN;
SLOWSAMPLES:          7 ; FASTSAMPLES: 40 ;

       KEY (V5BRA_OMTYPE)
       INFO (V5BRA_OMINFO)
VBRTXDSC           VBRCRC         VBRRXDSC         VBRS0TX
VBRS16TX           VBRSATX        VBRS0RX          VBRS16RX
VBRSARX            VBRLKREI       VBRLKREP         VBRRNRI
VBRRNRP            VBRREJTX       VBRREJRX

                      0
RMV5 01 0
                      0      0      0      0
                      0      0      0      0
                      0      0      0      0
                      0      0      0

                      1
RMV5 02 0
                      0      0      0      0
                      0      0      0      0
                      0      0      0      0
                      0      0      0
```

Service Order

The servord support for the datafill of V5 ISDN lines is minimal. From a functional perspective, there are no differences between provisioning a direct access ISDN BRI line and an ISDN BRI line over V5.2.

AMA Changes

NONE

Notes

The GPP shelf consists of the following basic functional blocks:

- Power Supply - MX72AA
- Main Controller UP - MX77AA
- Matrix - MX75AA
- Signalling Processor - MX73AA/AB
- PCM-30 link interface for the P_Side - MX82AA
- DS512 interface for the C-side - NT6X40FA and NT6X40GA Paddleboard, or DS30 interface for C-Side - NT6X40AC
- Extension Interface - MX79AA
- Message Tone Generator & CSM service - MX76BA
- Universal Tone Receiver (UTR) - NT6X92CA

- CLASS Message Resource (CMR) - NT6X78AB
- Enhanced ISDN Pre-Processor (EISP) - NTBX01AC

Alarms

A new CCS V5 alarm for ISDN datalink failure indication has been created.

Interactions

This Activity is actually comprised of the following individual activities, one per DRU:

- AF6458 - ETSI V5.2 SUPPORT FOR UK - PHASE 2:ISDN/BRI (XPM part)
- AF6537 - ETSI V5.2 SUPPORT FOR UK - PHASE 2:ISDN/BRI (WT part)
- AF6598 - ETSI V5.2 SUPPORT FOR UK - PHASE 2:ISDN/BRI (CCM part)
- AF6911 - ETSI V5.2 SUPPORT FOR UK - PHASE 2:ISDN/BRI (TL part)
- AF6597 - ETSI V5.2 SUPPORT FOR UK - PHASE 2:ISDN/BRI (CEU Part)
- AF6988 - ETSI V5.2 SUPPORT FOR UK - PHASE 2:ISDN/BRI (SHR Part)

Restrictions/Limitations

Interworking

Verification of interworking to and from ISDN BRA access over a V5 interface with all existing supported interworkings will remain the same as with direct ISDN BRA access (via Enhanced ISDN Line Concentrating Module (LCME) or Shared Resource Unit (SRU)).

An ISDN line using V5 appears no different from a call processing point of view, and as such interworks with all required interfaces of the target market.

A V5 ISDN line interworks to:

- V5.2 Line
- LCM line
- Match Enable Latch (MEL) CAS (loop start) line
- MEL CAS (DC5A) line
- UCD line
- ACD
- ANSI ISUP trunk
- ETSI ISUP Trunk
- BTUP trunk
- SMDI trunk
- TS-14 (PRI) trunk
- DC5 (DDI Service) trunk
- DPNSS trunk

- ETSI PRI trunk
- DFT Trunk
- DASS2
- AISUP Trunk
- ATUP Trunk

Services

Verification of support for all existing and forthcoming ISDN services not requiring Layer 2 changes.

All ISDN services that are currently supported on the DMS as of EUR006 are supported by this feature. These include:

- CLIP – Connected Line Identification Presentation
- CLIR – Connected Line Identification Restriction
- DDI – Direct Dial Incoming
- MSN – Multiple Subscriber Number
- AOC-E – Advice of Charge - End of Call
- AOC-D – Advice of Charge - D
- CCBS – Call Completion to Busy Subscriber
- MCID – Malicious Call ID
- CUG – Closed User Group
- SUB – Subaddressing
- PCOS – Priority Class of Service (non-ETSI, German Specific)
- 110/112 – non-ETSI, German Specific
- Line Hunting – Line Hunting (non-ETSI, German Specific)
- CW – Call Waiting
- CH – Call Hold
- CFU/CFB/CFNR – Call Forwarding
- DNDB – non-ETSI, German Specific

All Supplementary services that have no layer 2 specific interactions are supported as they are fully transparent to V5.

Basic ISDN services supported are: Speech, 3.1 Khz, and 64kHz unrestricted bearer capabilities as well as 2*B (i.e., 128 kHz) channel support (see limitations).

ISDN Teleservices to be supported include Group 2/3 Fax and Group 4 fax.

Two terminals per loop are initially supported since the DMS100E does not have the capability to support 8 terminals per loop.

TEI 0 (BRI Point to point) is supported.

V5 SWACT and ONP

Upgrading ISDN onto V5.2 PSTN results in the node being out of service due to the static data updates required, as well as the link initializations that must take place.

OA&M

- Line provisioning and maintenance are performed separately for the LE (GPP peripheral) and AN.
- The maximum number of message channels (C-channels) that can be declared per V5.2 interface is 4 (2 active and 2 backup).
- ISDN and PSTN lines on the same V5 interface can not have the same L3 Addresses.
- Only one ISDD C-channel can be declared

Datafill rules for table V5PROV:

- PROT2 is mandatory if PSTN or ISDD is not on the same C-channel as the CTRL, and more than one link exists
- PROT2 can not be declared on the same link as the PSTN/ISDD C-channels unless the PSTN/ISDD protocols exist in the same C-channel as the CTRL C-channel.

ISDN Services

- Multiple BRA channel allocation (128Kb/s) is not supported unless the customer equipment supports this by setting up 2 simultaneous calls.
- Semipermanent leased lines (PICS reference N32) is not supported.
- Pre-connected Bearer Channel (PICS reference N33) is not supported
- All ISDN PRI is not supported
- Packet Data is not supported
- All MOU1 and MOU2 features that have not been developed, or that are being developed in the same time frame as the V5 ISDN development is not supported unless they are transparent to the V5 protocol.
- The Override capability option defined in ETS 300-347-1 (Annex E.3.3) for ISDN lines is not supported.
- Layer 1 is not deactivated at the end of each ISDN call. The Layer 1 is automatically established by the telephone and NT1 and remains up permanently.
- The Continuity test defined in ETS 300-324-1 (Annex C 1) is not supported because this is only relevant for ISDN lines that support L1 deactivation at the end of each call.
- 8 TEIs per loop are not supported. The V5 design has taken into account the future support of 8 TEIs per loop, but the application does not exist to support this.
- Only functional ISDN lines are supported. Meridian Feature Transparency (MFT) lines are not supported.

Miscellaneous

- A maximum of 2048 lines are available for each V5.2 interface.
- A maximum of 8 ANs can be declared per GPP shelf.

- The total number of lines supported on a single GPP shelf is 6400 assuming that traffic allows this number.
- A maximum of 480 ISDN Lines are supported. (This is a base ISDN limitation). This number may be less depending on traffic and configuration. See SEB for more detail.
- DESPS 030-54/1 from Nov. 1996 - Not supported (these are Centrex features).

LAYER		SW-LATER
CEU 08		
		APPLICATION
ACTID	FEATURE TITLE	DCME
AJ4442	DCME Support for DMS100E	

Description

This feature provides Digital Circuit Multiplication Equipment (DCME) support on the DMS100E using the Q.50 protocol over TS16 of a PCM30 carrier.

It provides an interface between DMS100E and external DCME using Time Slot - 16 (TS16) of PCM30 multiframes conforming to CCITT Rec. Q.50 Annex A (***NOTE:*** Q.50 Annex B is not supported). Control is provided for DMS-DCME signalling over this interface to support call processing for European Telecommunications Standards Institute (ETSI) ISDN User Part (ISUP) interfaces. Bearer service selection and dynamic load control is included.

DCME reduces the bandwidth required to transmit digital-encoded speech by concentrating a number of outgoing digital trunks onto a fewer number of transmission channels between DCMEs. The ratio of active calls on trunks interfacing to a DCME to the number of transmission channels between DCMEs is termed the DCME gain.

This feature provides the signalling needed to allocate transmission resources on a per call basis.

Command Changes

The following new MAP levels are added by this feature:

- EQUIP level for external (EXT) devices control.
- DCME sub-level under EQUIP for DCME control.
- XDCME sub-level of the TTP level.

Three new software alarms are introduced to indicate fault condition with external equipment interfacing to the DMS. (See the ALARMS section of this feature.)

Data Schema Changes

- This feature introduces the following Data Schema changes:
- DCME option is added to table TRKSGRP for C7UP signalling selector.
- New tables added for this feature:
  - — DCME Inventory (DCMEINV).
  - — DCME Maintenance (DCMEMTC).

Trunk Subgroup Table

A DCME option is added to the options list available for C7UP signalling data selector refinement in table TRKSGRP, for outgoing (OG) and two-way (2W) trunk directions.

The DCME option is allowed to be added or removed only when there are no trunk members datafilled for the trunkgroups.

DCME Inventory Table

Table DCMEINV contains the inventory of DCMEs interfacing to a DMS office. It lists the following information per DCME:

- DCME Name (12 alphanumeric characters)
  - — Up to 2048 DCMEs may be identified with names.
- Maintenance Parameters (parameters set name)
  - — The maintenance parameters set to be applied to this DCME. It uses this field to index in DCMEMTC.
- C-Side Link Table (vector 0 to 9)

Up to ten PCM30 links to each DCME are supported. Each link interfacing to the DCME is described by:

- Link Number
- Peripheral Module Type, only PDTC
- Digital Equipment Number (0 to 511).
- Digital Equipment Circuit Number (0 to 15).
- Signalling Bits (AB, CD or None)

This table indicates which of AB or CD bits of the signalling timeslot (TS16) on the PCM30 multiframe are used for DMS-DCME signalling. The NONE value is currently not supported.

- Transmission Resource Management (Y or N)
  - — Indicates if TRM signals are supported on this DCME link.
- Maintenance Signals (Y or N)
  - — Indicates if maintenance requests from this DCME link will be acknowledged. If TRM is set to N this field must also be set to N.

Only PDTC peripherals are currently supported.

An example entry in table DCMEINV is:

```
DCMENNAME MTCPARM LINK NO CSLINKTAB
-------------------------------------------------------------------------
DCME1                                          DCME1234 (                  0
PDTC 4 0 AB Y Y) $
```

The conditions related to carrier states and the presence of trunks for changing datafill in table DCMEINV are listed below are to be done according to the datafill sequence.

Datafill Sequence

Trunk members on trunkgroups with ‘DCME’ option set in TRKSGRP (see above) are datafilled after table DCMEINV.

Datafilling of table DCMEINV will be denied if:

- The PDTC’s carriers are not OFFL;
- Carriers are not CAS signalling type (in LTCPSINV/CARRMTC);
- The Maintenance parameter used for MTCPARM cannot be found in Table DCMEMTC;
- Field MTC is not set to ‘N’ if field TRM is set to ‘N’.

DCME Maintenance Table

Certain DCME operational parameters are modifiable depending on the office requirements. Table DCMEMTC allows having different configurations of these parameters and naming them so that they may be referenced in table DCMEINV. In this way the maintenance and operation of each DCME may be customized.

Each entry in table DCMEMTC contains:

- Parameter Set Name
  - — A name given to the set of parameters, used in DCMEINV.
- Minor Alarm circuits (1 to 300)
  - — The number of trunks on DCME for which Channel Out of Service or Spare signals must be exceeded before the Minor external Equipment Alarm is raised.
- Major Alarm circuits (1 to 300)
  - — The number of trunks on DCME for which Channel Out of Service or Spare signals must be exceeded before the Major external Equipment Alarm is raised.
- Critical Alarm circuits (1 to 300)
  - — The number of trunks on DCME for which Channel Out of Service or Spare signals must be exceeded before the Critical external Equipment Alarm is raised.
- OM Parameter Threshold
  - — This is the threshold for the number of times bearer services can reach capacity before a log is generated.
- DCME Signal Recognition Time (20ms or 40ms)
  - — General recognition time for DCME signals.
- Bearer Service Acknowledge Time-out (50 to 250 1/100 sec.)
  - — The time DMS waits for DCME acknowledgment of a bearer service request, or the time a'spare' signal must remain while DMS is waiting for the acknowledgment before an error is assumed.
- Spare Signal Recognition Time (50 to 250 1/100 sec)
  - — The time applied before a'Spare' signal is recognized for all other cases.

- Acknowledgment of 3.1 kHz bearer service requests
  - — Whether the DCME supports signalling for 3.1 kHz bearer service, or if it distinguishes that the call is treated as a speech.

A'default' entry is created automatically in this table. It can be modified but not removed.

The ‘default’ tuple created automatically in table DCMEMTC is:

```
PARMSET MINALCT MAJALCT CRITALCT OMTHRESH SIGREC BEARACK SPARSIG ACK3K1
-------------------------------------------------------------------------
DEFAULT 100     150      200      500      SR20     200     200   N
```

Operation of Links to DCME

Tables DCMEINV and DCMEMTC must be datafilled after the carriers concerned have been equipped (i.e. tables LTCINV, LTCPSINV and CARRMTC must be datafilled). Before changes are made to a carrier or PDTC (i.e. tables LTCINV or LTCPSINV) referenced in table DCMEINV, the DCME datafill is removed from DCMEINV. TRM signals are monitored once each carrier is brought into service. BSS signals are monitored when each trunk is brought into service.

Carriers concerned are checked to be in OFFL (off-line) or MANB (Manual Busy) state before they are allowed to be added to DCMEINV.

Trunk members on DCME carriers are datafilled after table DCMEINV, and after the DCME option is added to TRKSGRP. Up to 16 trunkgroups are supported on each DCME.

The following checks are performed when datafilling trunk members with DCME option set in TRKSGRP:

- The trunk is on a carrier datafilled in DCMEINV.
- The trunk is on the same DCME as the previous members in the group.
- The maximum number of trunkgroups have not already been datafilled on the DCME.

External Equipment Alarms and DCME States

Three software alarms are introduced using table SFWALARM to indicate faults with external equipment interfacing to the DMS, e.g. DCME. (see the Alarms section of this feature for further information.)

DCME and Trunk Maintenance

Monitoring of DCMEs and maintenance of trunks interfacing to DCMEs are provided by two levels of the MAPCI:

- DCME Level of the External alarms (EXT -> EQUIP -> DCME) level
  - — This level is used to monitor the state of the DCME and its associated alarms.
- XDCME Level of TTP
  - — This level is used to manually maintain trunks interfacing to the DCME.

The Carrier level of the MAPCI may be used without change to maintain carriers interfacing to DCMEs.

An OM group and LOG for DCME is also provided.

Log Message Changes

This feature implements the following LOG changes:

- NWM111 information log report for group controls is supported for BSSKIP control.
- DCME100 is generated when DCME state is changed.
- DCME101 is generated when a maintenance release request is received from a DCME where maintenance is not supported (MTC field is set to ‘N(o)’ in table DCMEINV).
- DCME102 is generated when a spare bit pattern (000) is received in signalling bits 5, 7 & 8 of TS16 for frame 0 of PCM30 multiframe.
- DCME103 is generated after Bearer Service Request has been sent to the DCME and no acknowledgment has been received within the timeout specified in table DCMEMTC for the DCME.
- DCME104 is generated when there is a change in TS16 signalling channel from the DCME.
- DCME105 is generated when the OMs peg count which is incremented every time a call is rerouted when BS control is active.
- DCME106 is generated if monitoring at XDCME sublevel of the TTP is aborted due to a fault.

OM Changes

A BSSKIP register is used in the Network Management Trunk Group Count (NWMTGCNT) OM group, to count the number of times a reroute is required.

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

The following three new software alarms are introduced in table SFWALARM to indicate fault condition with external equipment interfacing to the DMS. Each of these alarms occur when the DCME Status is ISTB.

- MINEQUIP (Minor External Equipment Alarm)
  - — Channel out of Service or Spare signal exceed Number of circuits datafilled in DCMEMTC for minor alarm.
- MAJEQUIP (Major External Equipment Alarm)
  - — Channel out of Service or Spare signal exceed Number of circuits datafilled in DCMEMTC for major alarm.
- CRTEQUIP (Critical External Equipment Alarm)
  - — Channel out of Service or Spare signal exceed Number of circuits datafilled in DCMEMTC for critical alarm.

Interactions

NONE

Restrictions/Limitations

Interworkings

The interworkings that DCME for DMS100E supports are:

- PRI -> ETSI ISUP - does not reroute.
- ETSI ISUP -> ETSI ISUP - does not reroute.

General

- Only PDTC peripherals are currently supported.
- Control is provided for DMS-DCME signalling to support call processing for ETSI ISUP
- This feature does not support Annex B of CCITT Q.50.

Tables LTCINV and LTCPSINV

The following restrictions are placed on the changing of datafill in the tables LTCINV and LTCPSINV:

- A PDTC is not deleted from table LTCINV while it is referenced in table DCMEINV.
- The signalling type of a carrier is not changed from CAS in the table LTCPSINV while it is referenced in table DCMEINV.

The table control code for LTCINV and LTCPSINV does not check for DCMEs, and if these tables are altered as detailed above without removing the DCME first, then data corruption occurs.

Trunk Groups

The following restrictions are placed on datafill of trunk groups:

- A trunk group cannot contain a mix of DCME and non-DCME trunks.

- Members of a DCME trunk group must all connect to the same DCME. However, more than one trunk group has members connected to the same DCME.
- A maximum of 16 trunkgroups are supported on each DCME.

CCS Carriers

To provide the required signalling between DCME and DMS, it is necessary to use the frame structure for channel associated signalling, even in the case of voice frequency and common channel signalling systems. Any carrier interfacing to DCME must, therefore, be datafilled as type CAS in table LTCPSINV to allow using TS16 for scanning.

This implies TS16 of the PCM30 carriers interfacing to the DCME are not available for speech. Additionally, common channel signalling links of System No. 6 and 7 must use a time slot other than number 16. These requirements are checked when datafilling table TRKMEM.

Signalling Systems and Bearer Service Requirements

This feature provides call processing support for control of DCME equipment on ETSI ISUP.

Echo Cancellers

It is possible to use echo cancellers alongside DCME. It is worth noting that if table DCMEINV is datafilled to use bits A and B and table ECHCONF tries to access the same bits, a verification process takes place to inform ECHCONF to use bits C and D.

LAYER		SW-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	NMS TCAP
AF6608	Sourcing of Patches REF28 and FPA28	

Description

This feature involves two functionalities: 10-digit GTT and LCC monitor utility.

Allow NMS TCAP to use 10-digit GTT

Patch RER28 allows Network Message Service (NMS) Transaction Capability Application Party (TCAP) using Global Title Translations (GTT) to deliver 10 digits in the address indicator field to the Signal Transfer Point (STP). This is according to the concept of SPLITNXX option in table SLLNKDEV.

Previously NMS TCAP using GTT delivered only 6 digits to the STP in the address indicator field. The 6-digit delivery created ambiguity in routing the calls to directory numbers (DN) whose NPA-NXX combination existed in more than one host office other than the Simplified Message Desk Interface (SMDI) host office. This functionality removes the ambiguity by delivering 10 digits which are the NPA-NXX-XXXX to the STP.

LCC Monitor Utility

Patch FPA28 counts the number of lines with a particular line class code (LCC) for each of the currently available LCCs in the switch. It provides utilities to update the count of lines in the switch and to print this count. This information is used for billing purposes.

Depending upon the display command entered by the user, the following counts are displayed:

- all LCCs with a specified type of line commissioned on the switch
- all LCCs without a specified type of line commissioned on the switch
- all LCCs with at least one line of specified type commissioned on the switch

Command Changes

Sourcing of Patches RER28 and FPA29 adds the following new commands:

- MONLCC (in directory PROGDIR) – invokes the LCC count tool
- COUNT (in directory CINDIR) – resets the counters to zero and counts the LCCs
- DISP (in directory CINDIR) – displays the number of all types of LCCs
- QUIT (in directory CINDIR) – stops the monlcc increment

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

The LCC count tool lists the number of lines of the different types of LCCs that are commissioned in the switch. This information is then used for billing purposes.

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

Sourcing of Patches RER28 and FPA28 does not provide the end user with the flexibility of changing the GTT digits as desired since it is set to 10 digits.

LAYER		SW-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6632	ISDN Parameter Downloading – Feature Processing Environment (FPE) and Messaging	

Description

ISDN parameter downloading (PD) permits the ISDN terminal to send a register message to trigger the DMS-100 switch to program the ISDN terminal for the user. This is done by sending operating information, such as service information and directory number (DN) data, to the terminal in a series of facility messages.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

This feature generates the Parameter Downloading Abnormality log, log ISDN302, for each abnormality that prevents the normal completion of PD.

The ISDN302 is generated under the following conditions:

- The XPM receives a PD request from the terminal through a REGISTER message. Before the REGISTER message (i.e. SCP_X_Originate_Msg with the PDL_Start_Event) is sent to the CM to indicate a PD request has been received, the Extended Peripheral Module (XPM) determines some kind of initial error has occurred. The XPM sends a RELEASE_COMPLETE message (i.e. SCP_X_Feature_Msg message with a PDL_Log_Event) with the specific error that has occurred. Upon receiving this message from the XPM the FPE determines what error has occurred and produces the ISDN302 Log.
- The XPM receives a PD request from the terminal and no error has occurred. The XPM sends a REGISTER message (i.e. SCP_X_Originate_Msg with the PDL_Start_Event) to the CM to request downloading. The CM begins gathering the data (either DNI or DND) to be downloaded. If an error occurs while the CM attempts to retrieve the data, the CM generates the ISDN302 Log with the error condition and sends a RELEASE_COMPLETE message (i.e. SCP_C_Feature_Msg with an PDL_Abort_Event) to the XPM.

- The XPM receives a PD request from the terminal and no error has occurred. The XPM sends a REGISTER message (i.e. SCP_X_Originate_Msg with the PDL_Start_Event) to the CM indicating PD is required. The CM was able to gather the data (DNI or DND) and downloads it to the XPM. If the XPM detects an error with any of the data that is downloaded, it sends a RELEASE_COMPLETE message (i.e. SCP_X_Feature_Msg with an PDL_Release_Event) with the specific error that has occurred to the CM. Upon receiving this message from the XPM the FPE determines what error has occurred and produce the ISDN302 Log.
- The XPM receives a PD request from the terminal and no error has occurred. The XPM sends a REGISTER message (i.e. SCP_X_Originate_Msg with the PDL_Start_Event) to the CM indicating PD is required. The CM was able to gather the data (DNI and DND) and downloads it to the XPM. The XPM begins downloading the data to the terminal. The terminal detects an error with the data that was downloaded. The terminal sends a RELEASE_COMPLETE message to the XPM. The XPM determines the error that occurred and sends a RELEASE_COMPLETE message (i.e. SCP_X_Feature_Msg with an PDL_Release_Event) with the specific error that has occurred to the CM. Upon receiving this message from the XPM the FPE determines what error has occurred and produce the ISDN302 Log.

Log report: ISDN302

A typical example of log report ISDN302 is:

```
ISDN302 APR20 01:03:40 4833 INFO Parameter Downloading Abnormality
LEN = HOST 10 1 00 03
SPID = N/A
SOURCE: XPM                   CAUSE        :      ROSE Reject Invoke Error
ANALYSIS DATA: Mistyped Argument
ERROR DETAIL: 02 02 31 32 AC 08 82
```

OM Changes

This feature provides three additional OMs. These OMs are found in the PDATTMPT, PDFAILRE, and PDCOMPLT registers of the ISDNPDOM OM group. The OMs record the total number of downloading attempts, downloading completions, and downloading failures that occur on a per switch basis.

New OM Group: ISDNPDOM

This group of Parameter Downloading (PD) OMs is based on Bellcore TR-001281 (requirement (R)3-73). These OMs allow comparisons to be made between Service Profile Management (SPM) (a DMS-100 proprietary downloading feature) and PD. ISDNPDOM is used to implement Parameter Downloading OMs.

OM group ISDNPDOM counts the number of Download Attempts, Download Failures, and Download Completions that occur on a per switch basis.

OMSHOW example

```
OMSHOW isdnpdom active
ISDNPDOM
CLASS: ACTIVE
START:1996/10/29 16:00:00 THU;STOP: 1996/10/29 16:07:07 THU;
SLOWSAMPLES:                    4 ; FASTSAMPLES:      40 ;
PDATTMPT                        PDFAILRE              PDCOMPLT
0                               0                     0
```

New Register: PDATTMPT

According to (R)3-73 in TR-NWT-001281, PDATTMPT measures the number of parameter download attempts on a per switch basis. A PD Attempt is defined as the receipt by the switch of a REGISTER message for which the APDU can be decoded at least to the point of identifying that downloading was requested. If a REGISTER message is received by the Extended Peripheral Module (XPM) from the terminal, the XPM determines if the APDU associated with the REGISTER message is able to be decoded for Parameter Downloading (PD) and if it is decodeable a PD Attempt OM is pegged under the following conditions:

- The XPM sends a SCP_X_Feature_Msg with a PDL_Release_Event to the CM. The CM pegs the PDATTMPT register. Error numbers 1, 3, 4, and #20-40.
- The CM sends a SCP_C_Feature_Msg with a PDL_Abort_Event to the XPM. The CM pegs the PDATTMPT register. Error numbers 18 and 19.
- The XPM sends a SCP_X_Feature_Msg message with a PDL_Log_Event to the CM to indicate that a PD request was received from the terminal and an error has occurred. The CM determines the error that occurred. If the error was not an error such that the APDU was not decoded, then the CM pegs the PDATTMPT register.

New Register: PDFAILRE

According to (R)3-73 in TR-NWT-001281, PDFAILRE measures the number of failures of parameter download requests on a per switch basis. A PD Failure is defined as the receipt of an error other than the error event report from the XPM or the terminal. If a valid Parameter Downloading (PD) request has been received and processed and an error has been detected in the process by either the Extended Peripheral Module (XPM) or the Computing Module (CM), the PDFAILRE OM is incremented by the CM. The ISDN302 Log is also generated each time this OM is pegged. A PD Failure OM is pegged under the following conditions:

- The XPM sends a SCP_X_Feature_Msg with a PDL_Release_Event to the CM and indicates that an error has occurred. If the error was not a resource limitation error or an error event report then the CM pegs the PDFAILRE register. Error numbers 1, 4, 20-22, 30-34, 36-40.

- The XPM sends a SCP_X_Feature_Msg with a PDL_Log_Event to the CM and indicates that an error has occurred. The CM pegs the PDFAILRE register. Error numbers 2, 5-16.
- If the CM encounters problems in gathering the data to be downloaded. The CM sends a SCP_C_Feature_Msg with a PDL_Abort_Event to the XPM and pegs the PDFAILRE register. Error numbers 18 and 19.

Each time the PDFAILRE OM is pegged the ISDN302 Log will be generated to communicate the error that has occurred.

New Register: PDCOMPLT

According to (R)3-73 in TR-NWT-001281, PDCOMPLT measures the number of parameter download completions on a per switch basis. A PD Completion is defined as when the switch receives a to be the sending of the end of data indication (RELease COMplete) and receipt of a success or error event report from the terminal. A PD Completion is pegged under the following conditions:

- The XPM receives a RELease COMplete message from the terminal that has no errors. The XPM sends a SCP_X_Feature_Msg with a PDL_Release_Event to the CM with no errors. The CM pegs the PDCOMPLT register.
- The XPM receives a RELease COMplete message from the terminal that has a success report. The XPM sends a SCP_X_Feature_Msg with a PDL_Release_Event to the CM with a success report. The CM pegs the PDCOMPLT register.
- The XPM receives a RELease COMplete message from the terminal that has an error. The XPM sends a SCP_X_Feature_Msg with a PDL_Release_Event to the CM and indicates an error occurred. If the CM determines that the error that has occurred is an error event report then the CM pegs the PDCOMPLT register. Error numbers 3 and 23-29.

Service Order

The following paragraphs describe new Service Order Data Entry for ISDN Parameter Downloading – FPE and Messaging:

Number of Directory Number appearances (NDNAP) – The NDNAP is the number of DN appearances requested by an end user.

Directory Number Appearance Identifier (DNAI) – The DNAI identifies the key location of the directory number on the terminal set.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Since DMS-100 switches are required to perform downloading of parameters independently of call processing, the DMS-100 switch places the terminal in a call processing busy state while doing the download. This precludes interacting with call handling and other feature interactions.

The average processing time for call processing requests occurring during downloading requests is required not to increase more than 5% over the average processing time when no downloads are being processed. The DMS-100 switch shall process and complete 90% of the download request in less than 10 seconds. For switch architectures in which all the resources used by call processing and parameter downloading are the same, downloading is required not to use up more than 5% of the resources under conditions where call processing requests may be delayed or rejected. This requirement is required to be met, while at the same time meeting the requirements for response time and volume of requests.

If Call Forwarding is active on an ISDN terminal when a download occurs, the forwarding works as follows:

- Call Forward Busy, if active, will continue to forward calls.
- Call Forward No Answer will not forward calls because the terminal is busy.
- Call Forward Variable will continue to forward calls.
- Message waiting works with either Call Forward Busy or Call Forward No Answer; therefore, it will continue to operate only in busy cases.

Restrictions/Limitations

The following limitations and restrictions apply to ISDN Parameter Downloading – FPE and Messaging:

- Call processing is not available during parameter downloading.
- Parameter Downloading is implemented only for NI-2 terminals.
- Terminal must be a fully initialized terminal (FIT).

LAYER		SW-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ACC
AF6756	Automatic Congestion Control	

Description

Automatic Congestion Control (ACC) maximizes call completions by dynamically regulating traffic in the network to levels that can be handled most efficiently.

Dynamic overload control (DOC) is a network management system that handles heavy traffic during overload conditions. The congested switch alerts connecting switches of the varying levels of congestion by transmitting congestion level signals through Common Channel Signaling System #7 (CCS7).

When a switch becomes congested, all connecting switches are notified of the congestion through CCS7 messages. The distributed data manager (DDM) is used to send the congestion status message to all digital trunk controllers for SS7 trunks (DTC7) on the switch. This congestion status message is used to tell the digital trunk controller (DTC) when the computing module (CM) is congested. The congestion status message can have the values CL0, CL1 and CL2, where CL0 means uncongested. The congestion status message is only sent to DTC7s at return to service (RTS) time or on a change of state of congestion in the CM, for example, from uncongested to CL1 to CL2 to CL1 and back to uncongested.

Command Changes

NONE

Data Schema Changes

ACC adds two new office parameters:

- Office parameter INHIBIT_AUTO_CONGESTION_CNTRL is added to table OFCVAR. This parameter is used to block the sending of the ISDN User Part Release message (ISUP REL) automatic congestion level (ACL) parameter on an office-wide basis.
- Office parameter SS7_CONGESTION_CONTROL_TIME is placed in table OFCENG. This parameter is used to indicate the amount of time that it takes to deactivate the ACC network management (NWM) preplan controls.

ACC also adds two new option fields. INHIBITACC and DONTSENDACL are added to table ADJNODE.

- Option INHIBITACL is used to block the processing of the ACL parameter on a node level. This option is applied to the switch that receives the ACL parameters from the CCS7 network.
- Option DONTSENDACL is used to control when the ACL parameter is populated in the ISUP REL message in the congested office.

In addition, ACC uses existing NWM table control, which involves the use of tables NWMPPLN, CCS7PPLN, PREPLANS, NWMIDOC, and ISUPDEST.

Changed table: ADJNODE

The craftsperson populates INHIBITACL and DONTSENDACL in table ADJNODE.

The following are examples of changing table ADJNODE.

- Changing DONTSENDACL in table ADJNODE

```
CI:
>table adjnode
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ADJNODE
>pos node1
                  NODE1   ISUP    DMS
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SIGDATA: ISUP
>
PRODUCT: DMS
>
OPTIONS:
>DONTSENDACL
OPTIONS:
>$
WARNING: EACH MEMBER OF TRUNK GROUP MUST BE BSY/RTS
                          FOR OPTION DONTSENDACL TO TAKE EFFECT.
TUPLE TO BE CHANGED:
                  NODE1   ISUP    DMS     ( DONTSENDACL)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
WARNING: EACH MEMBER OF TRUNK GROUP MUST BE BSY/RTS
                          FOR OPTION DONTSENDACL TO TAKE EFFECT.
TUPLE CHANGED
```

- Adding DONTSENDACL to table ADJNODE

```
CI:
>table adjnode
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ADJNODE
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
ADJNODEK:
>node2
SIGDATA:
>isup
PRODUCT:
>dms
OPTIONS:
>DONTSENDACL
OPTIONS:
>$
WARNING: EACH MEMBER OF TRUNK GROUP MUST BE BSY/RTS
                          FOR OPTION DONTSENDACL TO TAKE EFFECT.
TUPLE TO BE ADDED:
                   NODE2   ISUP    DMS     ( DONTSENDACL)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
WARNING: EACH MEMBER OF TRUNK GROUP MUST BE BSY/RTS
                          FOR OPTION DONTSENDACL TO TAKE EFFECT.
TUPLE ADDED
```

- Changing INHIBITACL in table ADJNODE

```
CI:
>table adjnode
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ADJNODE
>pos node1
                   NODE1   ISUP    DMS
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SIGDATA: ISUP
>
PRODUCT: DMS
>
OPTIONS:
>INHIBITACL
OPTIONS:
>$
TUPLE TO BE CHANGED:
                   NODE1   ISUP    DMS     ( INHIBITACL)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
```

- Adding INHIBITACL to table ADJNODE

```
CI:
>table adjnode
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ADJNODE
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
ADJNODEK:
>node2
SIGDATA:
>isup
PRODUCT:
>dms
OPTIONS:
>INHIBITACL
OPTIONS:
>$
TUPLE TO BE ADDED:
                  NODE2  ISUP   DMS    ( INHIBITACL)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
```

New Table: CCS7PPLN

Tables C7RTESET, NWMPPLN and PREPLANS are datafilled before table CCS7PPLN. The craft person populates table CCS7PPLN.

The following are examples of datafilling table CCS7PPLN.

- Adding an entry to table CCS7PPLN

```
CI:
>table ccs7ppln
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: CCS7PPLN
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
PCNAME:
>ansirte1
PPLNNO:
>1                       1     1
TUPLE TO BE ADDED:
                  ANSIRTE11     1      1
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
```

- Changing an entry in table CCS7PPLN

```
CI:
>table ccs7ppln
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: CCS7PPLN
>pos ansirte1
ANSIRTE1                1      1      1
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
PPLNNO:
>1                        1     1
TUPLE TO BE CHANGED:
                  ANSIRTE12      2      2
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
```

Log Message Changes

NONE

OM Changes

This feature adds two new registers:

- Register ACCONG (Automatic Congestion Control) is added to OM group TRK. This register is used to peg the total number of times that a trunk group enters ACC congestion.
- Register ACCDFIL (Automatic Congestion Control Datafill) is added to OM group ISUPCONG. This register is used to peg the number of times that a trunk group detected an ACL but, due to missing datafill in table CCS7PPLN, could not apply NWM controls.

Changed OM group: Trunk Group (TRK)

OMSHOW example

```
>CI:
>OMSHOW TRK ACTIVE
TRK
CLASS:   ACTIVE
START:1997/02/19 08:30:00 WED; STOP: 1997/02/19 08:44:52 WED;
SLOWSAMPLES:         9 ; FASTSAMPLES:         89 ;

  KEY (COMMON_LANGUAGE_NAME)
  INFO (OM2TRKINFO)
  INCATOT           PRERTEAB          INFAIL            NATTMPT
  NOVFLATB      GLARE                 OUTFAIL          DEFLDCA
  DREU                PREU                    TRU                    SBU
  MBU                  OUTMTCHF          CONNECT      TANDEM
  AOF                  ANF                       TOTU               ANSWER
  ACCCONG

51 CARYSC
OG     1     1
      0                     0                       0                       0
      0                     0                       0                       0
      0                     0                       0                       0
      0                     0                       0                       0
      0                     0                       0                       0
      0
```

Changed OM group: ISUPCONG

OMSHOW example

```
>CI:
 >OMSHOW ISUPCONG ACTIVE  ISUP2WITEA

ISUPCONG

CLASS:   ACTIVE
START:2001/07/15 05:30:00 SUN; STOP: 2001/07/15 05:47:46 SUN;
SLOWSAMPLES:        11 ; FASTSAMPLES:        107 ;

       KEY (COMMON_LANGUAGE_NAME)
         NUMBLOCK    ACCDFIL

  640 ISUP2WITEA
               0         1
```

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Automatic Congestion Control (ACC) applies NWM controls that, when set, interact with other features. ACC implements option DONTSENDACL in table ADJNODE. By default, the ACL optional parameter is sent from the congested DMS office. To disable the sending of the ACL parameter, operating company personnel must add option DONTSENDACL for the selected trunk groups in table ADJNODE. After option DONTSENDACL has been added to table ADJNODE, a busy and return to service of the trunk groups is required for the change to take effect.

Restrictions/Limitations

The following limitations and restrictions Apply to Automatic Congestion Control (ACC):

- Remote DOC (RDOC) controls are activated only for direct connecting switches. Direct connecting switches are two switches connected directly by trunks.
- Table CCS7PPLN (Common Channel Signaling System #7 Preplanned Control) only contains point code names of direct connecting switches to which congestion controls are to be applied.
- Applied network management (NWM) controls do not survive a cold (or greater) restart, but do survive a warm restart.
- Automatic preplan (PPLN) controls are activated and/or removed on a routeset basis, but manual PPLN controls are activated and/or removed on a trunk group basis.
- This feature adds option DONTSENDACL to table ADJNODE. In the congested switch, this allows the ACC facility to be enabled or disabled on a per connected switch trunk group basis. This option is inserted into the trunk data message area, which enables the XPM (DTC7, PTC) to check for ACC at adjacent switches. Therefore, after adding option DONTSENDACL to table ADJNODE, the technician must BSY and RTS all trunk members of the trunk group at the MAP terminal, for the inhibiting of ACL parameter to take effect. This must be done for each trunk subgroup that references this entry into table ADJNODE.

LAYER		SW-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AIN
AF6847	E911 Routing via AIN 0.1	

Description

This feature also provides functionality to feature AF6994, E911 Selective Routing.

This feature provides the ability to use an emergency services (ES) service control point (SCP) (ESSCP) external database, a specialized form of the advanced intelligent network (AIN) SCP, to route Enhanced 911 Emergency Service (E911) callers using the AIN 0.1 call model trigger and response mechanism.

This capability includes the following four functionalities:

- Basic routing
  - — Most AIN-based routing translations are the same as E911 translations.
- Data propagation
  - — The ESSCP can override the automatic number identification (ANI) and emergency service number (ESN) data elements that are associated with an E911 caller. Since the caller may be a wireless user routed with a pANI (pseudo ANI), it is necessary to replace this pANI with an actual call–back number (for example, MIN) so that the caller can be reached if the connection is dropped. When the ForwardCall (FC) response of the ESSCP contains a new CallingPartyID parameter, this information is used as the new ANI for the caller, and it is sent to the Public Safety Answering Point (PSAP) for display.
  - — Additionally, since it is likely that all AIN-routed calls use one ESN, a new ESN for those calls must be generated when PSAPs are using selective transfer. To accomplish the generation of this new ESN, a DN may be returned in the ChargeNumber parameter of the FC response. If such a parameter is found, then E911 queries the selective routing database (SRDB) with this DN and, if a valid ESN is returned, replaces the caller's original ESN with that of a ChargeNumber. The ESSCP can pick the new ESN either by returning a "dummy DN" mapped to the geographic location and pre-datafilled in the switch-based SRDB or by returning the DN of a nearby wireline that is known to reside in the switch-based SRDB.
- E911 log and remote call event record (RCER) data
  - — All logs and RCERs reflect the data provided by AIN. The data includes the new AIN and ESN of the caller, if available and normally present in the log or RCER.
- Failure recovery
  - — In order to prevent ESSCP failures from resulting in lost calls, this feature introduces a type of AIN default routing, ESN default routing, that allows the assignment of a

tertiary default ESN. The ESN default routing option, like other AIN default routing selections, is datafilled on the basis of an Infoname in table TRIGINFO.

Command Changes

NONE

Data Schema Changes

This feature adds the E911 ESN selector to the AIN default routing DFLTRT option in table TRIGINFO. When the E911 ESN selector type is specified, an additional parameter, ESN, is prompted for. This parameter is a 7- or 10-digit number. Validation is performed to ensure that the specified TRIGINFO datafill sequences are unaffected. If DFLTRT option is not correctly datafilled in E911ESN, the following error message is output:

```
Invalid ESN specified. ESN must be present in Table E911ESN.
```

This feature requires base AIN and SS7 datafill.

Log Message Changes

This feature introduces log report E911229, AIN Routing Trouble. This variable format log is generated in seven different formats for the following situation during the AIN-based routing of an E911 call.

Invalid CallingPartyID, Invalid ChargeNumber, Unable to Retrieve ESN For ChargeNumber, and Invalid ESN Retrieved For ChargeNumber are generated when invalid data is returned from the off-board processor ESSCP for the call. Following is an example of one of these logs:

```
RTPT     E911229 MAY01 12:52:26 9700 INFO E911 AIN ROUTING TROUBLE
LEN HOST 00 0 01 18   DN 6210180
Invalid ChargeNumber Found
ChargeNumber = 0206210660
```

The action that the craftsperson has to take in response to this type of log is to contact the administrators of the ESSCP and determine why it is sending an invalid number. If the NPA of the number is a valid NPA but not an SNPA on the Tandem, it may need to be added. If it is an SNPA on the tandem, determine if it is datafilled in Table E911NPD; if not, add it if necessary.

Call Being Default Routed indicates that an AIN routing attempt failed and default routing is taking place, for example:

```
RTPT     E911229 MAY01 13:02:31 3400 INFO E911 AIN ROUTING TROUBLE
       LEN HOST 00 0 01 18   DN 6210180
       Call Being Default Routed
       ANI: 6136210180  Routing ESN: 10668
       Orig ESN: 10656   Facility ESN: 10668   AIN ESN: 10669
```

The craftsperson action is to check the links to the ESSCP and contact the ESSCP administrators to determine if the ESSCP is down.

Call Cannot Be Default Routed (Bad ESN) and Call Cannot Be Default Routed (Bad PSAP) indicate that an AIN routing attempt failed and default routing could not reroute the call. The following is an example:

```
RTPT     E911229 MAY01 13:13:45 9000 INFO E911 AIN ROUTING TROUBLE
        LEN HOST 00 0 01 18   DN 6210180
        Call Cannot Be Default Routed
        No Valid PSAP, Call Sent To Treatment, ANI: 6136210180
        Routing ESN: 10668   PSAP DN: 6210180
```

This log indicates that the Primary PSAP of the ESN being used for default routing this call, either from the E911 Facility (trunk, Virtual Facility Group (VFG)) or table TRIGINFO, maps to a non 10- or 7-digit DN. The craftsperson action is to change the ESN or the name of the Primary PSAP to one that is the correct length. This can most easily be caused by having a Primary PSAP which is an Emergency Directory Number Route (EDNR).

No E911229 log is produced when a data mismatch occurs and a parameter is rejected by base AIN processing before it is stored.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

Customers need to be familiar with and follow the engineering hardware requirements for existing AIN services.

Alarms

NONE

Interactions

This feature establishes the interaction of AIN and E911 and deals with interactions between various AIN and E911 features. The E911 features Originator Hold, Selective Transfer, Ring Back, and Three-Way Calling with Public Announcement (3WCPUB) are fully supported.

This feature does not expressly suppress or discard any AMA records generated by the invocation of AIN routing. While E911 does not bill the caller, any billable calls made by the

PSAP are allowed. For this reason, it is suggested that no AIN AMA parameters be returned in the FC responses and that the call leg from the VPSAP to the potential physical PSAP DNs be setup as non-billable in translations.

Restrictions/Limitations

The following limitations and restrictions apply to E911 Routing via AIN 0.1:

- It is recommended that any ESN datafilled as an AIN default routing ESN have a primary PSAP that is an actual, physical PSAP on the Tandem switch. Using an ESN with a Primary PSAP that refers to a VPSAP could reduce the Failure Recovery capability of this feature.
- It is recommended that the signaling system 7 (SS7) transaction capabilities application part (TCAP) links used to query the ESSCP from E911 tandem be dedicated links, separate from those used to carry other ISUP, AIN, or miscellaneous TCAP messaging. Additionally, to reduce the interaction with other non-emergency services traffic, these links should connect directly from the E911 tandem to the ESSCP and not through a signaling transfer point (STP). The suggested method reduces the possibility of problems due to link overload and other reliability concerns over using public facilities.
- All ESSCP DN parameters (CallingPartyID, CalledPartyID, and ChargeNumber) must be 10 digits in length, or they are ignored by this feature.
- Automatic Call Distribution and line-ended PSAPs can be affected when the PSAPs use Meridian Business Sets (MBS). Since the MBS displays always pick up the information retuned by AIN, they display the CalledPartyID returned by AIN, even if E911 thinks it is invalid. This normally occurs when a valid length DN is returned but the NPA is not an SNPA or is not even a valid area code.

LAYER		SW-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6934	ISDN Essential Service Protection – BRI/LTID	

Description

Integrated Services Digital Network (ISDN) Essential Services Protection – Basic Rate Interface (BRI) / LTID (Logical Terminal IDentifier) provides the capability to originate calls even during severe overload conditions in the switch. This feature introduces the concept of essential lines (ELN) for ISDN BRI in NA008.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

An LTID can be defined to receive preferential treatment using the service order system (SERVORD) SLT ADD or CHA command.

The Option prompt for the NI-1 and NI-2 LTIDs is enhanced to support the ELN parameter.

The SERVORD SLT CHAnge command is also enhanced to change the ELN subscription for a NI-2 LTID. After execution of the CHAnge command, subsequent call originations from the ISDN 1 LTID do not receive preferential treatment.

Table Control Support for Essential Service Protection

The table control commands ADD and CHAnge for Table LTDEF are enhanced to support the ELN parameter. The changes that are required to these commands are very similar to the Servord SLT ADD and CHAnge commands.

Enhancement of the QLT tool to Display ELN Parameter

The Query LTID (QLT) tool that currently provides all the information regarding a Logical Terminal is enhanced to display the ELN for that LTID.

Software Optionality Control (SOC) considerations

The ELN feature is part of the NI000051 package. This feature is allowed to be used by the NI-1 and NI-2 LTIDs only if the SOC state of the NI000051 package is ON. The SOC checks required for NI-2 LTIDs are addressed as part of feature AF6761 (SOC activity for NI000051).

If a NI-1 LTID is assigned the ELN, this feature ensures that the attachment of that NI-1 LTID to an interface succeeds only if the SOC state of the NI000051 package is ON.

Conversely, attaching a NI-1 LTID with ELN to an interface fails if the SOC state of the NI000051 package is IDLE.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Prior to NA007, this service was available only to plain old telephone sets (POTS) and Meridian business sets (MBSs). The service is subscribed on a directory number (DN) basis for non-ISDN lines. Subscribing to this service triggers the following events:

- The subscription information is stored against the DN as well as the interface. In the case of POTS, the interface and the DN are synonymous. In the case of Meridian business sets, the interface can have multiple DNs and is treated as an essential line only if at least one of the DNs on that interface has subscribed to ELN.
- The ELN information for an interface is conveyed to the XPM using Tbl_Eln_Option.

Restrictions/Limitations

The following limitations and restrictions apply to ISDN Essential Service Protection -BRI/ LTID:

- This feature is used by the NI-1 and NI-2 Logical Terminal Identifiers (LTIDs) only if the SOC state of the NI000051 package is ON. The SOC checks required for NI-2 LTIDs are addressed as part of feature AF6761, SOC Activity for NI000051.
- It is a requirement that ELN can be subscribed on an LTID basis, in the case of IDSN. This capability is provided through a subscription option called ELN and is available to NI-1 and NI-2 LTIDs. NI-2 LTIDs are introduced in NA008 and have capabilities such as Call Reference Busy Limit (CRBL). For a complete description of NI-2 LTIDs, refer to AF6641, NI-1/NI-2 Interface Identification, in the ***SW-NOW*** section of the Maintenance, Traffic, or Servord manual.

LAYER		SW-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	LNP
AJ4091	Triggering Local Number Portability on Attendant Consoles	

Description

This activity implements Location Routing Number-Local Number Portability (LRN-LNP) for attendant consoles on DMS 100/200 switches, in the NA008 stream for the North American market.

It permits the attendant console (AC) to encounter the LNP trigger. It enables calls both originating or extending from the console to terminate to a ported number. The LNP trigger is the last AIN 0.1 trigger that the software can hit at the Information Analyzed trigger detection point.

The supported LNP query responses are: Analyze_Route, Continue, and Disconnect.

This feature modifies maintenance tool AINTRACE to enable operating company personnel to select or remove ACs that use LNP. This activity also enables the use of AIN TRAVER options with the attendant console.

Command Changes

Triggering LNP on Attendant Consoles modifies maintenance tools AINTRACE and TRAVER.

This feature allows the AINTRACE tool to select or remove attendant consoles which use LNP. It adds the option AC to the existing SELECT and REMOVE commands. For example:

```
SELECT AC <clli>
```

where <clli> is the console to be traced.

This feature modifies the TRAVER tool to permit the use of all AIN TRAVER options on an attendant console.

Changed command: SELECT

The SELECT command provides different ways of selecting an originating terminal for tracing. Only the AC parameter is used to select an Attendant Console for tracing. The syntax for the SELECT command, as displayed by the help command for the AINTRACE tool, reads as follows, where the text in boldface is added by this feature:

```
>q select
This command selects a terminal for tracing.
Parameters are:
TID - specify a terminal id for the terminal
DN  - specify the directory number for the terminal
LEN - specify the line equipment number for the terminal
TRK - specify the trunk clli for the terminal
AC - specify the AC clli for the terminal
LTID - specify a logical terminal id for the terminal

Parms: <Options: > {TID <Node:> {0 TO 4095}
                                        <Terminal:> {0 TO 4095},
                                    DN <Directory Number:> STRING,
                                    LEN [<Site:> STRING]
                                              <Frame:> {0 TO 511}
                                              <Unit:> {0 TO 9}
                                              <Drawer:> {0 TO 31}
                                              <Circuit:> {0 TO 99},
                                    TRK   <CLLI:> STRING
                                               <Member Number:> {0 TO 9999},
                                    AC     <CLLI:> STRING,
                                    LTID <LTGRP:> STRING
                                              <LTNUM:> {0 TO 600}
                                               [<Key:> {1 TO 69}]}
```

Explanation:

The actions of the SELECT command have not been altered. As before, it selects TIDs from the set that is mapped to TCAP messages. The alterations made by this feature just add a new originator to the set of parameters that the SELECT command can use to perform its function.

System action:

The new AC parameter for the SELECT command adds the TID(s) appropriate to the Attendant Console identified, to the pool of TIDs that is scanned for in the AIN TCAP message list.

Examples

```
> aintrace
> select ac zeus
Invalid CLLI
No such terminal
>select ac attkdkb
>
```

Changed command: REMOVE

The REMOVE command provides different ways of removing an originating terminal for tracing. Only the AC parameter or the TID parameter is used to remove an Attendant console. The syntax for the REMOVE command, as displayed by the help command for the AINTRACE tool, reads as follows, where the text in boldface is added by this feature:

```
>q remove
This command removes a terminal from the selection list.
Parameters are:
TID - specify a terminal id for the terminal
DN  - specify the directory number for the terminal
LEN - specify the line equipment number for the terminal
TRK - specify the trunk clli for the terminal
AC - specify an AC clli for the terminal
LTID - specify a logical terminal id for the terminal
ALL - removes all selected terminals

Parms: <Options: > {TID <Node:> {0 TO 4095}
                                        <Terminal:> {0 TO 4095},
                                    DN <Directory Number:> STRING,
                                    LEN [<Site:> STRING]
                                              <Frame:> {0 TO 511}
                                              <Unit:> {0 TO 9}
                                              <Drawer:> {0 TO 31}
                                              <Circuit:> {0 TO 99},
                                    TRK   <CLLI:> STRING
                                              <Member Number:> {0 TO 9999}
                                    AC     <CLLI:> STRING,
                                    LTID  <LTGRP:> STRING
                                              <LTNUM:> {0 TO 600}
                                               [<Key:> {1 TO 69}],
                                    ALL}
```

Explanation

The actions of the REMOVE command have not been altered. As before, it removes TIDs from the set that are mapped to TCAP messages. The alterations made by this feature just add a new originator to the set of parameters that the REMOVE command can use to perform its function.

System action

The new AC parameter for the REMOVE command removes the TIDs appropriate to the Attendant Console identified, from the pool of TIDs that are scanned for in the AIN TCAP message list.

Examples

```
> aintrace
> remove ac zeus
Invalid CLLI
No such terminal
>remove ac attkdkb
>
```

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

Triggering LNP on Attendant Consoles supports only Nortel Meridian Digital Centrex attendant consoles.

Alarms

NONE

Interactions

Triggering LNP on Attendant Consoles requires feature AJ4411, which enables all existing AC features for the DMS switch to interact with LNP.

Restrictions/Limitations

The following limitations and restrictions apply to Triggering LNP on Attendant Consoles:

- Network Consoles are not addressed.
- Mini Attendant Consoles are not addressed.
- Stand-alone customer groups are portable only as whole groups, that is with all their members included. To port a customer group with a family dependency, first convert the whole group to a stand-alone group.
- Send_to_Resource response is not supported. A call that produces Send_to_Resource is sent to AIN Final Treatment.
- Unconditional triggering is not supported.

LAYER		SW-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AIN
AR2412	AIN 0.2 ACG (CNA)	

Description

Automatic code gapping (ACG) is a network management mechanism used in the control of network congestion. When a service control point (SCP) becomes congested with queries, it can request that a service switching point (SSP) slow down or stop sending queries for a desired length of time.

Code gapping can be initiated from the SCP in two ways:

- automatically using SCP initiated code control
- manually using service management system (SMS) originated code control (SOCC)

The manual SOCC method complements the automatic SCP method. The controls are managed on the SSP, in either an SCP or SMS control list.

The gap interval is the length of time for which queries are blocked. After this interval expires a query is allowed. After the allowed query is sent, the gap interval is reset and queries are again blocked until the gap interval expires again. This cycle repeats until the gap duration has expired.

This feature provides enhanced support of ACG capabilities on the SSP for both the AIN Service Enablers and Advanced Intelligent Network (AIN) Essentials products.

AIN Service Enablers (0.2) ACG (CNA) provides the following functionality on the SSP:

- enhanced alerting to the SCP when an attempt to add a control to a control list fails (caused by a full control list)
- support for private-gap intervals and national-gap intervals as specified in GR 1299
- support of global restoration for both the SCP and SMS control lists
- generalization of AIN ACG log text (some of the text is AIN Essentials (0.1) specific)

This includes support on the SSP for the following messages sent from or to the SCP:

- ACG_GLOBAL_Ctrl_Restore
- ACG_Global_Ctrl_Restore_Success
- ACG_Overflow

In summary, when an overflow condition exists, the following events occur:

- an AIN300 or AIN301 is generated
- SCPOVLDO or SMSOVLDO OM (AINACG OM group) is pegged

- an ACG_Overflow message is sent to the SCP in a unidirectional transaction capabilities application part (TCAP) package
- the new OM, NAOVFW (AINNCR OM group), is incremented when the ACG_Overflow message is sent

Command Changes

A new CI command, ACGRESTORE, is added to the AINCI directory. This command is used to restore entire control lists with one request (for example, delete all controls from either the SMS or SCP, or both control lists as specified). A mandatory parameter is LIST_TYPE. GAP_TYPE is optional.

The user is informed of the status of ACG and is given a warning about the potential impact of using this command. This is followed by presenting the user with an option to have the controls that to be deleted dumped to the map display prior to beginning the delete. The craftsperson can select “abort”, to stop any further processing of the ACGRESTORE request.

The user must enter “Y” or “N” for execution of the ACGRESTORE command to continue. If “Y” is entered, execution of the command continues with all controls in the appropriate control lists being displayed on the terminal. If “N” is entered, processing continues with the deletion of the controls from the user-specified control lists. If the user selects “abort”, no further processing of the ACGRESTORE request takes place. Sample output follows:

```
>ACGRESTORE SMS_LIST EXCLUDE_ZERO_GAPS
ACG is Currently Enabled.

WARNING: If Automatic Code Gapping (ACG) is enabled, then
deleting controls from the Automatic Code Gapping control
lists may impact the stability of the CCS7 network. The
severity of this impact depends on the current network
traffic load. This command should be used with extreme caution!

All AIN ACG controls in the SMS control list will be deleted.

Do you want to preview the controls to be deleted
before continuing with the restore?
Please confirm: Enter “Y”, “N” or “abort”:

The following controls will be deleted:

AIN                          SOCC CONTROL CODES

TRANSLATION  GLOBAL_TITLE  GAP_DUR    GAP_INT   GAP_DUR      GAP_INT
TYPE          ADDRESS       (Secs)   (mSecs)    REMAINING    REMAINING
-------------------------------------------------------------------------
AINTRANS1 6136219876          256    1000         165           56
AINTRANS1 613522              64     8000          52           1854

DO YOU WANT TO CONTINUE WITH THE GLOBAL RESTORE?
Please confirm (“Yes”, “Y”, “No”, or “N”):
> Y
The ACGRESTORE request is being processed.

Please use the ACGDISPLAY command to verify that
the controls have been removed.  An AIN612 log will be
generated when the controls have been successfully deleted.
```

Data Schema Changes

NONE

Log Message Changes

Log AIN612 is added to record ACG global control restore events.

Text in logs AIN300, AIN301, AIN302, AIN303, AIN510, AIN511, AIN610 and AIN611 is modified such that they no longer refer specifically to AIN Essentials (0.1). An example of log AIN300 follows:

```
COMD08AB  *  AIN300 Feb01 14:25:44 1400 TBL ACG/SOCC SCP Control List Overflow
                            AIN ACG SCP Control List Overflow
                            ACTION: Analyze list for stale controls.
                            GTA: 613722            TT_Name: AINJAZZ
                            UNREPORTED_OVERFLOWS: 4
```

OM Changes

The AINACG OM group has been modified to provide operational measurements for the ACG feature. It monitors blocking of AIN queries by ACG, ACG control list overflows, and count changes to ACG control lists.

Register CTRLCHA monitors control list changes, such as controls added, removed or deleted.

Related OM changes have been made in feature AR2306, in the ***SW-NOW*** section of this manual.

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This development activity has an impact on the NA008 AIN Essentials product. All of the functionality described in this document is part of the NA008 AIN Essentials Product.

AIN ACG is being further enhanced in NA008 under feature AJ4583, ACG Enhancements (CCM). This activity focuses on memory management of the ACG controls.

This design is dependent on feature AR2259 AIN 0.2 Messaging Enhancements-I, to support the following:

- the sending and receiving of 3 new non call-related messages:
  - — ACG_Overflow
  - — ACG_Global_Ctrl_Restore
  - — ACG_Global_Ctrl_Restore_Success
- an extension of private_gap_interval, which is used in the ACG message to support 22 (previously 17) gap level parameter values

AR2306, AIN SE Operational Measurements Support-1, provides the OMs to count incoming ACG_Global_Ctrl_Restore messages, outgoing ACG_Global_Ctrl_Restore_Success and ACG_Overflow messages.

Restrictions/Limitations

The following paragraphs describe the limitations and restrictions which apply to AIN 0.2 ACG (CNA).

Bellcore specifications indicate that when the overflowing control arrived in a package that also contained a send notification message, an indication of the overflow was included in the termination notification. This requirement, [1586v2], GR1298, Issue 3 is not supported. The SCP is informed of ACG overflow conditions using the ACG_Overflow message sent by the SSP to the SCP. The next SSP query associated with the target control does not contain an ACG_Encountered parameter.

Control exclusion is permitted on SMS-initiated controls only. An SCP gap interval of 0 is treated as a fatal application error.

Note: *This type of error does not affect the processing of the call related components of the package, when the ACG component was received as part of a multi-component package.*

The engineering and administrative data acquisition system (EADAS) requirements for ACG are not supported in this release.

LAYER		SW-LATER
TOPS 08		
		APPLICATION
ACTID	FEATURE TITLE	OLNS
AN1565	OLNS Screening and Routing	

Description

This feature adds parameter OLNS_RESTRICTED_DACC to table TOPSPARM.

Originating Line Number Screening (OLNS) allows calling subscriber information to be stored in a Line Information Database (LIDB) instead of Digital Multiplex System (DMS) tables and is accessed by the DMS switch during call processing through a Transaction Capability Application Part (TCAP) query over the Common Channel Signaling #7 (CCS7) network. Therefore, OLNS reduces the administrative requirements by centralizing the directory number information into a single database (instead of maintaining the data in multiple DMS switches) and by providing a simple interface for data entry. Also, OLNS allows removal of subscriber information from DMS switch tables, which require frequent updating.

Command Changes

NONE

Data Schema Changes

This feature requires the following datafill changes:

- Subscriber information [Inter-Local Area and Transport Area (LATA) carrier, line billing restrictions, and calling part station type] may be deleted from existing tables SPLDNID, DNSCRN, TOPSDB, TDBCLASS, RESTBIL, DARSTBIL, and DNPIC.
- Coin line Automatic Coin Toll Service (ACTS) compatibility is moved out of table RESTBIL and provided by the database.
- Screen displays:
  - — The restricted billing display for TOPS MP and OPP-compatible positions is moved from tables RESTBIL and DARSTBIL to new table OLNSRSDP (OLNS Restricted Billing Display). This display is optional, that is, if table OLNSRSDP is not datafilled, then nothing is displayed.
  - — Service/equipment display is provided by new table OLNSEQDP (OLNS Service/ Equipment Display). This display is optional, that is, if table OLNSEQDP is not datafilled, then nothing is displayed.

Note: *Display information is also provided by the OLNS database in the Alphanumeric String Indicator. The display message is determined by the database. There is no datafill associated with this display.*

- The restricted billing index is moved from tables SPLDNID [directory number (DN)-basis] and TDBCLASS into new tables OLNSTARS (OLNS Toll and assist Billing Restriction) and OLNSDARS (OLNS Directory Assistance Billing Restriction).
  - — This derived restricted billing index is used to index tables such as ST4QREST, DABILL, ADACCOPT, BPQUEUE, and so on. This restricted billing index is also forwarded to the Automated Alternate Billing System (AABS) node, Personal Audio Response System (PARS), Operator Services Signaling Advanced Intelligent Network (OSSAIN), and other automated systems that use the restricted billing index.

  Note: *Some protocols use the AMABRC value instead of the restricted billing number. However, the AMABRC value is not supported by OLNS.*
- The following changes apply to table TOPSPARM parameters:
  - — OLNS_EAANI_DACC and OLNS_EAANI_ADD_BILLSSRV are added to control Automatic Number Identification (ANI) spill.
  - — OLNS_RESTRICTED_DACC is added to indicate if DACC billing restrictions are considered in determine if calls restricted when signaled with ANI ID 7.
- This feature adds parameter RECORD_ORIG_BILLING_SERVICE to table TOPAMAOP to control generation of a module code.

Log Message Changes

This feature implements the following LOG changes to the existing logs TCAP100, TCAP101, TCAP199.

- TCAP100 log is used for OLNS responses containing return error or reject components. New text strings are added for the OLNS application.
- TCAP101 log is used for OLNS responses when routing failure occurs. A new text string is added for the OLNS application.
- TCAP199 log is used for miscellaneous TCAP errors, and a new informational text string for OLNS errors is added. A new error message string is added for miscellaneous TCAP error. This log is generated when an attempt is made by the OLNS application to obtain a transaction ID when none are available.

New logs introduced are: AUG606, AUD615, AUD611, and TOPS127.

- AUD606 log is generated whenever a call traps or is terminated while holding an OLNS TCAP extension block.
- AUD615 log is generated when there is an error in the AMA process that uses extension blocks for the CRS_SUBRU_POOL5.
- AUD611 log is generated when a call traps while holding an OLNS TCAP extension block.
- TOPS127 log, which indicates various OLNS errors, includes the calling number, originating, trunk, and an error message.

OM Changes

This feature requires the following changes for OMs:

- Two new registers are added to the TOPPDID5 OM group. These registers are OLNSIND and OLNSIND2 (extension register) and are pegged when an OLNS_INFORMATION_DID is sent to the Open Position Protocol (OPP) positions.
- The EXT OM group is changed to support the addition of OLNS_TCAP_EXT_BLK to key EXT_FORMAT_CODE. The EXT OM group also adds a new index into the key field for the new extension block definition. This monitors the usage of the new extension blocks.
- New OM groups TOPSOLNS and TOPSOLNE are created. The TOPSOLNS group captures OLNS information such as the number of OLNS queries launched, number of OLNS queries not launched due to code gapping, number of OLNS responses with screened data, and number of timeouts. The TOPSOLNE group pegs counts for each OLNS error including signaling connection control part (SCCP) routing errors (for example, subsystem failure or no translation for this specific address) or TCAP level errors (for example, missing customer record).

Changed OM group: TOPPDID5

TOPPDID5 (TOPS Open Position Protocol Data Identifier Group 5) is a continuation of TOPPDID1. These groups count each type of open position protocol (OPP) data identifier (DID) sent from the TOPS DMS. The registers are only incremented when a valid DID is sent. OPP consists of ActIDs and DIDs used to communicate between the DMS and the operator positions. DIDs are sent from the DMS to the operator position to update both call information and other information.

New register names: OLNSIND and OLNSIND2

OLNSIND is incremented each time the DMS sends the OLNS Information DID to the operator position. OLNSIND2 is the extension register for OLNSIND.

Service Order

NONE

AMA Changes

New structure code 0772 is created to record calls that launch an OLNS query. As part of Structure Code 0772, the following is added:

- Module Code 019, table 679
- Module Code 219, table 680
- tables 675, 677, and 678

Structure Code 0772 supports call codes 189, 190, 192, 194, 196, and 198.

Structure Code 0752 is recorded for operator-handled calls that do not launch an OLNS query. There are no changes to this structure code; however, a new value is added to the Screening code field (Table 34) of Structure Code 0752.

For existing module code 052, table 286 is modified to support two additional values.

Notes

NONE

Alarms

NONE

Interactions

Functionality TOPS OLNS Interface consists of the following features:

- AN1565 OLNS Protocol (NA006)
- AN1565 OLNS Screening and Routing (NA006)
- AN1566 OLNS TCAP and AMA Changes in TL (NA005)
- AN1567 OLNS AMA Changes in the CCM Layer (NA005)
- AN1788 AMA Re-engineering and OLNS Prep (NA005)
- AN1829 TPC06: Support for QMSCASE, OLNS, OSSAIN, Compatibility & UMP (NA006)
- AN1841 OLNS CI Tool (NA006)

Restrictions/Limitations

- In QMS, queue refinement can be done on the restricted billing index via table CT4QREST; however, when refining on restricted billing index with OLNS, the index will always come out of OLSNTARS. This is the case because with OLNS, tables OLNSTARS or table OLNSDARS are indexed based on the service type of the call (TASERV or DASERV). With QMS, since the service type of the call is unknown until the CT4Q refinements are performed and final CT4Q is obtained and then used to index TQMSSERV to determine the base service of the call. For OLNS, this is too late in the process. In this situation, OLNS will use the default service type, which is TASERV. The call can still route to the correct CT4Q since the capability exists to look at the call origination in addition to the restricted billing index. When datafilling table CT4QREST, remember that the restricted billing index used for DA calls will come out of table OLNSTARS and not OLNSDARS. Once the service type of the call is determined, the appropriate table for the restricted billing index can be checked.
- For calls on which an OLNS query is launched, OLNS will increase the subscriber post-dial delay by the amount of time required for the query to the data base.
- OLNS is only supported for the North American market.
- OLNS only applies to non-ISUP calls on incoming TOPS trunks and ISUP calls on incoming IT and ATC trunks.

- OLNS does not apply to intercept or inwards calls.
- New screen display for OLNS are not supported for TOPS IV positions, except for the RESTBIL/DARSTBIL replacement.
- OLNS screen display information in the DMS or OPP-compatible position tables needs to be datafilled consistently across the OC network.
- Due to the availability of new calling number information with OLNS, operator screen displays will differ for calls which do and do not launch OLNS queries.
- For offices with both TOPS IV and TOPS MP or OPP-compatible positions, operator screen display will differ; i.e., new displays will not be available on the TOPS IV.
- It is necessary to upgrade and activate the OLNS LIDB data base prior to upgrading the TOPS DMS software.
- If the MF-to-ISUP calling number blocking feature (AN1515) is activated (i.e., BLKCLI = Y in table TDBCLASS), then datafill must remain in table TDBCLASS.

LN-NOW

This section identifies changes and/or additions to line functions that are Traffic sensitive or affecting, which occur immediately upon the new software load insertion. This includes changes or additions to commands, data schema, logs, OMs, and service orders, which may affect Traffic activity.

NA008 PRODUCT

LAYER		LN-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	2B FIT/NIT
AF6749	Emergency Stand-Alone (ESA) Support for 2B FIT/NIT–CM	

Description

This feature enhances the existing ESA warm call takeback process so that both active and held calls on the non-primary directory number (PDN) keys on 2B fully initializing/non-initializing (2B FIT/NIT) terminals survive a warm exit from ESA provided that the calls are associated with a B-channel in the extended peripheral module (XPM).

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature works in conjunction with extended peripheral module (XPM) features AF6750 and AF6751 to provide support for ESA NI-2 (National ISDN-2).

Restrictions/Limitations

The following limitations and restrictions apply to Emergency Stand-Alone (ESA) Support for 2B FIT/NIT–CM:

- This feature is only applicable to RCC2 peripherals.
- This feature is only applicable to 2B-channel capable terminals.

LAYER		LN-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AIN
AQ1587	AIN 0.1 Additional Line Agent Support	

Description

AIN Essentials (0.1) Additional Line Agent Support enhances advanced intelligent network (AIN) triggers by supporting more line agents.

Line agents that are supported by the above triggers are:

- data line class codes (LCC)
  - — DATA and PDATA
- residential enhanced services (RES) coin lines
  - — Dialtone-first (CDF), coin-first (CCF), coin-free dialing (CFD), semi-postpay (CSP), zero-minus denied (ZMD), and zero-minus zero-plus allowed (ZMZPA)
- RES wide area telephone service (WATS) line
  - — two-way wide area telephone service (TWW), enhanced two-way wide area telephone service (ETW), inward wide area telephone service (INW), outward wide area telephone service (OWT), and enhanced outward wide area telephone service (EOW)

AIN 0.1 Additional Line Agent Support allows RES, COIN, and WATS line agents to directly encounter triggers PODPFEAT, OFFHKDEL and TERMATT. DATA and PDATA can directly encounter trigger TERMATT.

Note: *Line options AIN and AINDN become RES specific for the COIN and WATS line agents. For example, and Coin or WATS line agent that tries to subscribe to triggers PODPFEAT, OFFHKDEL, or TERMATT, are converted to a RES line first. Line options AIN and AINDN are not assigned when a POTS to RES conversion fails.*

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Multiple carriers can be assigned to an enhanced WATS line using the enhanced WATS access line (EWAL) option. EWAL can subscribe to the universal carrier (named UWATS in table OCCNAME).

The DMS switch proceeds with band screening based on the carrier provided by the ANALYZE_ROUTE message or the universal WATS (UWATS) option. Band screening proceeds when one of the following occurs:

- an enhanced outward WATS (EOW) line triggers
- an enhanced two-way WATS (ETW) line triggers

Restrictions/Limitations

The following limitations and restrictions apply to AIN 0.1 Additional Line Agent Support:

The OFFHKIMM and AFR triggers are blocked. Their assignment to Coin or WATS agents is denied by SERVORD.

LN-LATER

This section identifies changes and/or additions to line functions that are Traffic sensitive or affecting, which require activation after the new software load insertion. These changes may include tables, log reports, OM reporting and generation, or service orders.

NA008 PRODUCT

LAYER		LN-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	LCM
AF6472	1 Meg Modem Service – Ethernet on the LCM	

Description

1 Meg Modem Service offers existing DMS-100 HOST based line concentrating module (LCM) subscribers an Ethernet interface for high speed data access. This data access is in addition to existing voice services and over existing phone lines. The 1 Meg Modem Service interface provides the subscriber with data at 1 Mbps downstream and 128 kbit/s upstream with plain old telephone service (POTS).

Command Changes

A new command interpreter (CI), QXNET (Query Ethernet), is added for operating company personnel to perform multiple 1 Meg Modem Service engineering rules validations and queries including:

- COUNT
  - — Used to Query XNET Counts (quantitative information) on an office, an LCM, or LCM drawer basis.
- VERIFY
  - — Used to Verify XNET compliance to XNET Engineering Rules on an office, an LCM, or LCM drawer basis.
- EXPAND
  - — Used to Query the Expandability of XNET on an office, an LCM, or LCM drawer basis.

New command: QXNET

XNET, stands for “Query XNET”. This new command increment allows the craftsperson to query the DMS-100 to determine various information about the deployment of XNET throughout Host LCMs.

Within the QXNET there are multiple functions, including:

- Query XNET Counts
- Verify XNET Engineering Rules
- Query XNET Expandability

Command syntax

```
QUERY AND VERIFY XNET DEPLOYMENT
Parms: <OPERATION:> {COUNT [<SITE> STRING]
                          <frame> {0 TO 511}
                           <unit> {0 TO 1},
                           <drawer> {0 TO 99},
                    COUNTALL,
                      VERIFY [<SITE> STRING]
                           <frame> {0 TO 511}
                           <unit> {0 TO 1},
                           <drawer> {0 TO 99},
                          <circuit> {0 TO 99},
                    VERIFYALL,
                      EXPAND [<SITE> STRING]
                           <frame> {0 TO 511}
                           <unit> {0 TO 1},
                          <drawer> {0 TO 99},
                          <circuit> {0 TO 99},
                          {ALL]}
```

Data Schema Changes

1 Meg Modem Service requires the datafill changes described in the sections below.

Changed table: LCMDRINV

The XNET feature introduces a new LCM drawer variant, the XNETBIC. It can be datafilled for LCM drawers that are currently datafilled with standard LCM BICs or as a NIL_DRWR.

Description of changed fields

- LDCPEC – A Line Drawer Controller (LDC) code for the XNETBIC is added to the available LDC list. PEC = NTEX54AA
- DRWRPEC – A Drawer code will be added for the XNETDRWR. PEC = NT6X05EA.

Example

```
TABLE LCMDRWR
LCMNM DRWRTAB
-----------------------------------------------------------------
HOST  00 0
(0 NT6X05EA NTEX54AA NILLOAD) (1 NT6X05EA NTEX54AA NILLOAD)
(2 NT6X05AA NT6X54AA NILLOAD) (3 NT6X05AA NT6X54AA NILLOAD)
(4 NT6X05AA NT6X54AA NILLOAD) (5 NT6X05AA NT6X54AA NILLOAD)
(6 NT6X05AA NT6X54AA NILLOAD) (7 NT6X05AA NT6X54AA NILLOAD)
(8 NTBK32BA NT6X54DA QLQL0205)(9 NTBK32BA NT6X54DA QLQL0205)
```

Changed table: LNINV

The XNET feature introduces a new World Line Card, the XNETLC. This new line card is added to the available cards list, that can be configured to a line, when defining it in table LNINV for HOST LCMs.

Description of changed fields

- CARDCODE – A new card code for the XNETLC is added to the available cards list. This card can be configured to any LCM variant capable of supporting XNET. A check will be done to determine if the Drawer of the LCM supports XNET, a warning message with a confirmation request will be displayed if not.

Example

```
LEN CARDCODE PADGRP STATUS GND BNV MNO CARDINFO
-----------------------------------------------
HOST 01 0 00 16 EX17AA STDLN WORKING N NL N NIL
```

Log Message Changes

A new XNETLC was added to the table LNINV in an LCM Line drawer that does not support XNET data traffic. This line functions as a standard voice line, with no additional XNET functionality.

PM181 log reports are used to relay informational messages to operating company personnel about changes in line card assignment when made to a 1 Meg Modem Service line.

Log report: PM181

In the example below the craftsperson was warned at the time of the XNETLC addition to the table LNINV that the LNINV change results in an XNET provisioning violation.

Format

```
RTPJ       PM181 <Date> <Time> INFO <lcmtype> <lcmnm> Unit <unit>
XNET ENGINEERING RULES VIOLATED LEN = HOST XX X XX XX
PHYSICAL DRWR <drwr> DOES NOT SUPPORT XNET DATA TRAFFIC
```

Example

```
RTPJ       PM181 JUL17 21:24:40 5700 INFO LCM HOST 00 1 Unit 0
XNET ENGINEERING RULES VIOLATED LEN = HOST 00 1 00 12
PHYSICAL DRWR 0 DOES NOT SUPPORT XNET DATA TRAFFIC
```

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

Hardware requirements

The following components are added to the host LCM:

- NT6X05EA – Line drawer containing high speed data service change kit
- NTEX54AA – Data enhanced bus interface card (DBIC)
- NTEX17AA – 1 Meg Modem Service Dual-slot line card

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The following limitations and restrictions apply to 1 Meg Modem Service:

- NTEX17AA line cards are required to be installed in LCM drawers that have an NTEX54AA DBIC to provide the data functions.
- NTEX17AA cards not installed in a drawer equipped with an NTEX54AA DBIC card function with voice services only.

This feature needs the following features to function properly:

- AF6471 – LCM Drawer Provisioning

LAYER		LN-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6593	Simultaneous Provisioning of FC3 and FC6	

Description

Prior to the Simultaneous Provisioning of FC3 and FC6 feature, the Flexible Calling (FC) option was provisioned on only one feature key on an ISDN (Integrated Services Digital Network) terminal; a second assignment of FC was not permitted on a terminal. The Simultaneous Provisioning of FC3 and FC6 feature enables FC to be provisioned on two feature keys on an ISDN terminal, as long as each FC instance has a unique maximum conference size assigned to it.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

This feature allows more than one appearance of Flexible Calling provided that the maximum conference size of each appearance is unique. When a user tries to provision more than one instance of Flexible Calling on a set, the addition is not rejected as before, unless another feature key is already provisioned with the same maximum conference size. If the user attempts to add another appearance of Flexible Calling with a size that already exists, an error message is displayed, and the transaction is rejected.

Prior to the Simultaneous Provisioning of FC3 and FC6 feature, the Service Order System (SERVORD) did not allow a second assignment of the FC option on an ISDN terminal. If an assignment of FC was requested, and an assignment of FC already existed on the terminal, the request for an assignment was denied and the following error message was displayed:

```
FC already exists on this set. The duplication was found on key <key number>.
```

With the Simultaneous Provisioning of FC3 and FC6 feature, when an assignment of FC is requested in SERVORD, the new assignment is allowed if the requested conference size (CONFSIZE) for the new assignment is not the same as the conference size of the existing FC instance. The preceding error message is no longer displayed. If the requested conference size is the same as the conference size of the existing FC instance, the new assignment is denied and the following error message is displayed:

```
There already exists a conference size <conference size> on key <key number>
FC did NOT pass checking.
```

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The FC option can be provisioned on two feature keys on an ISDN terminal, as long as each instance has a unique maximum conference size assigned to it.

LAYER		LN-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6603	Transfer of Non-Conference Related Call	

Description

To further comply with National ISDN-2 (NI-2) requirements, the Nortel DMS-100 National ISDN Basic Rate Interface (BRI) product introduces a new Flexible Calling (FC) transfer option TRANSFER. This feature is similar to the existing FC transfer option XFER, that supports transfers involving conference calls. This feature now introduces the additional functionality to transfer non-conference calls.

TRANSFER and XFER are mutually exclusive and dependent on the terminal type that the subscriber uses. XFER supports only pre-NI-2 terminals; TRANSFER supports only NI-2 terminals. All other provisioning restrictions applicable to XFER remain applicable to TRANSFER.

FC TRANSFER supports the following types of transfers:

- Conference transfers (“floating the conference”), where remaining conference call parties continue to be connected to each other after the controller exists. Conference transfers are done by implicit or explicit invocation.
- Call-to-Call transfers, where a party from one call is transferred to a party from another call. Neither call requires a conference to be active. Call-to-call transfers are done by explicit invocation only.

Command Changes

NONE

Data Schema Changes

Changed table: KSETFEAT

New option TRANSFER is mapped to ISDN Logical Terminal Identifiers (LTIDs) in table KSETFEAT. Two fields are required to identify whether implicit or explicit transfer is assigned and what customer group restrictions apply.

Field Information

- FEATURE (changed)
  - — TRANSFER
- TYPE (new)
  - — NCT = No Transfer (default value)

— EXP = Explicit Transfer

— IMP = Implicit Transfer

- CXFERTYP (changed)

  Note: *Only those CXFERTYP values which are valid for ISDN Flex Call are visible from the TRANSFER CXFERTYP prompt.*

  — NCT = No Transfer (default value)

  — CTINC = Incoming Intergroup calls may be transferred to an Intragroup member.

  — CTOUT = Intergroup (incoming or outgoing) calls may be transferred to an Intragroup member.

  — CTINTRA = Intergroup or Intragroup (incoming or outgoing) calls may be transferred to an Intragroup member.

  — CTALL = Intergroup or Intragroup (incoming or outgoing) calls may be transferred to an Intragroup or Intergroup party.

  — CUSTOM = Customer definable restrictions for transferring calls.

Example

```
> table KSETFEAT
> ISDN 3 11 TRANSFER TRANSFER EXP CTALL
```

Log Message Changes

NONE

OM Changes

This feature uses OM group FC to record the number of conference and non-conference transfer attempts, completions, and failed attempts.

New OM group: FC

The number of tuples in the group structure is based on the maximum number of customer groups as defined in table OFCENG as the tuple named CUSTOMER_GROUP_IBNGRP_OM_COUNT.

Register list

FCXCONAT, FCXCONAT2, FCXCONFL, FCXCONSU, FCXC2CAT, FCXC2CAT2, FCXC2CFL, FCXC2CSU

OMSHOW example

```
>omshow fc active
FC

CLASS:   ACTIVE
START:1996/11/19 16:30:00 TUE; STOP: 1996/11/19 16:39:18 TUE;
SLOWSAMPLES: 6 ; FASTSAMPLES: 56 ;

INFO (OMIBNGINFO)
      FCXCONAT FCXCONAT2FCXCONSU FCXCONFL  FCXC2CAT FCXC2CAT2  FCXC2CSU FCXC2CFL

0     ASRDFLT
      0        0        0        0        0        0         0        0
1     PFDEFAULT
      0        0        0        0        0        0         0        0
2     POTSDATA
      0        0        0        0        0        0         0        0
3     PRADEFAULT
      0        0        0        0        0        0         0        0
4     IBNTST
               0        0        0        0        0         0        0
5     BNR
      0        0        0        0        0        0         0        0
6     CGA
      0        0        0        0        0        0         0        0
7     CGB
      0        0        0        0        0        0         0        0
8     CGC
      0        0        0        0        0        0         0        0
256   RESGRP
      0        0        0        0        0        0         0        0
257   RGA
      0        0        0        0        0        0         0        0
258   RGB
      0        0        0        0        0        0         0        0
259   RGC
      0        0        0        0        0        0         0        0
260   CGCI
      0        0        0        0        0        0         0        0
261   RGCI
      0        0        0        0        0        0         0        0
262   RES1
      0        0        0        0        0        0         0        0
263   RES2
      0        0        0        0        0        0         0        0
264   LNPBIBN
      0        0        0        0        0        0         0        0
265   LNPTIBN
      0        0        0        0        0        0         0        0
>
```

New OM registers

Register name: FCXCONAT (Extension Register: FCXCONAT2)

Counts the number of attempts to made to use FlexCall to transfer a conference.

Register name: FCXCONSU

Counts the number of successful FlexCall Conference transfers.

Register name: FCXCONFL

Counts the number of times a FlexCall Conference transfer fails due to one of the following reasons:

- The call transfer allowed by the controlling station (intragroup or Intergroup) are not compatible with the call transfer allowed by the station to which the call is to be transferred.
- The call transfer attempt does not have adequate supervision on the trunks.
- The call transfer attempt references an invalid call type.

Register name: FCXC2CAT (Extension register: FCXC2CAT2)

Counts the number of attempts to made to use FlexCall to transfer two 2-party calls.

Register name: FCXC2CSU

Counts the number of successful FlexCall transfers of two 2-party calls.

Register name: FCXC2CFL

Counts the number of times a FlexCall transfer of two 2-party calls fails due to one of the following reasons:

- The call transfer allowed by the controlling station (intragroup or Intergroup) are not compatible with the call transfer allowed by the station to which the call is to be transferred.
- The call transfer attempt does not have adequate supervision on the trunks.
- The call transfer attempt references an invalid call type.

Service Order

Transfer of Non-Conference Related Call uses option TRANSFER to provision NI-2 Flex Call Transfer. The existing XFER option is also available to pre-NI-2 Flex Call subscribers.

Modification to XFER Option

Flow through for assigning XFER to a subscriber line is unaffected. However, a new restriction has been imposed requiring this option to be provisioned only to pre-NI-2 terminals.

New TRANSFER Option

New option TRANSFER is available to FC subscribers. Assignment of the TRANSFER option is similar to the XFER option with the following differences:

- An additional prompt is required to identify transfer type: Implicit, Explicit, or No Transfer.
- Implicit TRANSFER may be assigned via SERVORD either to a feature key or a DN key.

— When Implicit TRANSFER is assigned to a feature key, the subscriber may use TRANSFSER explicitly as well.

— When Explicit TRANSFER is provisioned, the subscriber does not receive Implicit TRANSFER.

Details of service order change

Option XFER

- Restrictions
  — Option TRANSFER is not compatible with XFER.
  — The subscriber terminal's LT Access Privilege (in table LTDEF) must be one of: B, D, PB, BD, or 2B. (LT Class=BRAFS; Circuit Switch Access Privilege = N, Y, 2B).

Option TRANSFER

- Restrictions
  — Option XFER is not compatible with TRANSFER.
  — Option FC must be assigned.
  — The subscriber terminal's LT Access Privilege (in table LTDEF) must be: NI2. (LT Class=BRAFS; Circuit Switch Access Privilege = NI2).
  — If TRANSFER is being assigned to a feature key, the key number must be greater than the feature key number assigned to FC.
  — All other restrictions applicable to XFER also apply to TRANSFER.
  — All other restrictions applicable to XFER also apply to TRANSFER.

Note: *IMPlicit TRANSFER may be either a DN feature or a SET feature. EXPlicit TRANSFER is a SET feature. NOTRANSfer TRANSFER is a DN feature.*

New prompts

- OPTKEY (1 to 64)
  — The Key number to which this option will be assigned.
  — If TYPE (new prompt) is assigned IMP or NCT, the DN key may be used.
- OPTION (TRANSFER)
  — Option name.
- TYPE (NOTRANS, EXP, IMP)
  — NOTRANS = No Call Transfer
  — EXP = Explicit Transfer only
  — IMP = Implicit Transfer. (If a feature key is assigned, Explicit Transfer is also allowed.)
- CXFERTYP CTINC, CTOUT, CTINTRA, CTALL, CUSTOM
  — CTINC = Incoming Intergroup calls may be transferred to an Intragroup member.

- CTOUT = Intergroup (incoming or outgoing) calls may be transferred to an Intragroup member.
- CTINTRA = Intergroup or Intragroup (incoming or outgoing) calls may be transferred to an Intragroup member.
- CTALL = Intergroup or Intragroup (incoming or outgoing) calls may be transferred to an Intragroup or Intergroup party.
- CUSTOM = Customer definable restrictions for transferring calls.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

- Explicit Transfer can transfer to a non–conference call to the Uniform Call Distribution (UCD) agent or UCD Queue. If the UCD Queue is full and an overflow route is given, the transferring user will be given Busy treatment.
- Explicit transfer can transfer a non–conference call to the attendant or into an attendant queue.
- When FC is assigned with Attendant Console Camp-on (ACO), the ISDN user (or controller) can place an existing call on hold to connect to a waiting call (referred to as an ACO call). Once the waiting call is answered, the Transfer option is allowed.
- The switch allows a call established through one of the Call Pickup features to be eligible for transfer.
- An IBN line or ISDN functional terminal is prevented from picking up any unanswered call involved in the FC conference. However, it is permitted to pick up any additional call on the BRI interface before it answers and is transferred. The controller may invoke Call Pickup to establish the conference call or an additional call from another DN/BC pair.
- DN bridging is incompatible with FC.
- When a party is found by Hunt (either Analog Hunt or Key Set Short Hunt), that party can be transferred to another party.
- A 911 call routed over an ES line or trunk cannot be bridged to an FC conference unless office parameter B911_3WC_ALLOWED in table OFCENG is set to true. Existing Fc and 911 interactions remain unchanged.
- EBO is a feature that allows the calling station to disrupt a call. Conferences and calls marked as Transfer–pending cannot be disrupted.

- A call where either party has option NDC (No Double Connect) is categorized as an FC blocked call. Since FC is a set option and NDC is a DN option, these FC calls are not blocked in service order. Instead, the FC calls are blocked on the invocation of the FC service.
- Feature Malicious Call Hold (MCH) can be invoked either by key or code access. For code access, the business set must have the 3WC or call transfer feature assigned. FC is not compatible with MCH.

Restrictions/Limitations

Transfer of Non-Conference Related Call is restricted to NI-2 terminals.

LAYER		LN-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6627	ISDN Calling Name/Number Privacy – Provisioning	

Description

This feature contains the CCM software changes associated with Integrated Services Digital Network (ISDN) Calling Name/Number Privacy–Provisioning. ISDN Calling Number Delivery/Name and Number Privacy allows ISDN Basic Rate Interface (BRI) lines access to the following Residential Enhanced Services (RES)/Meridian Digital Centrex (MDC) Calling Number Delivery (CND) and blocking features:

- Caller ID Delivery and Suppression (CIDS) originator-side features
  - — Caller ID Delivery and Suppression Suppression (CIDSSUP)–Calling Name and Number Blocking (CNNB) in the RES/MDC environment
  - — Caller ID Delivery and Suppression Delivery (CIDSDLV)–Calling Name and Number Delivery (CNNB) in the RES/MDC environment
  - — CIDSSUP and CIDSDLV Universal Access (UA) with Subscriber Usage–Sensitive Pricing (SUSP)
- Calling Number Identification Services (CNIS) originator-side features
  - — Privacy Change Allowed (PCA)

Command Changes

NONE

Data Schema Changes

Changed table: KSETFEAT

For each feature on a keyset, table KSETFEAT contains one tuple, indicating which set, which key and which feature, and holding any data relevant to the feature, such as the billing option or keylist. Since CIDSSUP, CIDSDLV, and PCACIDS are new line options, they are added to the range for the FEATKEY and FEATURE fields.

Changed fields

- FEATKEY, subfield FEAT
  - — The CIDSSUP, CIDSDLV, and PCACIDS options are added to the range of values for the FEAT subfield of FEATKEY.
- FEATURE
  - — The CIDSSUP, CIDSDLV, and PCACIDS options are added to the range of features available to KSETs.

- KVAR
  - — CIDSSUP and CIDSDLV refine KVAR to contain a billing option (AMA or NOAMA) and a keylist, while PCACIDS refines KVAR to hold the ALLOWPI bool and a keylist.

Example

```
TABLE:KSETFEAT
FEATKEY FEATURE KVAR
-----------------------------------
RCU0 00 0 13 12 1 CIDSSUP CIDSSUP NOAMA (1) (2) $
RCU0 00 0 13 12 1 CIDSDLV CIDSDLV NOAMA (1) (2) $
RCU0 00 0 13 12 1 PCACIDS PCACIDS Y (1) (2) $
```

Changed table: KSETLINE

For each DN on a keyset, table KSETLINE contains one tuple, indicating data about the set, and which features exist on the DN. Since CIDSSUP, CIDSDLV, and PCACIDS are new line options, they are added to the range for the OPTLIST refinement of the DNRESULT field.

Changed field

- DNRESULT (OPTLIST subrefinement)
  - — IDSSUP, CIDSDLV and PCACIDS are added to the range of options under this refinement.

Example

```
TABLE:KSETLINE
KSETKEY FORMAT DNRESULT
-----------------------------------------
HOST 00 1 09 04 1 DN Y 6215540 ISDNTST 0 0 613 (CIDSSUP) (CIDSDLV) (PCACIDS) $
```

Changed table: LCCOPT

For each Line Class Code (LCC), table LCCOPT lists all the options that are compatible with that LCC. Since CIDSSUP, CIDSDLV and PCACIDS are new line options for LCC ISDNKSET, these options appear in the ISDNKSET tuple.

Changed field

- COMPAT
  - — The CIDSSUP, CIDSDLV and PCACIDS options are added to the list of compatible options for the ISDNKSET LCC. This entry in table LCCOPT is added automatically at IPL.

Example

```
TABLE: LCCOPT
ISDNKSET
CIDSSUP(AAB) (ACOU) (AFC) (AIN) (AINDN) (AMATEST) (ASP) (ATC) (AUD) (AUL) (AVT)
(BC) (BCLID) (BLOCKCDN) (BLOCKCGN) (BNN) (BRICLID) (CBE) (CBI) (CBU) (CDC) (CDE)
(CDI) (CDU) (CFB) (CFD) (CFDVT) (DCF) (CFF) (CFI) (CFMDN) (CFTB) (CFTD) (CFU) (CHG)
(CIR) (CLI) (CMCF) (CIDSSUP) (CIDSDLV) (CNDBO) (CNF) (COT) (CPU) (CTD) (CWI)(CWT)
(CXR) (DCBI) (DCBX) (DCPK) (DCPU) (DCPX) (DENYISA) (DIN) (DLH) (DND) (DNH) (DOR)
(DRING) (DROP) (DTM) (EBO) (EBX) (ECM) (EHLD) (FC) (FCTDNTER) (FCTDNTRA) (FNT)
(FTRKEYS) (FTRGRP) (GIC) (HLD) (ICM) (IECFB) (IECFD) (ILB) (IMB) (IRR) (ISA)
(ISADEACT) (ISDNAMA) (KSH) (LCDR) (LNR) (LNRA) (LOD) (LOR)(LPIC) (LVM) (MBK) (MCH)
(MDN) (MDNNAME) (MEMDISP) (MLH) (MREL) (MRF) (MRFM) (MSB) (MSBI) (MWT) (NAME) (NDC)
(NOH) (NRS) (NUMC) (ONI) (PBL) (PCACIDS) (PIC) (PLP) (PPL) (PREMTBL) (PRK) (PRL)
(PROVCGS) (PROVCDS) (PROVLLC) (PROVHLC) (PRV) (RAG) (REASDSP) (RLS) (RMB) (RSP)
(RSUS) (SCA) (SCF) (SCL) (SCMP) (SCRJ) (SCS) (SCU) (SDS) (SDSDENY) (SDY) (SEC)
(SHU) (SL) (SLU) (SMDR) (SPB) (SSAC) (SUPPRESS) (SUS) (SVCGRP) (TBO) (TES) (TFO)
(3WC) (WML) (XFER) (XXTRG) $
```

Changed table: IBNXLA

Table IBNXLA contains the data for digit translations. The activation codes used to activate ISDN BRI CIDSSUP and CIDSDLV are the suggested activation codes *67 and *82, respectively. These activation codes are also used to activate the existing customer group option CNDB and universal access CNDB.

Changed field

- RESULT (FEATURE subrefinement)
  - — IDSSUP and CIDSDLV are added to the range of options under this refinement.

Example

```
TABLE:IBNXLA
KEY RESULT
----------------------------------------
CXT3 67 FEAT Y N N CIDSSUP
CXT3 82 FEAT Y N N CIDSDLV
```

Changed table: OPTCTL

Table OPTCTL contains packaging information for each line option. CIDSSUP and CIDSDLV for ISDNKSETs are added to package NTXA41.

Changed fields

- OPTLIST
  - — {CIDSSUP ISDNKSET} and {CIDSDLV ISDNKSET} are added as acceptable multiples.

Example

```
NTXPKG LASTCHG MAXCOUNT ACTCOUNT OPTLIST
------------------------------------------------------------------------
NTXA41 1996/11/7 999999 29 (CNDB RES) (CNDBAMA RES) (CNDB IBN) (CNDBAMA IBN)
(CIDSSUP ISDNKSET) (CIDSDLV ISDNKSET) $
```

Changed table: OPTOPT

Table OPTOPT contains one tuple for each line option and indicates the options incompatible with the line option in question. Since CIDSSUP and CIDSDLV are new line options and are incompatible with several options that currently exist, new tuples are added for each one. In addition, CIDSSUP and CIDSDLV are added to the incompatible options list for each existing incompatible option.

Changed fields

- OPTION
  - — IDSSUP and CIDSDLV are added to the range for this field.
- INCOMPAT
  - — IDSSUP and CIDSDLV are added to the range for the vector. This entry in table OPTOPT is added automatically at IPL.

Example

```
OPTION INCOMPAT
---------------------------
CIDSSUP (AUL) (AVT) (BNN) (PREMTBL) $
CIDSDLV (AUL) (AVT) (BNN) (PREMTBL) $
AVT (ACB) (ACRJ) (AR) (ARDDN) (CALLOG) (CIDSSUP) (CIDSDLV) (CNAB) (CNAMD) (CND)
(CNDB) (COT) (DDN) (DRCW) (DTM) (LDTPSAP) (SCA) (SCF) (SCMP) (SCRJ) $
```

Changed table: CUSTSTN

Table CUSTSTN contains options assigned to each of the customer groups. This feature creates a new customer group option PCACIDS. Through subfield ALLOWPI, this option controls whether or not privacy changes via the PI in the ISDN SETUP message are allowed for BRI lines in the customer group, and it overrides the ISDNBRI_PRIVACY_CHANGE_ALLOWED office parameter.

Changed field

- OPTNAME
  - — PCACIDS is added to the range of values for field OPTNAME.
- OPTION
  - — PCACIDS and subfield ALLOWPI are added to field OPTION.

Example

```
TABLE: CUSTSTN
CUSTNAME OPTNAME OPTION
-----------------------------------------
ISDNGRP PCACIDS PCACIDS Y
```

Office parameters

New office parameter ISDNBRI_PRIVACY_CHANGE_ALLOWED

An office-wide control to allow/deny the use of the PI in the ISDN setup message is required. A new office parm, ISDNBRI_PRIVACY_CHANGE_ALLOWED, is added to table OFCVAR for specifying the PCA status. If ISDNBRI_PRIVACY_CHANGE_ALLOWED is set to Y, the customer can modify the privacy status via the PI in the ISDN SETUP message. If ISDNBRI_PRIVACY_CHANGE_ALLOWED is set to N, the customer is denied the ability to modify the privacy status through the use of the PI. The value of this parameter can be overridden by the PCACIDS customer group control and the PCACIDS line option.

ISDNBRI_PRIVACY_CHANGE_ALLOWED is a boolean, and therefore takes only Y or N as appropriate values.

The default value for ISDNBRI_PRIVACY_CHANGE_ALLOWED is N, as specified in TR-TSY-000860.

When the parm is set to N and it is not overridden by the PCACIDS customer group option or line option, the user is restricted from changing the privacy status via the PI in the ISDN SETUP message. When the parm is set to Y and it is not overridden by the PCACIDS customer group option or line option, the user is allowed to change the privacy status via the PI in the ISDN SETUP message.

The value can be overridden by the PCACIDS customer group option and the PCACIDS line option.

Log Message Changes

NONE

OM Changes

NONE

Service Order

CIDSSUP and CIDSDLV can be added to feature keys on a set using SERVORD. The feature key can be used by all DNs on the set or by a specified subset of DNs. They can also be added as DN key options, assignable to the PDN of the set. The features can be accessed by all DNs on the set, or a specified subset. Option PCACIDS must be assigned to the PDN, but the functionality can apply to a subset of all the DNs.

The CIDSSUP and CIDSDLV options can be assigned either when a new line is being established using the NEW command or afterward using the ADO command. They can be deleted from the PDN or feature key using the DEO or OUT command. PCACIDS can be deleted using the DEO command. If the line is removed using the OUT command, the option is automatically deleted.

The billing option and keylists associated with the CIDSSUP and CIDSDLV options can be changed with CHF command. The value of the ALLOWPI parameter can be changed with the CHF command.

Service order examples

If Subscriber Usage-Sensitive Pricing (SUSP) is set to ON in table AMAOPTS, then the operating company has the option of enabling or disabling billing associated with CIDSSUP and CIDSDLV through the BILLING_OPTION prompt when adding the option to or changing the option on a feature key or DN. If SUSP is set to OFF, billing is disabled, and the BILLING_OPTION prompt does not appear.

The keylist specified for each feature consists of a discrete list of DN keys to which the feature applies, terminated by a dollar sign ($), or a list consisting solely of a dollar sign, indicating the feature applies to all DN keys.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The following limitations and restrictions apply to ISDN Calling Name/Number Privacy–Provisioning:

- The CIDSSUP and CIDSDLV options are explicit, assignable line options for ISDN BRI only.
- Activation of the CIDSSUP and CIDSDLV options affects the current call only.
- The CIDSSUP, CIDSDLV, and PCACIDS options are valid on functional version terminals only.
- The CIDSSUP and CIDSDLV feature keys are assignable on NI-2 terminals only.

- The functionality of the PCA option applies to IDSN only.
- The PCA option only controls the acceptance of the PI in the originating SETUP message.
- The PCA option does not affect activation of the CIDSDLV CIDSSUP options.

LAYER		LN-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6628	ISDN Calling Name/Number Delivery–Provisioning	

Description

This feature provides the provisioning of Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) Calling Name Delivery (CNAMD) and Calling Number Delivery (CND).

CNAMD, when active on a terminator's line, displays the calling party's name for the terminating subscriber on a flat-rate or subscriber usage-sensitive pricing (SUSP) basis. The calling party's name is retrieved from a centralized name database using transaction capabilities application part (TCAP). This feature provides the operating company the ability to provision CNAMD on an ISDN BRI terminal. This option is datafilled through SERVORD, and it must be added to a DN key.

CND, when active on a terminator's line, allows delivery of the originator's number information for the terminating subscriber on a flat-rate or SUSP basis. This feature provides the operating company the ability to provision CND on an ISDN BRI terminal. This option is also datafilled through SERVORD, and it must be added to a DN key.

Command Changes

NONE

Data Schema Changes

The following tables must be datafilled for CNAMD and CND:

- The ENABLED field of table RESOFC must be set to Y for CNAMD and CND to be activated for the entire office.
- Through its presence or absence in table CUSTNTWK, the TCAPNM customer group option provides the operating company the flexibility to use either the local name database or the centralized name database for RES, IBN, PSET, and ISDN subscribers to CNAMD.
- The existing CLID option is datafilled in table CUSTNTWK to specify the type of network calls for which CNAMD applies.
- Table RESFEAT is automatically updated when CNAMD and CND are assigned in SERVORD.
- Table IBNXLA stores the activation codes for activation and deactivation of CND and CNAMD SUSP. The same access codes used for RES and IBN as used for ISDN CNAMD and CND.

Changed table: LCCOPT

For each Line Class Code (LCC), table LCCOPT lists all the options that are compatible with that LCC. Since CNAMD and CND are expanded to be compatible with LCC ISDNKSET, these options need to appear in the ISDNKSET tuple.

Changed field: COMPAT

The CNAMD and CND options are added to the list of compatible options for the ISDNKSET LCC.

This entry in table LCCOPT is added automatically at IPL.

Example

```
TABLE: LCCOPT
ISDNKSET
(AAB) (ACOU) (AFC) (AIN) (AINDN) (AMATEST) (ASP) (ATC) (AUD) (AUL) (AVT) (BC)
(BCLID) (BLOCKCDN) (BLOCKCGN) (BNN) (BRICLID) (CBE) (CBI) (CBU) (CDC) (CDE) (CDI)
(CDU) (CFB) (CFD) (CFDVT) (DCF) (CFF) (CFI) (CFMDN) (CFTB) (CFTD) (CFU) (CHG) (CIR)
(CLI) (CMCF) (CNAMD) (CND) (CNDBO) (CNF) (COT) (CPU) (CTD) (CWI)(CWT) (CXR) (DCBI)
(DCBX) (DCPK) (DCPU) (DCPX) (DENYISA) (DIN) (DLH) (DND) (DNH) (DOR) (DRING) (DROP)
(DTM) (EBO) (EBX) (ECM) (EHLD) (FC) (FCTDNTER) (FCTDNTRA) (FNT) (FTRKEYS) (FTRGRP)
(GIC) (HLD) (ICM) (IECFB) (IECFD) (ILB) (IMB) (IRR) (ISA) (ISADEACT) (ISDNAMA)
(KSH) (LCDR) (LNR) (LNRA) (LOD) (LOR)(LPIC) (LVM) (MBK) (MCH) (MDN) (MDNNAME)
(MEMDISP) (MLH) (MREL) (MRF) (MRFM) (MSB) (MSBI) (MWT) (NAME) (NDC) (NOH) (NRS)
(NUMC) (ONI) (PBL) (PIC) (PLP) (PPL) (PREMTBL) (PRK) (PRL) (PROVCGS) (PROVCDS)
(PROVLLC) (PROVHLC) (PRV) (RAG) (REASDSP) (RLS) (RMB) (RSP) (RSUS) (SCA) (SCF)
(SCL) (SCMP) (SCRJ) (SCS) (SCU) (SDS) (SDSDENY) (SDY) (SEC) (SHU) (SL) (SLU) (SMDR)
(SPB) (SSAC) (SUPPRESS) (SUS) (SVCGRP) (TBO) (TES) (TFO) (3WC) (WML) (XFER) (XXTRG)
$
```

Changed table: OPTOPT

For each line option, table OPTOPT lists all the options that are incompatible with that line option. For the CND option, additional options are added to the list of incompatible options. For the CNAMD option, no additional options are added to the list of incompatible options.

Changed fields

- IINCOMPAT
  - — The BLOCKCGN and BNN options are added to the list of incompatible options for the CND option.
- INCOMPAT
  - — The CND option is added to the list of incompatible options for the BNN option.
- INCOMPAT
  - — The CND option is added to the list of incompatible options for the BLOCKCGN option.

This entry in table OPTOPT is added automatically at IPL.

Example

```
TABLE: OPTOPT
BLOCKCGN
                                                                    (      CND)$
      BNN
(ACB) (ACD) (AR) (ARDDN) (CBE) (CBI) (CBU) (CDE) (CDI) (CDU) (CFB) (CFBL) (CFD)
(CFDA) (CFDVT) (CFF) (CFI) (CFK) (CFRA) (CFS) (CFU) (CFW) (CMCF) (CNAMD) (CND)
(CPU) (CSDO) (CSMI) (CUSD) (CWX) (DIN) (DRCW) (ECM) (EHLD) (IECFB) (IECFD)
(LDTPSAP) (LINEPSAP) (LNPTST) (MDN) (MLAMP) (MPB) (MREL) (PBL) (PLP) (RAG) (RCHD)
(RSUS) (SCA) (SCF) (SCL) (SCMP) (SCRJ) (SCS) (SCU) (SC1) (SC2) (SC3) (SDN)
(SETMODEL) (SLQ) (SLVP) (SMDI) (SMDICND) (SOR) (SORC) (SPB) (UCD) (UCDSD) (WUCR) $
CND
(AVT) (BLOCKCGN) (BNN) (CCSA) (DCND) (DDN) (LDTPSAP)
(LNPTST) (PCWT) (PREMTBL) (3WCPUB) $
```

Office parameters

The new office parameter ISDNBRI_CNAMD_CND_ONE_AMA gives the operating company the flexibility of generating one or two AMA records when both CND and CNAMD are assigned on a SUSP basis and both features are active. When set to YES, one AMA record is generated. When set to NO, two separate records are generated. The default is N.

Log Message Changes

NONE

OM Changes

NONE

Service Order

CNAMD and CND are existing options in the MDC environment. This feature makes these options available to an LCC of ISDNKSET.

The CND and CNAMD options can only be added to a PDN or secondary DN key. For each DN assigned CND or CNAMD by SERVORD, a separate tuple in table RESFEAT is automatically updated.

AMA Changes

IF SUSP is set to ON in table AMA OPTS, AMA or NOAMA can be specified at the BILLING_OPTION prompt, which is created by this feature. If SUSP is set to OFF, the BILLING_OPTION parameter is not prompted for, and the NOAMA default is used.

Notes

NONE

Alarms

NONE

Interactions

Please see AF6640 in the ***LN-LATER*** section of this document for ISDN CNAMD interactions and AF6630 in the ***LN-LATER*** section of this document for ISDN CND interactions.

Restrictions/Limitations

The following limitations and restrictions apply to ISDN Calling Name/Number Delivery – Provisioning:

- ISDN CNAMD TACP is supported on NI Protocol Version Control (PVC) Issue 2 functional terminals only. ISDN CND is supported on NI PVC functional terminals.
- Unlike the CLID option in the ISDN calling number delivery case, the CLID option alone does not provide ISDN calling name delivery TCAP to the terminating party in the CLID's customer group. The CNAMD option must also be assigned to the terminating party DN, and the TCAPNM option must be assigned to the customer group.
- ISDN CNAMD and CND can only be added to a DN key. Therefore, the ISDN CNAMD and CND SUSP option can only be activated and deactivated by access code. Key activation and deactivation is not allowed.
- ISDN CNAMD and CND cannot be added to a Bridged Night Number (BNN).
- ISDN CNAMD and CND with AMA cannot be assigned to lines with Denied Origination (DOR) or Automatic Line (AUL).
- ISDN CNAMD and CND cannot be added through a feature group.
- The line option CNAMD can be assigned without any of the TCAPNM customer group options or TCAP office parameters, but the TCAP calling name is not delivered.
- The initial state of ISDN CNAMD TCAP and CND with SUSP is inactive. To change the state to active, the user can activate ISDN CNAMD TCAP and CND by activation code CNDA.
- The CND option is incompatible with the existing ISDN BRI option BLOCKCGN.
- ISDN CNG cannot be added to a secondary MDN single call arrangement (SCA)/Call Appearance Call Handling (CACH) member.
- ISDN CNAMD is incompatible with MADN SCA and MADN CACH.

LAYER		LN-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6630	ISDN Calling Number Delivery/Name and Number Privacy – Call Processing	

Description

ISDN Calling Number Delivery/Name and Number Privacy allows Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) lines access to the following Residential Enhanced Services (RES)/Meridian Digital Centrex (MDC) Calling Number Delivery (CND) and blocking features:

- Caller ID Delivery and Suppression (CIDS) originator-side features
  - — Caller ID Delivery and Suppression Suppression (CIDSSUP), which is Calling Name and Number Blocking (CNNB) in the RES/MDC environment
  - — Caller ID Delivery and Suppression Delivery (CIDSDLV), which is Calling Name and Number Delivery (CNND) in the RES/MDC environment
  - — CIDSSUP and CIDSDLV Universal Access (UA) with Subscriber Usage-Sensitive Pricing (SUSP)
  - — Privacy Change Allowed (PCA)
- Calling Number Identification Services (CNIS) terminator-side features
  - — ISDN Calling Number (and Name) Delivery (I-CND), including SUSP activation by way of CND Activation (CNDA) and CND Deactivation (CNDD)

CIDSSUP

This originator-side feature suppresses, or blocks, the calling party's name and number. The feature lasts for the duration of the call. The call originator activates CIDSSUP by dialing an access code or pressing a feature key before dialing a DN. The caller's name and number is suppressed for that call and is not delivered to the terminating party.

CIDSDLV

This originator-side feature delivers the calling party's name and number. The feature lasts for the duration of the call. The call originator activates CIDSDLV by dialing an access code or pressing a feature key before dialing a DN. The caller's name and number is delivered for that call to the terminating party if the terminating party has an active CND or CNAMD feature on the line.

CND

This terminator-side feature allows delivery of the caller's name and number if the information is not suppressed. If the information is suppressed by the originator,

operating-company datafilled text, such as OUTSIDE CALL, displays to alert the terminator that the calling number has been suppressed.

PCA

The Privacy Change Allowed feature gives the operating company control to allow or disallow subscriber ability to restrict or allow privacy status changes. The control mechanism is the presentation indicator (PI) in the calling number information element (CGNIE) of the SETUP message from an ISDN BRI originator's set. The PI can be set to allowed or restricted.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

The following AMA records are produced for CND and CIDSDLV:

- Structure code 110, call code 264, feature code 080.
  - — This is an existing CLASS billing record, produced for SUSP CND and for lines that have both SUSP CNAMD assigned in the office parameter ISDNBRI_CNAMD_CND_ONE_AMA is set to N.
- Structure code 1030, call code 330, feature code 085.
  - — This is a new AMA record produced for successful subscriber UA and CIDSDLV line option activations of SUSP CIDSDLV.

Billing format: CND

Record: Structure Code 110 / Feature Code 80

For ISDN BRI lines which are assigned SUSP CND, but not assigned usage-sensitive CNAMD, the billing record has the 110 Structure Code with 080 as the CLASS

Feature Code (indicating CND). The billing record includes the AVAIL and UNAVAIL counts of Calling Number Delivery.

The peg counts for the CND feature are reported as follows:

- AVAIL count stores the number of times that a calling number was delivered to the subscriber.
- UNAVAIL count stores the number of times that out-of-area or private was delivered.

ISDN BRI lines that are assigned both SUSP CND and SUSP CNAMD generate a billing record for CND as described above only if office parameter ISDNBRI_CNAMD_CND_ONE_AMA is set to N in table OFCENG. The N value for this office parameter indicates that separate AMA records are required for the CND and CNAMD features.

See features AF6640, ISDN TCAP Calling Name Delivery - Callp, and AF6628, ISDN Calling Name / Number Delivery - Prov, in the ***LN-LATER*** section of this manual for more details on the behavior and provisioning of ISDNBRI_CNAMD_CND_ONE_AMA.

Example of record

```
HEX ID: AA STRUCTURE CODE:40110C CALL CODE:264C SENSOR
TYPE:036C SENSOR ID:0000000C REC OFFICE TYPE:036C REC
OFFICE ID:0000000C CLASS FEATURE:080C DATE:92519C CONNECT TIME:1049386C NPA:819C
DIR NUMBER:6221999C AVAIL
COUNT:000026C UNAVAIL COUNT:000005C
```

Record: Structure code 110/Feature Code 87 (with Module Code 49)

For information on this record, refer to feature AF6640, ISDN TCAP Calling Name Delivery - CallP, in the ***LN-LATER*** section of this document.

To produce an AMA record using structure code 110 / call type 264 where CLASS Feature Code is 080:

- The BELLCORE AMA package must be present in the office.
- The SUSP entry in Table AMAOPTS must be set to “ON”.
- CNAMD and CND features with AMA must be assigned to a line.
- CNAMD and CND must be enabled in Table RESOFC.
- CNAMD and CND must be enabled on the subscriber's line.
- The CIDSUSPAUD entry in Table AMAOPTS must be scheduled.
- ISDNBRI_CNAMD_CND_ONE_AMA in Table OFCENG is set to N.

CIDSDLV

This feature implements the TR-NWT-000391, Issue 1, format for the CIDSDLV (CNND) AMA record.

If CIDSDLV AMA is enabled, an AMA record is generated upon successful ISDN CIDSDLV activations.

The new AMA record uses the structure code 1030 call code 330 and feature code 085.

Example of record

```
*HEX ID:AA STRUCTURE CODE:01030C CALL CODE:330C SENSOR TYPE:036C SENSOR
ID:0619351C REC OFFICE TYPE:036C REC OFFICE ID:0619351C DATE:60819C CLASS
FEATURE:085C ORIG NPA:613C ORIG NUMBER:6215015C OVERSEAS IND:1C TERM NPA:00613C
TERM NUMBER:6215010C CONNECT TIME:1514376C ELAPSED TIME:000000000C CLASS
FUNCTION:000C FEATURE STATUS:000C SCRN LIST SCF:FFFF SCRN LIST SCR:FFFF SCRN LIST
DRCW:FFFF
```

Note: *ELAPSED TIME is zero because this record bills for usage of a subscriber feature and not for a toll call. CONNECT TIME is the time at which the billing record is generated. The ANSWERED bool is defaulted to YES.*

To produce an AMA record using structure code 1030 call type 330 where the CLASS Feature Code is 085:

- The Bellcore AMA package must be present in the office, and the office must be configured for Bellcore AMA format records.
- SUSP billing must be enabled in Table AMAOPTS.
- CIDSDLV must be available in the office.
- CIDSDLV AMA must be assigned to the line or CIDSDLV is activated by Universal Access on an ISDN line with no CIDSDLV line option or CIDSDLV customer group option.
- Upon successful CIDSDLV activation an AMA record is generated.

Notes

NONE

Alarms

NONE

Interactions

ISDN Calling Number Delivery/Name and Number Privacy–Call Processing interacts with the following features:

- Additional Call Offering (ACO)
- ISDN Call Forwarding
- ISDN Multiline Hunt Group
- Electronic Key Telephone Service (EKTS)

Restrictions/Limitations

The following limitations and restrictions apply to ISDN Calling Number Delivery/Name and Number Privacy–Call Processing:

- The ISDN display features are supported on the Protocol Version Control (PVC) Functional Issue 2 terminals only. Both NI-1 and NI-2 terminals are supported. CIDSSUP and CIDSDLV feature keys are only supported on NI-2 terminals.
- The extended CND parameter that allows the subscriber to control delivery of the calling party number based on its intra- or inter-Basic Business Group (BBG) status is not supported.
- The PCA parameters only control the acceptance of the PI in the originating SETUP message.
- CND deactivation and reactivation using a feature key is not supported.
- The CND option is incompatible with the existing ISDN BRI option BLOCKCGN.
- Abbreviated Number Delivery (AND) is not supported.
- Redirecting Number Delivery (RND) is not supported.
- No AMA records are generated for the PCA feature.
- This feature does not support the Bellcore requirements for ISDN uniform display.
- CND is not provisionable on a MADN SCA secondary ISDN member.

LAYER		LN-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6640	ISDN TCAP Calling Name Delivery	

Description

The ISDN transaction capabilities application part (TCAP) Calling Name Delivery (CNAMD) feature extends existing DMS-100 TCAP CNAMD to include ISDN basic rate interface (BRI) subscribers. This feature is also referred to as ISDN basic rate interface (BRI) TCAP Calling Name Delivery (I-CNAM).

This feature launches a TCAP query to a centralized name database and displays the calling party's name and name privacy status for the terminating subscriber, based on the calling party's North American numbering plan (NANP) 10-digit directory number (DN).

This feature is datafilled through SERVORD and must be added to a DN key.

Command Changes

NONE

Data Schema Changes

All necessary TCAPNM datafill specified in feature AN0232, CLASS: TCAP for Calling Name Delivery, is required.

The table control changes for assigning ISDN TCAP CNAMD to an ISDN BRI subscriber include the following:

- Enabling CNAMD in table RESOFC
- Assigning TCAPNM and CLID to the ISDN BRI subscriber's customer group in table CUSTNTWK
- Specifying ISDNBRI_CNAMD_CND_ONE_AMA in table OFCENG

Log Message Changes

ISDN TCAP CNAMD generates standard logs.

OM Changes

ISDN CAP CNAMD pegs normal name delivery and TCAP query.

Service Order

The SERVORD changes for assigning ISDN TCAP CNAMD to an ISDN BRI subscriber include assigning CNAMD to an ISDN BRI DN key.

AMA Changes

A Bellcore format AMA record is produced for each CLASS SUSP Display (CND, CNAMD, DDN) subscriber as scheduled in table AMAOPTS through the CIDSUSPAUD entry, or when SUSP is removed from the DN key.

The ISDN TCAP CNAMD feature enables the ISDN BRI line to use the existing CLASS SUSP billing format. For ISDN BRI lines that have been assigned SUSP CNAMD but that have not been assigned usage-sensitive CND, a billing record with 110 Structure Code and 082 CLASS Feature Code (indicating CNAMD) is generated. The record includes the AVAIL and UNAVAIL counts of the CNAMD.

Billing records that are generated when the ISDN BRI subscriber has both SUSP CNAMD and SUSP CND assigned are dependent upon office parameter ISDNBRI_CNAMD_CND_ONE_AMA in table OFCENG. When the office parameter is set to Y (yes), a combined AMA record for the CNAMD and CND features is produced that has a 110 Structure Code, 087 CLASS Feature Code (indicating combined CNAMD/CND record), and 049 Module Code.

When ISDNBRI_CNAMD_CND_ONE_AMA is set to N (no), separate AMA records are generated for the CNAMD and CND features if they are both assigned to the BRI line. These separate records are consistent with the records produced when the features were singly assigned (that is, 082 CLASS Feature Code in the CNAMD records, 080 CLASS Feature Code in the CND record).

Notes

The standard hardware to implement ISDN BRI, CCS7, signaling switching point (SSP), and service control point (SCP) is required.

Alarms

NONE

Interactions

Additional Call Offering and Additional Functional Calls

The Additional Call Offering (ACOU) and Additional Functional Calls (AFC) features together allow an ISDN set to accept more than one call on a particular DN. Calls can be controlled by extra DN keys, but only one call at a time may be active. Calls terminating to an ISDN AFC key receive the TCAP calling name. NI-2 calls that are offered using ACOU (offered without a B-channel) receive the TCAP calling name.

ADDRESS DNGRPS option

Option DNGRPS allows a calling DN to be mapped to another DN to be used as the originating address. If this feature changes the originating DN, then the TCAP name query is launched using the changed DN.

Advanced intelligent network (AIN 0.1)

Instead of the originating party DN, the CallingPartyID parameter in the Analyze_Route, Forward_Call, or Authorize_Termination message returned from the advanced intelligent network (AIN 0.1) SCP response is used to query the centralized name database. This expedient allows the name associated with the CallingPartyID provided by the AIN 0.1 SCP to be displayed on the terminating CPE of the ISDN subscriber.

When no CallingPartyID is provided in the AIN 0.1 response, the original calling party DN is used to query the centralized name database.

The AIN 0.1 Display Text parameter is currently supported only for RES, 1FR, and 1MR line classes. Therefore, AIN 0.1 Display Text has no impact on delivery of the TCAP calling name to the ISDN BRI subscriber.

Auto Dial

When Auto Dial, which automatically dials a stored number, originates the call, the TCAP calling name is delivered to the ISDN party.

Automatic Line

When Automatic Line, which originates calls to a predefined DN, originates the call, the TCAP calling name is delivered to the ISDN party.

Automatic Call Back (ACB), Automatic Recall (AR)

The ACB feature allows a subscriber to make a call to the last station called by the subscriber. The AR feature allows a user to call the last station that called the subscriber. When the call cannot be completed because of a busy line, the ACB or AR subscriber receives a confirmation tone or announcement. Ringback is given to the ACB or AR subscriber once the called party becomes free. The TCAP calling name information is not delivered during the ringback on ACB or AR activations. However, TCAP calling name information is delivered to the ISDN called party.

Basic Business Group (BBG)

In the case of BBG functionality, the ISDN TCAP CNAMD feature overrides the proprietary name delivery feature when both of these features are assigned to the line or group. In determining which database is used to obtain the calling name, no discrimination exists between intra- or inter-group calls. TCAP CNAMD is used in all cases.

Call Forward Universal, Call Forward Busy, Call Forward Fixed

When the ISDN TCAPNM subscriber has activated the Call Forward Universal (CFU), Call Forward Busy (CFB), or Call Forward Fixed (CFF) feature, no name is transmitted to the call forward base station on call forward since the call is not answered.

When a call is forwarded to an ISDN remote party, TCAP calling name information associated with the originator is delivered to the ISDN remote station.

For all call forwarding scenarios that forward over ISUP, the TCAP calling name is not sent in the IAM. The terminating office is responsible for querying the centralized database for TCAP calling name information based on the 10-digit calling party number in the ISUP IAM.

Note: *Redirecting proprietary name information (NAMEDISP), if provisioned, continues to show the proprietary redirecting name and redirecting reason on the call forwarded remote station.*

Call Forwarding Don't Answer (CFD)

The TCAP calling name information associated with the originator is delivered to the ISDN call forward base station. When the call is not answered within the specified period of time, the call is forwarded to a remote party. TCAP calling name information associated with the originator is delivered to the call forward remote station.

For scenarios that forward over ISUP, the TCAP calling name is not sent in the IAM. The terminating office is responsible for querying the centralized database for calling name information based on the 10-digit calling party number in the ISUP IAM.

Note: *Redirecting proprietary name information (NAMEDISP), if provisioned, continues to show the proprietary redirecting name and redirecting reason on the call forwarded remote station.*

Call Hold

If the TCAP calling name is delivered during the initial termination to the ISDN BRI party, then all subsequent retrievals from Call Hold display the TCAP calling name.

Calling Number Delivery (CND)

If an ISDN party is subscriber to both CND and CNAMD, then both the TCAP calling number and TCAP calling name are displayed.

Call Park (PRK, DCPK)

During Call Park functions, ISDN sets do not update name display. If ISDN is the original terminator parking the call, the TCAP name is delivered at termination time, since it is a purely basic call function. Call Park Recall does not update the ISDN display with either proprietary calling name or TCAP calling name. When ISDN un-parks a call, the TCAP calling name is not displayed.

Call Transfer

When the ISDN TCAP CNAMD subscriber is the conference call add-on party, a TCAP name query is launched based on the conference controller's DN. If the conference controller performs a call transfer before the TCAP response is received by the add-on party, and before the TCAP name timer expires, then the TCAP response is no longer valid and the proprietary connected name is delivered to the MDC or ISDN BRI CPE upon transfer.

Calling Identity Delivery and Suppression (CIDS)

Using features CNND and CNNB for CIDS, an originator may explicitly deliver or block both name and number. When an ISDN party is called by a party that has activated CNNB, the TCAP calling name is not displayed.

Conference Features

When any conference interacting with ISDN TCAP CNAMD initiates a normal two-party call to an ISDN party, the ISDN party receives the TCAP calling name. If the TCAP response is received by the add-on party after the controller has conferenced, then the response it not considered valid and is not displayed to the add-on party. The following conference features are affected:

- 3WC and FlexCall. These two features require the controller to call each of the add-on parties. ISDN BRI add-on parties receive the TCAP calling name of the controller before conference or transfer.
- Station-Controlled. This feature requires the controller to call each of the add-on parties. ISDN add-on parties receive the TCAP calling name of the controller.
- Meetme. Parties must call a central conference number. Since no ISDN parties are called, TCAP CNAMD does not apply.
- Preset. When the controller calls the conference number, each of the preset conferees is automatically called. Since this not a typical two-party scenario, any ISDN add-ons do not receive the TCAP calling name.

Executive Busy Override (EBO)

The ISDN party who is barged in on by EBO does not receive any display updates during EBO feature function. An ISDN terminator who originally displayed the TCAP calling name does not display the EDOer's name upon barge-in, and therefore does not change when the EDOer exits the call.

Group Intercom Calls (GIC)

The GIC feature allows a user to terminate a call on a member of a designated intercom group using abbreviated dialing. For calls terminating to ISDN BRI GIC, no TCAP calling name information is delivered.

Hunt Groups (DNH, MLH)

Hunting is a call-completion process that increases the likelihood of an incoming call being completed within a subscriber-defined group of lines. When attempting to terminate a call to a busy line that is assigned hunting, the switch scans a group of lines sequentially, searching for an idle line on which to complete the call. This group of lines is called a hunt group. The TCAP calling name information is sent to a line when it is alerted of an incoming call.

Last Number Redial (LNR)

The LNR feature redials the last number dialed by the subscriber. In a call originated by means of LNR to an ISDN party, the ISDN party receives the TCAP calling name.

Make Set Busy (MSB)

The MSB feature makes the ISDN party appear busy to all incoming calls, and so no TCAP calling name is displayed.

Message Waiting (CAR, CRR, MWT)

Message waiting in conjunction with Call Request Retrieve and Call Request enables a party to log a call against another party, enabling that party to dial an access code to call back the requesting party. Calls originated to an ISDN party by means of CRR do not receive the TCAP calling name.

Multiparty Lines

When an ISDN party is called by a multiparty line, a TCAP calling name is displayed based upon the proper multiparty lines DN.

Note: *4FR lines need special hardware to discriminate individual DNs or an operator assisted call. 8FR lines cannot discriminate.*

MADN SCA, EKTS CACH

The Multiple Appearance Directory Number (MADN SCA) and Electronic Key Telephone System (EKTS CACH) features allow a single DN to be associated with a group or a group of groups of subscriber lines. One member of the group can be a residential line and another can be a business line. TCAP calling name information is not provided to any member of the EKTS MADN SCA or EKTS CACH group.

Multiswitch Business Group (MBG) Feature Networking Control

MBG Feature Networking Control implements a per-customer group control mechanism for a subset of the networked features available to calls using a MBG service. The network features that can be controlled are: Network Name Display (NAME) and Network Number/Reason Display (CLID).

Control of the CLID and NAME display features for a customer group is accomplished by the addition of option MBGDENY to table CUSTNTWK. Option MBGDENY has two associated sub-options: option CLID and option NAME.

TCAP calling name information is not delivered to the called party for MBG calls over public ISUP trunks when the terminating switch has either the option MBGDENY NAME or the option MBGDENY CLID NAME for the customer group.

Proprietary CNAMD

If datafill and service orders have been completed to allow TCAP CNAMD to an ISDN BRI subscriber, and that subscriber's customer group is also assigned the proprietary CNAMD option NAMEDISP in table CUSTSTN, then TCAP CNAMD takes precedence over proprietary CNAMD.

Note: *There is no discrimination between inter-BBG calls and intra-BBG calls to determine which CNAMD mechanism to use. This is a known non-compliancy, since discrimination between these kinds of calls is supposed to take place and the option of providing personal names for intra-BBG calls is supposed to be provided.*

Ring Again (RAG)

The Ring Again (RAG) feature allows the subscriber encountering a busy DN to be notified when the busy party becomes idle and the same DN is redialled automatically. Ringing is provided to the RAG subscriber once the busy party is free. The TCAP calling name information is not delivered during the RAG ringback. However, TCAP calling name information is delivered to the RAG called party.

Selective CAll Acceptance (SCA)

TCAP calling name information is delivered to the ISDN line if Selective Call Acceptance applies and the call is allowed to terminate. For those calls that are not accepted, termination to the ISDN line does not occur and thus TCAP calling name information is not delivered.

Selective Call Forwarding (SCF)

For an ISDN line with SCF, the interactions are the same as Call Forwarding if SCF applies to the call and the call is forwarded. When SCF does not apply to the call, the call terminates to the ISDN call forward base station and TCAP calling name information is delivered.

Selective Call Rejection (SCRJ)

TCAP calling name information is delivered to the ISDN line if Selective Call Rejection does not apply to the call and is allowed to terminate. For those calls that are rejected, termination to the ISDN line does not occur and thus TCAP calling name information is not delivered.

Speed Call

Speed call enables subscribers to dial an abbreviated access code that corresponds to a pre-programmed DN. Calls to an ISDN party by means of speed call receive the TCAP calling name.

Option SUPPRESS line

Option SUPPRESS line sets the originator's permanent privacy status for number and name. During termination to the ISDN TCAP CNAMD subscriber, the permanent privacy status of the name is not used to discriminate when a TCAP query should be launched. The permanent privacy status of the calling number, as set by SUPPRESS, is considered when determining whether ISDN TCAP CNAMD applies. This is consistent with the fact that name privacy follows number privacy.

Option SUPPRESS DNGRPS

Network option SUPPRESS DNGRPS affects the delivery of the TCAP calling name. When this option is set to SUPPRESS NAME in DNGRPS, no TCAP name query is launched.

Restrictions/Limitations

The following limitations and restrictions apply to ISDN TCAP CNAMD:

- The ISDN Display features are supported only on National ISDN Protocol Version Control (PVC) Functional Issue 2 terminals.
- End-to-end ISUP CCS7 connectivity is required on inter-switch calls to transmit the calling DN to the terminating switch.
- ISDN TCAP CNAMD uses the same centralized name database that is used by the Residential Enhanced Services (RES) and MDC TCAP CNAMD features. Therefore, this feature requires all necessary datafill for providing the RES TCAP CNAMD functionality.
- The centralized name database requires a 10-digit DN in the TCAP query. An out-of-area indication is sent to the ISDN BRI customer premises equipment (CPE) if a calling party number is received in the ISUP initial address message (IAM) with other than a 10-digit DN.
- ISDN TCAP CNAMD is not supported for primary rate interface (PRI) trunk-originated calls that terminate to an ISDN BRI subscriber. When the originating trunk type is PRI, an out-of-area indication is delivered.
- ISDN TCAP CNAMD SUSP activation and deactivation is provided by existing RES or IBN Calling Number Delivery Activation (CNDA) and Calling Number Delivery Deactivation (CNDD) codes, respectively. ISDN-specific activation codes (DLVFEATA or DLVFEATD) are not used. Feature key activation and deactivation is not provided.
- TCAP calling name information is not delivered during the ringback on automatic call back (ACB) or automatic recall (AR) activations.
- ISDN TCAP CNAMD is not supported to terminating electronic key telephone service (EKTS) Multiple Appearance Directory Number (MADN) groups.
- ISDN TCAP CNAMD does not support basic business group (BBG) and multi-switch business group (MBG) procedures.
- ISDN TCAP CNAMD does not change existing ISDN BRI display text functionality (provided by proprietary name and reason display).

- ISDN TCAP CNAMD does not support Redirecting Name Delivery (RNAM). The existing proprietary (non-TCAP) redirecting name delivery remains in effect.
- ISDN TCAP CNAMD uses existing CLASS CNAMD and Calling Number Delivery (CND) operational measurements (OM).

LAYER		LN-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	BRI
AF6650	Basic Rate Interface Layer 2/3 Surveillance Monitoring	

Description

This feature implements the Basic Rate Interface (BRI) layer 2/3 surveillance requirements as outlined by section 3.5 of technical requirement 821 (TR821).

The following is a list of the functional elements of this feature:

- Extension of functionality of current maintenance and administration position (MAP) commands for on demand accessing to include layer 3 performance data for circuit switched lines
- Generation of abnormality log reports including reports of terminal endpoint identifier (TEI) assignment abnormalities which are detected by the D-channel (DCH) or Enhanced D-channel handler (EDCH) and logged by the computing module (CM)
- Generation of log reports for layer 3 signaling abnormalities reported by the integrated services digital network extended peripheral module (ISDN XPM) and logged by the CM
- Generation of daily log reports listing ISDN lines experiencing high abnormality rates for both layers 2 and 3
- User control of layer 2 and 3 abnormality reports on an individual line and office-wide basis

Command Changes

Modifications have been made to the MAP commands QLAYER and RLAYER to include the additional layer 2 and layer 3 abnormality counts. The following modifications have been made:

- displaying of layer 2 high abnormality count
- displaying of layer 3 high abnormality count
- displaying of TEI assignment abnormality total count
- displaying of two additional frame abnormality counts along with other frame abnormality counts, which are:
  - — tracking when proper response is not received when attempting to establish or reset a link after a N200 SABME frame has been sent
  - — tracking all incorrect frames not counted elsewhere

Non-menu commands L2LOGCTL and L3LOGCTL have been added to the LTPISDN MAP level.

The use of the non-resident ISPGAUD command has been expanded to include layer 3 checking.

QLAYER command description

This menu command is used to query the layer 1, 2, and 3 performance and abnormality information for ISDN lines. It is executed from the LTPISDN level of the MAP. The command displays the information to the MAP. This feature increases the information displayed for layer 2, adding one more frame abnormality count, a layer 2 abnormality count, and a TEI assignment abnormality count total. A layer 3 high abnormality count is also displayed.

If the posted ISDN line is not a 2B1Q line, layer 1 information is ignored.

The new information display introduced by this feature for layer 2 is not applicable to the ISDN line drawer (ILD), the subscriber module-100 urban (SMU), and the subscriber carrier module-100 access (SMA). The layer 2 information for the ILD is displayed in the existing format.

QLAYER command syntax

A valid ISDN line must be posted to display the command syntax. The syntax for command QLAYER is:

QLAYER <layer> <mode>

Sample output follows:

```
> QLAYER
LEN HOST 01 0 00 06
 ---BE NE---  ---BE FE---
  C.Hr  P.Hr   C.Hr  P.Hr
    0     1      0     0

 ---ES NE---  ---SES NE---    ---ES FE---  ---SES FE---
  C.Hr  C.Dy   C.Hr  C.Dy      C.Hr  C.Dy   C.Hr  C.Dy
    0     1      0     0         0     0      0     0
 Active Thresholds (NE)   and   (FE)
   40   100     10    25        40   100     10    25

 ---ES NE---  ---SES NE---    ---ES FE---  ---SES FE---
  P.Hr  P.Dy   P.Hr  P.Dy  TI  P.Hr  P.Dy   P.Hr  P.Dy
     1            0        -1     0            0

  Linecard Clock    1   12:20:36
Frames received in total      :          0
Frames received in error      :          0
Frames transmitted in total   :        274
Frames retransmitted          :          0
Percentage error received     :        0.0%
Percentage retransmitted      :        0.0%

Number of Service Disruptions :     0
Length of Time Disrupted      :     0 minutes.
Currently Disrupted           : NO

Layer 2 Individual Abnormality Counts:
 ABN1  ABN2  ABN3  ABN4  ABN5  ABN6  ABN7  ABN8  ABN9 ABN10
===== ===== ===== ===== ===== ===== ===== ===== ===== =====
    0     0     0     0     0     0     0     0     0     0

TEI Assignment Abnormality Count : 0
Layer 2 High Abnormality Count   : 0

Layer 3 High Abnormality Count   : 0
```

RLAYER command description

This menu command is used to query and reset the layer 1, 2, and 3 performance abnormality information for ISDN lines. It is executed from the LTPISDN level of the MAP. The command displays the information to the MAP. This feature increases the information displayed and resets for layer 2, adding one more frame abnormality count, a layer 2 high abnormality count, and a TEI assignment abnormality count total. A layer 3 high abnormality count is also displayed and reset.

If the posted ISDN line is not a Two-Binary, One-Quaternary (2B1Q) line, layer 1 information is ignored.

RLAYER command syntax

A valid ISDN line must be posted in order for the command syntax to be displayed. The syntax for command RLAYER is:

RLAYER <layer> <mode> <all_posted>

An example follows:

```
> RLAYER
LEN HOST 01 0 00 06
 ---BE NE---  ---BE FE---
  C.Hr  P.Hr   C.Hr  P.Hr
    0     1      0     0

 ---ES NE---  ---SES NE---    ---ES FE---  ---SES FE---
  C.Hr  C.Dy   C.Hr  C.Dy      C.Hr  C.Dy   C.Hr  C.Dy
    0     1      0     0         0     0      0     0
 Active Thresholds (NE)   and   (FE)
   40   100     10    25        40   100     10    25

 ---ES NE---  ---SES NE---    ---ES FE---  ---SES FE---
  P.Hr  P.Dy   P.Hr  P.Dy  TI  P.Hr  P.Dy   P.Hr  P.Dy
     1            0        -1     0            0

  Linecard Clock    1   12:20:36
  L1 COUNTERS : RESET

Frames received in total      :          0
Frames received in error      :          0
Frames transmitted in total   :        274
Frames retransmitted          :          0
Percentage error received     :        0.0%
Percentage retransmitted      :        0.0%

Number of Service Disruptions :     0
Length of Time Disrupted      :     0 minutes.
Currently Disrupted           : NO

Layer 2 Individual Abnormality Counts:
 ABN1  ABN2  ABN3  ABN4  ABN5  ABN6  ABN7  ABN8  ABN9 ABN10
===== ===== ===== ===== ===== ===== ===== ===== ===== =====
    0     0     0     0     0     0     0     0     0     0
TEI Assignment Abnormality Count : 0
Layer 2 High Abnormality Count   : 0

   L2 COUNTERS : RESET

Layer 3 High Abnormality Count   : 0

   L3 COUNTERS : RESET
```

L2LOGCTL command description

This command allows the user to control which ISDN layer 2 abnormality logs are generated and which are inhibited. The logs can be controlled on an individual line basis as well as on an office-wide basis. This command is only used to set individual line log generation parameters. The office-wide parameters are controlled through table control. Both the office parameter and the line parameter must be ON for a log to be generated for a particular line. This provision can be overridden using the particular line's override parameter. The inclusion of this parameter allows the generation of log reports for an individual line instead of for the whole office. The three options for this command are: QUERY, SET, and SETOVR.

L2LOGCTL command syntax

The syntax for the L2LOGCTL command is:

- L2LOGCTL QUERY <query_mode>

- L2LOGCTL SET <12logic_entity><12_entity_status>
- L2LOGCTL SETOVR <12_ovr_state>

Sample output follows:

```
L2LOGCTL setovr on
Loop layer 2 abnormality log status:
Override: ON
lapd taa1 taa2 taa3 taa4 taa5 taa6 taa7
 ON   ON   OFF  ON   OFF  ON   ON   OFF
abn1 abn2 abn3 abn4 abn5 abn6 abn7 abn8 abn9 abn10
 OFF  OFF  ON   ON   ON   OFF  ON   ON   OFF  OFF

Office layer 2 abnormality log status:
lapd lapd taa1 taa2 taa3 taa4 taa5 taa6 taa7
OFF   ON   ON   ON   OFF  OFF  ON   ON   OFF
abn1 abn2 abn3 abn4 abn5 abn6 abn7 abn8 abn9 abn10
 ON   OFF  ON   OFF  ON   ON   OFF  ON   OFF  OFF
```

L2LOGCTL command usage

Following are samples of how the command L2LOGCTL can be used to block or unblock logs from being generated. In all of the examples, ABN1 is used as a sample entity.

Turn ON/OFF a single log on an individual line

To turn OFF a log:

1. Post the line with the desired log
2. Use L2LOGCTL SET ABN1 OFF to turn it OFF. This inhibits the log.

The two methods to turn a log ON are:

- When the entity is ON for the office in general

  1. Post the line with the desired log.
  2. Since the entity is ON for the office, use L2LOGCTL SET ABN1 ON to turn the log ON for the line.

  Note: *This method also assumes that the office and line entities controlling Link Access Protocol for the D-channel (LAPD) are on. Turning these entities off is currently the equivalent of turning all the individual entities off (either on an office-wide basis or an individual line basis). This is due to the fact that all layer 2 abnormality logs are related to LAPD. This will not always be the case however. In the future, new layer 2 logs that are not related to LAPD protocol errors will not be turned off simply because either the LAPD log control entity for the line or the LAPD log control entity for the office is set to off.*

- When the entity is OFF for the office in general

  1. Post the line with the desired log.
  2. Use L2LOGCTL SETOVR ON to turn the line's override bit to ON.

3. Use L2LOGCTL SET ABN1 ON to turn on the log.

Turn ON/OFF all logs for an individual line

To turn OFF all the individual entities for a line:

1. Post the line with the desired logs.
2. Use L2LOGCTL SET ALL OFF to turn off all the logs.

The two ways to turn all entities ON are:

- When all office log control entities are ON
  1. Post the line with the desired logs.
  2. Use L2LOGCTL SET ALL ON to turn on all the logs.
- When any office entities are OFF
  1. Post the line with the desired logs
  2. Use L2LOGCTL SETOVR ON to turn on the override bit.
  3. Use L2LOGCTL SET ALL ON to turn on all the logs.

Turn ON/OFF a single log for the entire office

To turn OFF an entity for an office, turn OFF the entity using table control:

1. Go to table ISDNVAR
2. Set ABN1 to OFF

This turns off all logs of that type except for those from lines with both their override bits and their ABN1 entity sets to ON. To turn OFF the ABN1 logs for these lines, refer to "Turn ON/OFF a single log on an individual line."

Turn ON a single log

To turn ON the logs for lines with their ABN1 entity sets to ON, turn ON the log control entity in table ISDNVAR:

1. Go to table ISDNVAR
2. Set ABN1 to ON

To turn ON the ABN1 entity set to OFF, refer to the section "Turn ON/OFF a single log on an individual line."

Turn ON/OFF all logs for the entire office

To turn OFF the log entities for the office, set the value for the log entries in table ISDNVAR to OFF. This only turns off the logs for lines that have their override bits set to OFF. Lines with their override bits set to ON continue to have logs generated for all abnormalities for which the line's corresponding log entity is set to ON.

Note: *To turn OFF all logs, either all override bits must be set to OFF or all the log entities for all lines must be set to OFF.*

To turn ON all logs entities, set all layer 2 log control entities in table ISDNVAR to ON. However, individual lines with individual entities set to OFF do not generate logs for those entities.

Note: *A L2LOGCTL SET ALL ON command must be issued before all layer 2 logs are truly turned on for all office lines.*

L3LOGCTL command description

This command allows the user to control which ISDN layer 3 abnormality logs are generated and which are inhibited. The logs can be controlled on an individual line basis as well as on an office-wide basis. This command is only used to set individual line log generation parameters. The office-wide parameters are controlled through table control. Both the office parameter and the line parameter must be set to ON for a log to be generated for a particular line. This provision can be overridden using the particular line's override parameter. The inclusion of this parameter allows the generation of log reports for an individual line instead of for the whole office. The three options for this command are: QUERY, SET, and SETOVR.

L3LOGCTL command syntax

The syntax for the L3LOGCTL command is:

- L3LOGCTL QUERY <query_mode>
- L3LOGCTL SET <13logic_entity><13_entity_status>
- L3LOGCTL SETOVR <13_ovr_state>

Sample output follows:

```
L3LOGCTL setovr on
Loop layer 3 abnormality log status:
Override: ON
 Q931  abn1  abn2  abn3  abn4  abn5  abn6  abn7
  ON    ON    OFF   ON    OFF   ON    ON    OFF
 abn8  abn9  abn10 abn11 abn12 abn13
  OFF   OFF   OFF   ON    ON    OFF

Office layer 3 abnormality log status:
 Q931  abn1  abn2  abn3  abn4  abn5  abn6  abn7
  ON    ON    ON    OFF   OFF   ON    ON    ON
 abn8  abn9  abn10 abn11 abn12 abn13
  OFF   OFF   OFF   ON    ON    OFF
```

ISPGUAD command description

The use of the ISPGUAD command was expanded to include layer 3 checking. This command causes an ISDN layer 2 and 3 audit to be run. This audit is in addition to the 24-hour audit that is run. The audit checks all the ISDN lines and reports that have exceeded the layer 2 or layer 3 high abnormality rate thresholds. A summary ISDN 201 log reports the total number of LENs exceeding the layer 2 threshold and the total number of LENs exceeding the layer 3 threshold. An ISDN 203 log reports the lines that

exceeded the layer 2 high abnormality rate threshold, and an ISDN 204 log reports the lines that exceeded the layer 3 high abnormality rate threshold.

Note: *The ISPGUAD command syntax is a non-resident command.*

ISPGAUD command syntax

The syntax for the ISPGAUD command is:

- ISPGUAD <node>

Sample output follows:

```
ISPGAUD node 0
Command started for node number 38.
Only layer 2 counts will be displayed.
Cannot obtain layer 3 counts on a per
node basis.
Use Ispgaud all command to obtain total
layer 2 and layer 3 counts for the office.
Command started for node number 0.
Resulting counts are:
   Number of transmission reports : 0
   Number of abnormality reports  : 0
   Total received frames          : 0
   Total received errored frames  : 0
   Total transmitted frames       : 0
   Total retransmitted frames     : 0
   First unacked/unlogged/next entry: 0 0 0
```

Data Schema Changes

The following tables are created by this feature: ISDNVAR, L2ABNLOG, and L3BNLOG. New office parameters are added to table OFCVAR.

New Table L2ABNLOG

This table stores the reporting status for layer 2 controllable log reports for individual ISDN lines. Entries only appear in this table if they establish a log generation status for layer 2 abnormality log reports for a given line that is different from that established on an office-wide basis. The office-wide status for layer 2 abnormality log reports is set in office parameters located in table ISDNVAR (Integrated Services Digital Network Variable).

New fields added to this table are: LEN, OVR, LAPD, TAA1, TAA2, TAA3, TAA$, TAA5, TAA6, TAA7, ABN1, ABN2, ABN3, ABN4, ABN5, ABN6, ABN7, ABN8, ABN9, and ABN10.

New Table L3BNLOG

This table stores the reporting status for layer 3 controllable log reports for individual ISDN lines. Entries only appear in this table if they establish a log generation status for layer 3 abnormality log reports for a given line that is different from that established on office-wide basis. The office-wide status for layer 3 abnormality log reports is set in office parameters located in table ISDNVAR.

New fields added to this table are: LEN, OVR, Q931, ABN1, ABN2, ABN3, ABN4, ABN5, ABN6, ABN7, ABN8, ABN9, ABN10, ABN11, ABN12, and ABN13.

Entries into tables L2ABNLOG and L3ABNLOG are the result of either one of the following methods:

- manual datafill using table editor
- dynamic updating

If the LTPISDN MAP level commands L2LOGCTL and L3LOGCTL are used to make a change in the status for generation of layer 2 or layer 3 abnormality log reports for individual lines, entries are made automatically in these tables. These changes only appear in these two tables if they establish a log generation status for an individual line that is different from that established on an office-wide basis.

New Table ISDNVAR

This table is used to store 31 ISDN-related office variables. Office variables located in this table are bound to it during initial program load (IPL) build. Variables in this table are used to control the office-wide status for the generation of layer 2LAPD and layer 3Q931, question abnormality log reports.

The L2LOGCTL command or table control can be used to make entries in table L2ABNLOG to establish a log generation status for a given line that is different from a parameter's instructions for log generation on an office-wide basis. The following new office variables are added in table ISDNVAR by this feature and apply to layer 2LAPD:

- LAPD_ABN_LOG
  - — This parameter is used to enable or disable the generation of ISDN LPAD abnormality log reports on an office-wide basis.
  - — The following logs are enabled or disabled on an office-wide basis:
    - — ISDN 100
    - — ISDN 102
    - — ISDN 115
    - — ISDN 116
    - — ISDN 120
    - — ISDN 121
    - — ISDN 122
    - — ISDN 304
- TEI_SUBSCRIPTION_LIMITS_EXCD
  - — This parameter enables or disables on an office-wide basis the generation of ISDN115 Layer 2 Protocol Abnormality log reports with the following message displayed in the Subscription limits exceed field:

```
Subscription limits exceed
```

— ISDN115 log reports are generated to report that TEI limits have been exceeded.

- TEI_NO_RESPONSE
  — This parameter enables or disables on an office-wide basis the generation of ISDN100Layer 2 Protocol Abnormality log reports with the following message displayed in the Terminal Unavailable field:

  ```
  Terminal Unavailable
  ```

  — ISDN100 log reports are generated to report no terminal is available for message traffic.
- TEI_ROUTINE_TEST
  — This parameter enables or disables on an office-wide basis the generation of ISDN120 Layer 2 Protocol Abnormality log reports with the following message displayed in the Routine Test field:

  ```
  Routine Test
  ```

  — ISDN120 log reports are generated to report a routine test being performed.
- TEI_MULTIPLE_RESPONSE
  — This parameter enables or disables on an office-wide basis the generation of ISDN102 Layer 2 Protocol Abnormality log reports with the following message displayed in the TEI Removed field:

  ```
  TEI Removed
  ```

  — ISDN102 log reports are generated by the ISDN subsystem to report the detection of a duplicate TEI on the same loop and removal of the line from service by a DCH, EDCH, or V5 interface (V5I).
- TEI_IDENTIDY_VERIFY_MSG
  — This parameter enables or disables on an office-wide basis the generation of ISDN121 Layer 2 Protocol Abnormality log reports with the following message displayed in the Identity Verify Message field:

  ```
  Identity Verify Message
  ```

  — ISDN 121 log reports are generated to report that a terminal has initiated an identify verify message with a TEI of 127.
- TEI_UNSOLICITED_RESPONSE
  — This parameter enables or disables on an office-wide basis the generation of ISDN122 Layer 2 Protocol Abnormality log reports with the following message displayed in the Unsolicited Response field:

  ```
  Unsolicited Response
  ```

— ISDN122 log reports are generated when a terminal sends an unexpected frame to the switching system for the current LAPD state.

- TEI_NOT_ASSIGNED
  — This parameter enables or disables on an office-wide basis the generation of ISDN116 Layer 2 Protocol Abnormality log reports with the following message displayed in the TEI unassigned field:

  ```
  TEI has not been assigned
  ```

  — ISDN116 log reports are generated by the ISDN subsystem when the DCH or EDCH receives a response from an unassigned TEI.
- L2_DM_FRAME_RCVD
  — This parameter enables or disables on an office-wide basis the generation of ISDN304 Layer 2 Protocol Abnormality log reports with the following frame sent displayed in the abnormality field:

  ```
  Disconnect Mode
  ```

  — ISDN304 log reports are generated when a layer 2 Protocol Abnormality specified in technical requirement TR821 is detected by the DCH or EDCH handler.
- L2_FRAME_RCVD_CNTRL_UNDEF
  — This parameter enables or disables on an office-wide basis the generation of ISDN304 Layer 2 Protocol Abnormality log reports with the following message displayed in the Abnormality field:

  ```
  Frames Rcvd with cntrl field not defined
  ```

  — ISDN304 log reports are generated when a layer 2 Protocol Abnormality specified in technical requirement TR821 is detected by the DCH or EDCH handler.
- L2_FRAME_RCVD_INVALID_INFO
  — This parameter enables or disables on an office-wide basis the generation of ISDN304 Layer 2 Abnormality log reports with the following message displayed in the Layer 2 Abnormality field:

  ```
  Frames Rcvd with invalid info field
  ```

  — ISDN304 log reports are generated when a layer 2 abnormality specified in technical requirement TR821 is detected by the DCH or EDCH handler.

- L2_FRAME_RCVD_INVALID_SEQ_NUM
  - — This parameter enables or disables on an office-wide basis the generation of ISDN304 Layer 2 Protocol Abnormality log reports with the following message displayed in the Abnormality field:

    ```
    Frames Rcvd with invalid receive seq num
    ```

  - — ISDN304 log reports are generated when a layer 2 protocol abnormality specified in technical requirement TR821 is detected by the DCH or EDCH handler.
- L2_FRAME_RCVD_EXCD_INFO
  - — This parameter enables or disables on an office-wide basis the generation of ISDN304 log reports with the following message displayed in the Abnormality field:

    ```
    Frames Rcvd with info field exceeding max established length
    ```

  - — ISDN304 log reports are generated when a layer 2 protocol abnormality specified in technical requirement TR821 is detected by the DCH or EDCH handler.
- L2_FRAME_RCVD_UNEXPECTED
  - — This parameter enables or disables on an office-wide basis the generation of ISDN304 Layer 2 Protocol Abnormality log reports with the following message displayed in the Abnormality field:

    ```
    Unexpected frames received
    ```

  - — ISDN304 log reports are generated when a layer 2 protocol abnormality specified in technical requirement TR821 is detected by the DCH or EDCH handler.
- L2_FRMR_RCVD
  - — This parameter enables or disables on an office-wide basis the generation of ISDN304 Layer 2 Protocol Abnormality log reports with the following message displayed in the Abnormality field:

    ```
    FRMR from Rcvd
    ```

  - — ISDN304 log reports are generated when a layer 2 protocol abnormality specified in technical requirement TR821 is detected by the DCH or EDCH handler.
- L2_PROPER_RESPONSE_NOT_RCVD
  - — This parameter enables or disables on an office-wide basis the generation of ISDN304 Layer 2 Protocol Abnormality log reports with the following message displayed in the Abnormality field:

    ```
    Invalid Frames Rcvd
    ```

  - — ISDN304 log reports are generated when a layer 2 protocol abnormality specified in technical requirement TR821 is detected by the DCH or EDCH handler.

The L3LOGCTL command or table control can be used to make entries in table L3ABNLOG to establish a log generation status for a given line that is different from a parameter's instructions for log generation on an office-wide basis. These parameters enable or disable on an office-wide basis the generation of ISDN301 Layer 3 Protocol Abnormality log reports. The following parameters apply to layer 3Q931 and display the messages listed in the Abnormality field of the ISDN301 log report:

- Q931_ABN_LOG

  ISDN301 log reports are generated when a layer 3 protocol abnormality specified in technical requirement TR821 is detected by the XPM unified processor (UP).
- L3_DISCONNECT_MSG_RCVD

  ```
  DISCONNECT transmitted
  ```

- L3_RELEASE_MSG_RCVD

  ```
  RELEASE received
  ```

- L3_RELEASE_MSG_TRANS

  ```
  RELEASE transmitted
  ```

- L3_RELEASE_COMP_MSG_RCVD

  ```
  REL COMPLETE
  ```

- L3_RELEASE_COMPL_MSG_TRANS

  ```
  REL COMPLETE transmitted
  ```

- L3_STATUS_MSG_RCVD

  ```
  STATUS received
  ```

- L3_STATUS_MSG_TRANS

  ```
  STATUS transmitted
  ```

- L3_PROGRESS_MSG_TRANS

  ```
  PROGRESS transmitted
  ```

- L3_MSG_RCVD_BAD_LENGTH

  ```
  MSG Rcvd less than min length
  ```

- L3_MSG_RCVD_INVALID_INFO

  ```
  MSG Rcvd with inval protocol discriminator
  ```

- L3_MSG_RCVD_INVALID_CR_VALUE

  ```
  MSG Rcvd with an inval CR value
  ```

- L3_MSG_RCVD_INVALID_CR_FLAG

  ```
  SETUP Rcvd with CR flag incorrectly set to 1
  ```

Table OFCVAR

The following office parameters in table OFCVAR are modified by this feature:

- DAILY-ISDN-L2L3_PEG_AUDIT_TIME
  - — This parameter specifies the time of day that all ISDN layer 2 and layer 3 peg counts are audited and reset.
  - — This parameter replaces office parameter DAILY_ISDN_LAYER2_PEG_AUDIT_TIME.
  - — The report generated as a result of the audit creates an ISDN201 log report. Log reports ISDN203 and ISDN204 may also be generated if conditions warrant it.
- LAYER2_CIRCUIT_ABN_PEGS_THLD
  - — This parameter sets the high abnormality rate threshold number for allowable layer 2 protocol abnormalities on any circuit switched ISDN line over a 24-hour period.
  - — Once this threshold number is exceeded, a high abnormality rate is declared and audit registers are pegged.
  - — ISDN201 and ISDN203 log reports are generated when the threshold value set by this parameter is exceeded by an ISDN line.
  - — This parameter replaces office parameter LAYER2_SAPIO_ABN_PEGS_THLD.
- LAYER2_PACKET_ABN_PEGS_THLD
  - — This parameter sets the high abnormality rate threshold number for allowable layer 2 protocol abnormalities on any packet switched ISDN line over a 24-hour period.
  - — Once this threshold number is exceeded, a high abnormality rate is declared and audit registers are pegged.
  - — This parameter replaces office parameter LAYER2_SAP116_ABN_PEGS_THLD.

The following office parameters are new:

- LAYER3_PACKET_ABN_PEGS_THLD
  - — This parameter sets the high abnormality rate threshold number for allowable layer 3 protocol abnormalities on any packet switched ISDN line over a 24-hour period.
  - — Once this threshold number is exceeded, a high abnormality rate is declared and audit registers are pegged.

- LAYER3_CIRCUIT_ABN_PEGS_THLD
  — This parameter is the number of layer 3 protocol abnormalities that are allowed on any ISDN line for circuit transmission in a 24 hour period before a high abnormality rate is declared.

Log Message Changes

The following log reports are modified by this feature: ISDN100, ISDN102, ISDN115, ISDN201, and ISDN202. New logs are ISDN116, ISDN120, ISDN121, ISDN122, ISDN204, ISDN301, and ISDN304.

Changed log report: ISDN100

The ISDN subsystem generates this report when a DCH or an EDCH has detected that a terminal does not respond to a TEI check or audit.

The following two fields are added to this log report to make it conform to the requirements located in section 3.5.4 of TR821:

- Data
- Action taken

An example of this log follows:

```
RTPT ISDN100 AUG 11 01:00:53 8800 INFO Terminal Unavailable
ISG: 1 Chnl: 4 BRA LTC: 1 LEN: HOST 01 0 08 07
Data: TEI = 69 EC = FF LTID ISDN 1
Action Taken: TEI Audit
```

Changed log report: ISDN102

The ISDN subsystem generates this report when a DCH, EDCH or V5I has detected a duplicate TEI on the same loop and removes the line from service. All subsequent communication using the removed TEI will be unsuccessful. This situation affects both call processing and D-channel packet (SAPI 16) services. Generation of log report ISDN102 indicates that there is more than one terminal on the loop using the same TEI.

The following two fields are added to this log report to make it conform to the requirements located in section 3.5.4 of TR821:

- Data
- Action taken

An example of this log follows:

```
RTPT ISDN102 8800 FLT TEI Removed
ISG: 1 Chnl: 4 BRA LTC: 1 LEN: HOST 01 0 08 07
Data: Redundant TEI = 69
Action Taken: TEI Check
```

Changed log report: ISDN115

The ISDN subsystem generates this report whenever the subscription counters that represent the maximum allowable links for a specific set of TEI values is exceeded by the attempted TEI assignment. This condition causes the switch to perform a TEI audit.

The following two fields are added to this log report to make it conform to the requirements located in section 3.5.4 of TR821:

— Data

— Action Taken

An example of this log follows:

```
RTPT ISDN115 AUG 11 01:00:53 8800 INFO Subscription limits exceeded
ISG: 1 Chnl: 4 BRA LTC: 1 LEN: HOST 01 0 08 07
Data: Redundant TEI = 127 nd1 SC = 2
Action Taken: TEI Audit
```

New log report: ISDN116

The ISDN subsystem generates this report when the action identifier is a TEI value that has not previously been assigned to a terminal on the loop. This condition causes the switch to perform a TEI audit.

This log which has been previously defined is now being implemented.

An example follows:

```
RTPT ISDN116 AUG 11 01:00:53 8800 INFO TEI has not been assigned
ISG: 1 Chnl: 4 BRA LTC: 1 LEN: HOST 01 0 08 07
Data: TEI = 69
Action Taken: Identity Denied Message
```

New log report: ISDN120

The ISDN subsystem generates this report when a periodic TEI audit fails during a routine test. For example, if during the audit more terminals respond than the switch expects, an ISDN 120 report is generated.

An example follows:

```
RTPT ISDN120 AUG 11 01:00:53 8800 INFO Routine Test
ISG: 1 Chnl: 4 BRA LTC: 1 LEN: HOST 01 0 08 07
Data: Redundant TEI = 127
Action Taken: TEI Audit
```

New log report: ISDN121

The ISDN subsystem generates this report when a terminal initiates an identity verify message with a TEI of 127.

An example follows:

```
RTPT ISDN121 AUG 11 01:00:53 8800 INFO Identity Verify Message
ISG: 1 Chnl: 4 BRA LTC: 1 LEN: HOST 01 0 08 07
Data: None
Action Taken: Redundant TEI Query
```

New log report: ISDN122

The ISDN subsystem generates this report when a terminal sends an unexpected frame to the switching system for the current LAPD state.

An example follows:

```
RTPT ISDN122 AUG 11 01:00:53 8800 INFO Unsolicited Response
ISG: 1 Chnl: 4 BRA LTC: 1 LEN: HOST 01 0 08 07
Data: TEI = 127
Action Taken: Redundant TEI Query
```

Changed log report: ISDN201

The ISDN subsystem generates an ISDN201 log report once every 24 hours at the end of the daily Layer 2 and 3 audit.

The following two fields are added to this log report to make it conform to the requirements located in section 3.5.4 of TR821:

— Number of LENs on the switching system experiencing high layer 2 protocol abnormality rates.

— Number of LENs on the switching system experiencing high layer 3 protocol abnormality rates.

An example follows:

```
RTPT ISDN201 AUG 11 01:00:53 8800 INFO Frame Report
Percentage of errored frames on ISDN switch : 0.0%
Percentage of retransmitted frames on ISDN switch : 0.0%
Number of LENs reporting transmission errors: 0
Number of LENs reporting layer 2 protocol abnormalities: 18
Number of LENs reporting layer 3 protocol abnormalities: 2
```

Changed log report: ISDN202

This log is generated when RLAYER resets layer 2 or layer 3 performance counts. The layer 3 information is added by this feature. An example follows:

```
RTP2 ISDN202 DEC10 20:53:53 7100 INFO ISDN Pegs reset
LEN HOST 01 0 00 04 LAYER: 2 REASON : RLAYER command issued
```

New log report: ISDN204

The ISDN subsystem generates this report when a layer 2/3 audit is completed. It identifies up to ten line equipment numbers (LENs) which have a higher layer 3 abnormality rate.

The report lists the abnormality count for each LEN. An example follows:

```
RTPT ISDN204 AUG 11 01:00:53 8800 INFO Layer 3 High Abnormality Rate
Abnormality Threshold : 10
LEN HOST 01 1 14 25 Abnormality : 107
LEN HOST 01 1 09 18 Abnormality : 1007
LEN HOST 01 1 07 01 Abnormality : 12
LEN HOST 01 1 01 27 Abnormality : 175
LEN HOST 01 1 00 11 Abnormality : 106
LEN HOST 01 1 14 01 Abnormality : 153
```

New log report: ISDN301

The ISDN subsystem generates this report when a layer 3 protocol abnormality specified in TR821 is detected by the extended XPM UP. The log report includes the abnormality type and cause. An example follows:

```
RTPT ISDN301 AUG 11 01:00:53 8800 INFO Layer 3 Protocol Abnormality
LTC: 1 LEN: HOST 01 1 14 25 TEI:69 PDN: 6217356
Abnormality: Disconnect Received
Cause: Temporary Failure
```

New log report: ISDN304

The ISDN subsystem generates this report when a layer 2 protocol abnormality specified in the TR821 is detected by the DCH or the EDCH. The report includes the abnormality type and cause. An example follows:

```
RTPT ISDN304 AUG 11 01:00:53 8800 INFO Layer 2 Protocol Abnormality
BRA LTC: 1 LEN: HOST 01 1 14 25 TEI:69
Abnormality:Disconnect mode frame rcvd
```

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Feature AF6669, ISDN BRI Layer 3 Abnormality Counts, must be present in order to provide the layer 3 abnormality counts and the logging of adnormality occurrences. This feature needs AF6669 to function properly.

Feature AF6688, Multipoint EOC Performance Monitoring, must be present to support the modifications made to MAP commands QLAYER and RLAYER.

Restrictions/Limitations

The following limitations and restrictions apply to Basic Rate Interface Layer 2/3 Surveillance Monitoring:

- No additional layer 2 and layer 3 packet surveillance beyond requirements described in section 3.5 of technical equipment 821 (TR821) is supported by this feature.
- Both DLOG and SDM log delivery support 24-hour storage of protocol abnormality log reports as required by section 3.5.3 D and M1 of TR821.
- The buffer space for the protocol abnormality log reports is allocated on a log report type basis, not on access of an individual line as required by section 3.5.3 G1-13 of TR821.
- Service disruption because of the layer 3 signaling condition is not supported as outlined in section 3.5.2 of TR821.
- This feature is not supported for ILD lines.
- The layer 2 and layer 3 surveillance capability for the Generic Services Framework (SF) ISDN lines is not blocked.
- The layer 2 and layer 3 log control capability is not supported for GSF ISDN lines.

LAYER		LN-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	SACB
AF6946	SACB Zero Minus	

Description

The Subscriber Activated Call Blocking (SACB) Zero Minus (ZROM) feature provides the following enhancements to the existing SACB feature:

- Allows for ZROM as a SACB Call Class (SACBCC) for line option SACB in SERVORD
- Allows for Software Optionality Control (SOC) 0-dialing functionality under option order code RES00079
- Allows the SACB feature to block 0-calls on an optional basis

Command Changes

NONE

Data Schema Changes

Table SACB contains call class definitions. These call class codes are assigned to lines when option SACB is added.

The ZROM call class is based on the standard translation results for the dialed number. Table SACB sets up the call class based on the nonprefix digits where different from the translation results.

Changed table: SACB

ZROM appears as a new SACBCC, but table control prevents this new Call Class from being added as a tuple within the table. This is consistant with the current implementation of Call Classes TOLL, OPRA, and IDDD, all of which are SACBCC but are not allowed as tuples in Table SACB.

Description of changed field

ZROM is being added to the existing range of values {TOLL,OPRA,LDAS, TDAS,IDDD,I800,I900,I976,SPEC}.

Datafill sequence

The new SACBCC of ZROM is not allowed as a tuple within Table SACB, but it appears as a SACBCC within the table.

The SACB line option requires the Station Programmable PIN (SPP) entry in Table CUSTSTN. This is an existing SACB restriction and is only listed here for completeness.

Log Message Changes

NONE

OM Changes

NONE

Service Order

The Service Order System (SERVORD) can be used to assign SACB ZROM to a subscriber services line. SACB ZROM is assigned at the SACBCC prompt.

SACB requires an SPP entry in Table CUSTSTN. This is an existing requirement of SACB and is listed here for completeness.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

Although no restrictions or limitations are introduced as a result of this feature, the existing SACB restrictions apply to this feature.

LAYER		LN-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AIN
AJ4122	Enhanced Busy Call Return (EBCR), RES00076	

Description

The functionality of both Enhanced Busy Call Return (EBCR) and Message Service Application (MSA) is repackaged in this feature. It includes the main functions offered by the features Automatic Call Back (ACB), Special Delivery Service (SDS), Selective Call Messaging (SCM), SCM Access to ACB, and MSA Repackaging.

Enhanced Busy Call Return

EBCR service in combination with the ACB feature allows callers to automatically call back the last party called if that party was busy.

Access to Messaging service, RES00077

Access to Messaging service in combination with a voice messaging system (VMS) allows the operating company to provide with voice messaging service when they call lines that are either not answered within a specified length of time or are busy.

Command Changes

Access to Messaging service and EBCR service introduce the ICSDEACT line option which is visible through query command such as QDN and QLEN. If the line has the SDS line option, the ICSDEACT and SDS line options are both displayed in QDN and QLEN outputs. If the service is in universal mode, the SDS office option is not displayed if the ICSDEACT option is assigned to the line.

Data Schema Changes

This feature introduces some modifications to tables SDSINFO, SDSCUST, OCCINFO, IBNXLA, IBNLINES, and KSETLINES.

Special Delivery Service Information (SDSINFO) Table Changes

New fields added to this table are: CFW, CONF, HNTGRP, and REJECTMT. Field ALLOWCAR has been deleted. Fields BSYMODE and RNAMODE are modified.

This table defines the behavior of EBCR service on an office-wide basis. Tuples OFFICE, SDSOFC, SDSBSY and SDSRNA must be datafilled. In table SDSINFO, the new fields of tuple OFFICE are set to default values. If the extended digit collection capability exists on the dump side (due to a fix patch, for example), the value of the EDC

period is transferred “as is” to field EXDIGCOL of tuple SDSOFC in table SDSINFO. Otherwise, this field is initialized to a default value of 3 (seconds).

The presence of an active SCM Access to ACB feature patch on the dump side requires:

- The value of the office parameters “SDS_BUSY_MODE” and “SDS_ACB_ON_INTER” to be transferred to the SDSBSY tuple of table SDSINFO
- The newly introduced MSA00006 SOC order code to be turned on automatically

Table transfer is supported for all available loads from NA004 and up. The supported dump side loads include the configurations where different SDS related feature patches (FPA83, FPB28 and FPB51) are applied and activated.

SDSCUST Table Changes

Table SDSCUST is also impacted by the new expanded routing DN format. The fields INTERBSY, INTERRNA, INTRABSY and INTRARNA are all changed to allow the operating company to enter DNs of up to 30 digits in length. Sample datafill follows:

```
Table: SDSCUST
> add
SDSDNKEY:
>CUSTGRP1
INTERBSY:
>6211100
INTRABSY:
>16136211100
INTERRNA:
>6211100
INTRARNA:
>16136211100
TUPLE TO BE ADDED:
CUSTGRP1 6211100 16136211100 6211100 16136211100
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
```

Table OCCINFO Changes

To implement the new list of carriers whose calls can be offered the messaging service, a new field INCASA (IN-CAll Service Access), is added to the tuples of table OCCINFO. Valid values for this new field are Y (Yes) and N (No). If the field is set to Y, the messaging service is available to calls going through the corresponding carrier, and unavailable otherwise.

During the One Night Process (ONP), the new field INCASA of all carriers is set to the default value of N if the patch FPB51 is not active on the dump side. During the transfer of table SDSINFO this field is set to Y for the carriers that are present in the old field ALLOWCAR of the OFFICE tuple.

The following lists a tuple in table OCCINFO:

```
>table OCCINFO
TABLE: OCCINFO
>lis
TOP
CARRNAME CARRNUM  ACCESS ORIGCARR INTER INTNTL INTRA ANI FANI ONISCRN AD1
OVERLAP INTERS INTRAS TERMREC OCCSEPNO OPSIG PICIND NOA950 INCCPN DTMFIND
OPSERV CACBLOCK CTDOA CMCMON SCRNWATS CRMCRA ATPINCL INTRAOPR INCASA
INTRCOIN ARBLKPVT
--------------------------------------------------------------------------------
----------------------------------------
MCI                0220            EAP         Y                 Y          Y
      Y         N      N       N              N
Y                    Y        N           LONG      0                FGRPD    N
    N             Y             N
N                  N            N           N             N                 N
      N               N             Y
N                    Y
```

IBN Translations (IBNXLA) Table Changes

To map the vertical service codes to the sustained deactivation and per-call denial functionality respectively, additional translation datafill in table IBNXLA is required. The ICSCTRL IBN feature is added to the list of available features for the sustained deactivation capability, while the already existing IBN feature CISA is used to implement the per-call denial capability. The FEATURE field has been modified. The datafill required to enable the vertical access code for sustained deactivation follows:

```
>table ibnxla
TABLE IBNXLA
>add
KEY
>custfeat 02
TRSEL
>feat
ACR:
>n
SMDR:
> n
VDCR:
> n
FEATURE:
> icsctrl
```

Table IBN Line Assignment (IBNLINES) Changes

This table contains service information about IBN subscriber lines and includes line options SDS, SDSDENY and ICSDEACT. The OPTLIST field has been modified. Following is an example of a tuple with the ICSDEACT option:

```
LEN   DNNO   RESULT
---------------
HOST 00 1 00 14 0 DT STN RES 6216076 271 (ICSDEACT) $
```

Changed Table Business Set and Data Unit Line Assignment (KSETLINE)

This table contains service information about KSET subscriber lines and includes line options SDS, SDSDENY, and ICSDEACT. The OPTLIST field has been modified. A sample tuple with ICSDEACT line option follows:

```
KSETKEY FORMAT DNRESULT
-----------------------
HOST 00 1 00 30 1 DN Y 7262128 CFSIBN2 0 11 819 (NDC) (ICSDEACT)$
```

Changed Announcement Tables

Announcement tables consist of TMINV, ERRAMINV, CLLI, DRAMS, ANNS, ANNMEMS, and DRAMTRK. They must be datafilled for each announcement used for EBCR service.

Changed Table Treatment Control (TMTCNTL)

This table defines treatments. EBCR service requires that treatments ICSA and ICSD be datafilled in table TMTCNTL.

Changed Table Customer Group Station Option (CUSTSTN)

This includes customer group options SDS and SDSDENY.

Changed Table Line Arrangement (LENLINES)

This table includes line options SDS and SDSDENY.

Log Message Changes

This feature adds a new extension block (AIN_REORIG_EXT) to SDS calls. A new log report is created automatically by the system for this new extension block.

Access to Messaging service uses the following logs:

- SDS600 - This log is generated whenever one of the following OM group SDS registers is pegged: SOFTFAIL, ANNCFAIL, UTRSHORT.
- SDS601 - This log is generated whenever OM group SDS register ROUTFAIL is pegged.
- AUD640 - This log is generated whenever a Access to Messaging service call with a AIN_REORIG_EXT extension block attached to it traps or dies. The log is used to investigate the cause of death or trap of the SDS call. An example follows:

```
MTLJN AUD640 NOV12 16:38:55 4020 INFO EXT DUMP 0111 0000
0321 6342 AC60 FDE3 E00D 0431 9B40 FDFD FDFD FDFF
FC03 FDF1 FDFD FDFD FDFD FDFD FDFD FDFD FDFD FDFD
FDFD FDFD FDFD FDFD FDFD FDFD FDFD FDFD FDFD FDFD
```

OM Changes

Seven new OM registers are introduced by the EBCR feature. Five of these OM registers belong to the existing SDS OM group.

- ACBOFFER is pegged each time ACB is offered by the SDS service.
- ACBACTIV is pegged each time ACB is activated by the SDS service.
- BSYCOND is pegged for each Busy call that passes either messaging-specific screening or ACB-specific screening or both.
- RNGCOND is pegged for each Ringing call that passes messaging service-specific screening.
- RNGCOND2 is pegged every time register RNGCOND reaches its upper bound and is reset to 0.

OMSHOW command output from the SDS group follows:

```
>OMSHOW   SDS   ACTIVE

     CLASS:   ACTIVE
     START: 1996/08/23   12:02:56 FRI;   STOP: 1996/08/23   12:16:25  FRI;
     SLOWSAMPLES:                   5;        FASTSAMPLES:                    50;

        ACTIVATE          ACTIVAT2          BSYOFFER          RNAOFFER
        BSYACTIV          RNAACTIV        ABANDON           SOFTFAIL
        UTRSHORT        ANNCFAIL        NOCLIDCN          ROUTFAIL
        ACBOFFER       ACBACTIV       BSYCOND           RNGCOND
        RNGCOND2

 0          5                    0                   3                        2
            1                    2                   0                        0
            0                    0                   0                        2
            3                    2                   3                        2
                0
```

Note that the existing SDS BSYOFFER and BSYACTIV OM registers now apply specifically to the messaging service. Both the BSYOFFER and ACBOFFER are incremented when ACB and messaging service are offered simultaneously in the Busy case.

The other two new OM registers belong to the OM group TRMTFR3.

- TFRICSA is pegged for every connection to the ICSA treatment.
- TFRICSD is pegged for every connection to the ICSD treatment.

An OMSHOW example from the TRMTFR3 group follows:

```
>OMSHOW TRMTFR3 ACTIVE

CLASS:   ACTIVE
START:1996/10/30 19:45:00 WED; STOP: 1996/10/30 19:49:19 WED;
SLOWSAMPLES:         3 ; FASTSAMPLES:         26 ;

           FRSPR1   FRRTEERR   TFRNDISC    TFRPSNF
          TFRINER    ISAEXIT    TFRPNUN    TFRUNPM
           FRSPR9    FRSPR10    TFRICSA    TFRICSD
          FRSPR13    FRSPR14    FRSPR15    FRSPR16
          FRSPR17    FRSPR18    FRSPR19    FRSPR20
          FRSPR21    FRSPR22    FRSPR23    FRSPR24
          FRSPR25    FRSPR26    FRSPR27    FRSPR28
          FRSPR29    FRSPR30    FRSPR31    FRSPR32

    0           0          0           2          0
                0          0           0          0
                0          0           3          5
                0          0           0          0
                0          0           0          0
                0          0           0          0
                0          0           0          0
                0          0           0          0
```

Since a new type of extension block (AIN_REORIG_EXT) is created by this feature, a new subgroup 172 is added to the EXT OM group. The OM registers of the 172 subgroup are: EXTSEIZ, EXTOVFL, and EXTHI.

- EXTSEIZ is incremented when a request for an AIN_REORIG_EXT extension block is successful. EXTSEIZ2 is an extension register for EXTSEIZ.
- EXTOVFL is incremented when an AIN_REORIG_EXT extension block requested for a call is not available. EXTOVFL2 is an extension register for EXTOVFL.
- EXTHI records the maximum number of extension blocks of type AIN_REORIG_EXT that are in simultaneous use during the preceding OM transfer period. EXTHI2 is an extension register for EXTHI.

An OMSHOW example from the EXT group follows:

```
> OMSHOW EXT ACTIVE 172

  CLASS: ACTIVE
  START:1996/11/11 11:30:00 MON; STOP: 1996/11/11 11:38:33 MON;
  SLOWSAMPLES:          3 ; FASTSAMPLES:          29 ;

                       EXTSEIZEXTOVFLEXTHI  EXTSEIZ2
                       EXTHI2


                       172 AIN_REORIG_EXT
                       50     0      1      0
                       0
```

Service Order

The SDS, SDSDENY and ICSDEACT line options can be assigned to and deleted from a line using the service order (SERVORD) utility.

The new ICSDEACT line option, when assigned to a line, prevents the service prompting from being offered on this line. This option can be assigned to the following LCCs: RES, MDC (IBN, EBS, M5XXX and M9XXX) and ISDNKSET.

The subscriber can deactivate the service offering on the line for an undefined period of time and across different calls using the vertical access codes *02. The subscriber can re-activate the service offering by redialing the *02 code.

The ICSDEACT line option is usually added or removed from a line by the end-user who toggles the line status by dialing *02. The addition and removal of the ICSDEACT line option using SERVORD are not required by the operating company. However, they are supported to facilitate the operating company's provisioning and maintenance operations.

The operating company can assign the line option ICSDEACT using SERVORD and thus disable the service offering on a line for an unlimited period of time. The operating company can also remove ICSDEACT from a line to enable the service offering on this line.

AMA Changes

Access to Messaging service has no impact on billing on the first leg of the call (the original call). If the caller accepts the offer of Access to Messaging service, whether an AMA record for the call to the SDS messaging routing DN is deleted depends on the value of the field BILLING in table SDSINFO tuple OFFICE.

- If field BILLING is set to N (no), the AMA record for the call to the SDS messaging routing DN is deleted.
- If field BILLING is set to Y (yes), the AMA record for the call to the Access to Messaging routing DN is not deleted.

However, when the call to the Access to Messaging routing DN is an equal access toll call, the AMA record of the call is not deleted even if field BILLING is set to N.

Notes

Announcements required for EBCR service can be recorded on the following Digital Recorded Announcement Machine (DRAM) cards:

- NT1X77AA RAM speech memory card
- NT1X79AA EEPROM speech memory card
- NT1X80AA EDRAM speech memory card

EBCR uses the NT6X92AA Universal Tone Receiver (UTR) during digit collection. The subscriber lines must be hosted by Series 2 peripherals (XPM).

The two new treatments ICSD and ICSA required by Sustained deactivation can be mapped to either confirmation tones or announcements by the operating company. New EDRAMs may be required if the treatments are mapped to new announcements.

The MSA Repackaging feature reworks the existing packaging to come up with a service-oriented view which provides:

- Separate Software Optionality Control (SOC) control for the activations of Access to Messaging (also called MSA Access Enabler), Fax-Thru Service and SCM Access to ACB (also known as Enhanced Busy Call Return)
  - — MSA00001 maps to MSA Access Enabler
  - — MSA00005 maps to MSA Fax-Thru Service
  - — MSA00006 maps to MSA SCM Access to ACB.
- New RES00076, RES00077, RES00078 packages which respectively contain the SCM Access to ACB, Access to Messaging and Fax-Thru Service functionality, in parallel with the existing MSA00006, MSA00001 and MSA00005 packages
  - — RES00076 maps to RES Enhanced Busy Call Return
  - — RES00077 maps to RES Access to Messaging
  - — RES00078 maps to RES Fax-Thru Service

As a result of the software repackaging, this feature obsoletes the MSA00003 and MSA00004 packages.

Alarms

NONE

Interactions

EBCR service interacts with the DMS-100 features that are described below. For further feature interactions, consult documentation for the Automatic Callback (ACB) feature.

Advanced intelligent network (AIN 0.1)

On calls that terminate on a busy line and where an AIN 0.1 trigger is hit on the originating switch, EBCR service is offered if the terminating party's DN is the same as the DN the caller dialed. If the call is routed from the dialed DN to another DN because of the AIN response, EBCR service is not offered.

On calls that terminate on a busy line and where an AIN 0.1 trigger is hit on a non-originating switch, EBCR service is offered. However, in the case where the AIN 0.1 trigger is a Termination Attempt Trigger and the SCP response is a FORWARD_CALL response, if the user accepts the service, she/he hears the busy tone and not the ACB confirmation announcement. The user is not provided with the ACB service she/he was offered and accepted. This is a limitation of the Automatic Callback feature.

On calls that terminate on a busy line and where an AIN 0.1 trigger is hit on a non-originating switch, EBCR service is offered if the conditions described above are met. However, if the SCP response is a FORWARD_CALL response, and if the user elects to hang up, go off-hook and then dial *66, thereby accessing standard ACB directly instead of accepting the EBCR offer of service (if it is provided), standard ACB fails. Standard ACB service is not provided and generates a busy treatment instead of the ACB confirmation announcement. EBCR service then detects the busy condition and offers EBCR service. If the caller accepts the offer of EBCR service, she/he receives a busy

tone and does not receive the ACB service she/he was offered and accepted. This is a limitation of standard ACB.

Call blocking

EBCR service is not invoked when call blocking occurs.

Call forwarding (IBN and POTS)

Call forwarding features allow stations to forward calls to subscriber-defined locations.

When the operating company sets field CFW in table SDSINFO tuple OFFICE to Y (yes), EBCR service is offered on calls that have one or more call forwarding features. When this field is set to N (no), EBCR service is not offered on calls that have one or more call forwarding features. For this functionality call forwarding feature refers to all types of call forwarding including AIN FORWARD_CALL response. Some exceptions exist and are described below.

On calls to DNs with AIN FORWARD_CALL response, if the AIN trigger is hit on the originating end office, EBCR service is not offered, even if field CFW is set to Y.

Interworking with other equipment can impact call forwarding detection on the originating switch, causing EBCR service to be offered even if field CFW is set to N. When an interoffice call is forwarded, Nortel's implementation of call forwarding sends a forwarding indicator back to the originating switch as part of the ISUP pass-along message (PAM). However, if one or more switches in the call path does not send the call forwarding indicator back to the originating switch, the originating switch is unable to detect the call forwarding interaction and offers EBCR service on the call even if field CFW is set to N.

The values of fields CFW and HNTGRP (see interaction with Hunt groups) only determine whether EBCR service is offered when the called party has either one or more call forwarding features or the Hunt Group feature. Therefore, in a call forwarding scenario, if the forwarded to party has the hunt group feature or call forwarding features, this is irrelevant to fields CFW and HNTGRP. Take the following scenario as an example: A (who has EBCR service) calls B who is busy and has the Call Forwarding Busy (CFB) feature. The call is then forwarded to C who is a member of the hunt group. In this scenario, EBCR service is offered if field CFW is set to yes even if field HNTGRP is set to N, since the Hunt Group feature is on the forwarded to party and not on the called party.

When the called party has both one or more call forwarding features and the Hunt Group feature, EBCR service is not offered if either field CFW or field HNTGRP is set to N or if both fields are set to N.

Automatic Call Back (the service to which EBCR service provides access) cannot be activated, even if field CFW is set to Y unless Automatic Call Back supports the type of call forwarding feature that is present on the called party's line. Consult documentation for the Automatic Callback feature for Automatic Callback's interaction with call forwarding features.

Call forwarding validation

This option validates the DN entered as the forwarding DN. The following validation options are offered on a customer group basis only:

- validation of the DN to which calls are forwarded (default option)
- validation of the DN as a routable number (routing option)
- validation by attempting to complete the call to target station upon feature activation (terminating option)

If the terminating option is selected, an attempt is made to call the forwarding DN. EBCR service is not activated when the validation call attempt encounters a busy condition.

Calling name and number delivery blocking

Calling Name Delivery Blocking (CNAB) and Calling Number Delivery Blocking (CNDB) are outgoing call services that operate on a per-call basis. They allow subscribers to control the delivery of their name and number to a called party by toggling the default name and number suppression of the line. If the information delivery is suppressed by default, the services allow the subscribers to enable the delivery of their name and number before dialing the called DN. If the information delivery is allowed by default, subscribers can block their name and number delivery.

Calling Number Blocking (CNB) is an outgoing call service. CNB enables subscribers to block the display of their number on the subscriber set of the called party. CNB is used on an individual call basis and is available to subscribers who have the CNAB or CNDB line option.

Calling Name and Number Delivery Blocking (CNNB) is an outgoing call service. CNNB enables a subscriber to block the display of number and name information on the subscriber set of the person being called. CNNB is used on an individual call basis and is available to all subscribers who have the CNAB or CNDB line option.

The Calling Name and Number Delivery (CNND) feature is available to subscribers who have the CNAB or CNDB line option. CNND allows subscribers to deliver both name and number information to the called party, regardless of the permanent name and number suppression status of the line.. CNND works on an individual call basis.

A subscriber to any of these features is provided with EBCR service and EBCR service does not interfere with these features.

Call Pickup (CPU)

The CPU feature enables a station to answer calls incoming to another station within the same pickup group.

EBCR service is not invoked if a CPU request is denied.

Call Waiting (CWT)

The CWT feature notifies a subscriber in a stable call when another call arrives. The subscriber can place the current party on hold and answer the call that is waiting.

On calls to parties that have the Call Waiting feature, EBCR service only offers its service to the caller if there is already one party waiting on the called party's line.

Conferencing

EBCR service allows the operating company to decide whether to offer EBCR service on the consultation leg of Conference calls. Conferencing calls for this functionality refer only to the operation of conferencing features which make use of consultation legs, for example, Three-Way Call (3WC), Station Controlled Conference, Flexible Call, and Call Transfer.

Setting field CONF in table SDSINFO tuple OFFICE to Y (yes) allows EBCR service to be offered on calls using one of these types of conferencing features, while setting this field to N(no) prevents the offering of EBCR service on calls that have this type of Conferencing feature.

Customized dialing

EBCR service is not invoked on calls originated with a customized dial plan (on-net calls). However, EBCR service is invoked on off-net calls that qualify for EBCR service activation. EBCR service ensures that the original translated dialed digits (public DN) is present in the proper ISUP message where applicable.

Distinctive Ringing/Call Waiting (DRCW)

When a line has DRCW, incoming calls from DNs that are on the DRCW list are identified by a distinctive ring, or if the line is busy, a distinctive call waiting tone. The caller receives standard audible ringback tone.

The interaction of EBCR service with DRCW is the same as with CWT.

Enhanced Secondary DN (ESDN)

Note: *This feature is also called Enhanced Teen Service.*

The Teen Service feature allows multiple DNs (up to 6) to be assigned to a single line without the expense of additional equipment. The ESDN feature is an enhancement to the Teen Service feature.

EBCR service is not available on secondary DNs. If the operating company has both the EBCR feature and the Access to Messaging feature active in an end office and has datafilled these features to provide callers with a choice of either service on the busy condition, only Access to Messaging is offered to secondary DNs. Primary DNs are offered a choice of either service.

Hook flash

EBCR service ignores hook flashes while an offer of service announcement for EBCR service is playing and while a help announcement is playing. The user must accept or reject the offer of service before hook flash can be used again (for example to return to the first party on a 3-way call or on the consultation leg of a station-controlled conference call). After the offer of service announcement is over, EBCR service is no longer on the call and the user can use the hook flash.

Hunt groups

A hunt group is an end-user defined group of lines. When attempting to terminate a call to a busy line within the hunt group's group of lines, the switch scans the group of lines sequentially and searches for an idle line on which to terminate the call.

EBCR service allows the operating company to decide whether to offer EBCR service on intraoffice calls that terminate on a hunt group. Setting field HNTGRP in table SDSINFO tuple OFFICE to Y (yes) allows the offering of EBCR service on intraoffice calls that terminate on a hunt group, while setting this field to N (no) prevents the offering EBCR service on intraoffice calls that terminate on a hunt group.

If table RESOFC tuple ACB field HUNTLINE is set to DENY. Automatic Call Back (ACB) (the service to which EBCR service provides access) is not activated on intraoffice calls terminating on a hunt group, even if field HNTGRP is set to Y. Though ACB cannot be activated when field HUNTLINE is set to DENY, an announcement offering EBCR service to the caller is still played when field HNTGRP is set to Y.

Long Distance Alerting (LDA/LDS)

The Long Distance Alerting feature notifies its subscribers that they have an incoming long distance call by means of LDS distinctive call waiting tones. If the subscriber foes not respond to the distinctive call waiting tones within a predefined period of time, the call is routed to the no terminal responding treatment.

On a call to a party with the Long Distance Alerting feature who is currently receiving LDS distinctive waiting tones due to an incoming long distance call, EBCR service is provided to the caller.

Meet-Me Conference

The Meet-Me Conference feature allows conferees to dial a specific DN at a predetermined time to access a bridge and hold the conference.

EBCR service is offered when a caller tries to join a Meet-Me Conference by dialing a specific DN and that DN is busy.

Network Facility Access (NFA)

The Network Facility Access (NFA) feature provides a direct connection between a subscriber line and an intelligent processor (IP) by means of the DMS switch. Through this connection, the subscriber has direct access to services provided by the IP.

The subscriber is provided with access to the IP in two manners: implicit and explicit. With implicit access, the subscriber is directly connected to the IP simply by going off-hook; the subscriber can interact with the IP or revert to regular call processing by dialing as normal. With explicit access, the subscriber dials an NFA explicit access code to connect to the IP; then the subscriber can interact with the IP.

When the IP redirects the caller to a new DN, EBCR service is offered when the new DN is busy.

Spontaneous Call Waiting Identification with Disposition (DSCWID)

The DSCWID feature allows subscribers to receive calling party information during call waiting and provides subscribers with a set of disposition options to treat incoming calls.

On calls to parties that have the DSCWID feature, EBCR service is only offered to the caller if there is already one party waiting on the called party's line.

Toll Diversion (TDV)

The TDV feature diverts originator's toll calls to an attended console, thus preventing the completion of toll calls to a toll operator without the assistance of an attendant.

EBCR service is not invoked after a call attempt is blocked by TDV.

Uniform Call Distribution/Automatic Call Distribution features

Uniform Call Distribution (UCD) allows calls to be evenly distributed to a number of predesignated stations known as UCD stations or UCD positions. This feature is used to queue incoming calls to a message desk.

Automatic Call Distribution (ACD) is a set of MDC features that assigns answering machine priority to incoming calls and then queue and distributes them to a predetermined group of telephone sets designated as answering positions.

EBCR service is not offered on calls to UCD or ACD group unless the call is forwarded to an overflow DN or a Night Service DN that is outside of the UCD/ACD group and the forward-to DN is busy.

If the call is forwarded to an overflow DN or a Night Service DN outside the UCD or ACD group and the forward-to DN is busy, EBCR service detects the busy condition and offer EBCR service. However, when the caller accepts the service, she/he hears a busy tone instead of the ACB confirmation announcement. She/he does not receive the ACB service that was accepted. This is a limitation of EBCR service.

On a call to a UCD or ACD group that is forwarded to an overflow DN or a Night Service DN outside the UCD or ACD group which is busy, EBCR service is offered, as explained

above. However, if the user elects to hang up, go off-hook and then dial *66, thereby accessing standard ACB (that is, the Automatic Callback feature) directly, instead of accepting the EBCR offer of service, standard ACB fails. Standard ACB service is not provided and generates a busy treatment instead of the ACB confirmation and offers EBCR service for the second time. If the caller accepts the offer of EBCR service, he/she receives busy tone and does not receive the ACB service she/he was offered and accepted. This is a limitation of standard ACB.

Virtual Facility Group (VFG)

A Virtual Facility Group (VFG) is a software structure that emulates a trunk. For example, a VFG can be used to limit the number of calls originating from a customer group or to simulate a looparound trunk without using physical resources.

If no redirection has occurred before a VFG is encountered, screening for EBCR service is performed after the call has gone through the VFG. When this happens, EBCR service is offered if the screening for EBCR is passed.

Restrictions/Limitations

The following limitations and restrictions apply to EBCR service:

- EBCR service performs screening prior to offering its service to the caller. This screening is performed in order to minimize the chance of Automatic Call Back feature failure after the caller has accepted the EBCR offer of service. Nonetheless, in some cases the Automatic Call Back feature still fails after the caller accepts EBCR service.
- The ACB feature does not support all of the agents that EBCR service supports. When EBCR service is a service candidate for the busy offering, the EBCR screening may reject some agents which have already passed common offering screening. However, it is not within the scope of the ACB feature to expand the range of agents that EBCR supports.
- The ‘1166’ sequence is not supported for in-call EBCR service activation.
- Only one help announcement is available for the busy condition service offer regardless of whether only EBCR service is offered on the busy condition or whether a choice of Access to Messaging or EBCR service is offered.
- Per-call denial and substained deactivation are not available on POTS and PBX lines.
- Call forwarding detection may fail when one or more switches involved in the call path fail to send call forwarding information to the originating switch. When this information is not received by the originating switch, EBCR service is offered on the call even when field CFW in table SDSINFO tuple OFFICE is set to N.
- On inter-switch calls, EBCR service is only available if the inter-switch call is end-to-end ISUP.
- The “#” and “*digits” digits cannot be detected by EBCR service if the originating station is a DP line.
- EBCR service is not available on hotel/motel calls and credit card calls.

- EBCR service is not supported on interoffice busy calls where the busy treatment is not applied by the originating end office.
- Since EBCR service uses UTRs for digit collection, subscriber lines must be hosted by Series 2 peripherals (XPM).
- If a warm or cold restart is performed while an EBCR offer of service announcement is playing, the announcement plays over and over. The caller must hang up and then go off-hook to get dial tone. This announcement behavior is not caused by EBCR service and is not restricted to EBCR service announcements.
- If a call is forwarded more than 5 times, the system provides busy treatment to the caller and EBCR service is offered on the call.
- The acceptance key for EBCR service is not displayed when entered on a KSET line with called number/name display.
- When the R selector in table STDPRTCT.STDPRT or the REPL selector in IBNXLA is used, the dialed digits are replaced by new digits. If these selectors are used on calls where EBCR service is active, EBCR service only performs screening on the new digits. Therefore, in the case of N11 calls, for example, EBCR service may be offered if the N11 digits are replaced by digits that satisfy the screening criteria for EBCR service.
- EBCR service may be offered on a second leg of a 3-way call or on the consultation leg of a station-controlled conference call. While the offer of service announcement or help announcement is playing, the hook flash is ignored. To return to conference mode, the user must first accept the offer of service, reject the offer of service by pressing any key other than the acceptance key, or wait for the offer of service announcement to complete. After service is accepted, rejected, or the offer of service announcement is over, EBCR service is no longer on the call and the user can use the hook flash to return to the first party on the call.
- When a call terminates on a busy line, the user may elect to hag up, go off-hook and then dial *66, thereby activating the Automatic Call Back feature directly. In some cases the Automatic Call Back feature fails and generates a busy treatment. In such cases, EBCR detects the busy condition and offers EBCR service. However, if the user accepts the offer of EBCR service, he/she receives the busy treatment and not the Automatic Call Back service proposed by EBCR. This is a limitation inherited from the Automatic Call Back feature.

TRK-NOW

This section identifies changes and/or additions to trunk functions that are Traffic sensitive or affecting, which occur immediately upon the new software load insertion. This includes changes or additions to commands, data schema, logs, and OMs, which may affect Traffic activity.

CEU 08

NA008 PRODUCT

LAYER		TRK-NOW
CEU 08		
		APPLICATION
ACTID	FEATURE TITLE	ETSI ISUP
AF4779	R2 To ETSI ISUP Interworking (EN BLOC)	

Description

This feature provides interworking between R2 and the (ETSI) ISUP protocols on the DMS100 Europe.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This activity does not impact any existing features on the DMS100. It provides new interworking capability between R2 and ETSI-ISUP signalling systems.

Restrictions/Limitations

- Only the ETSI ISUP messages mentioned in this feature document are supported for interworking with R2.
- Only basic calls will be supported by this activity. No feature interactions are provided at this time.
- Only calling party control is supported by this activity.
- Operator signals are not supported.
- ETSI ISUP Cause values Preemption and No Preemption Circuit Available are not supported.
- Over-decadic digits cannot be propagated over ETSI ISUP trunks. These must be removed from the digit stream via translations.
- Only “Operator, English Language” can be sent as an ETSI ISUP calling party category in R2 to ISUP interworking of operator originated calls.
- All ETSI ISUP calling party categories other than those listed in this feature document are mapped to the R2 calling party category “REGULAR”.
- ETSI ISUP to R2 calls with continuity checking requested will not hold up the call setup on the R2 leg until the results of the continuity check have been received.
- During R2 to ETSI ISUP interworking, requesting the calling digits prior to requesting all of the called digits on the incoming R2 trunk is not supported.
- During the R2 to ETSI ISUP interworking whatever be the Calling Party Category received on R2 leg it will be mapped on to Ordinary Calling Subscriber on the ETSI ISUP leg.

Hardware Information

The Continuity Tone Detector card (NT6X70) must be present on PDTC(s) used.

LAYER		TRK-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AIN
AR2259	AIN 0.2 Messaging Enhancements-I	

Description

The advanced intelligent network (AIN) messaging component of the service switching point (SSP) platform acts as an SSP and service control point (SCP) interface. It provides messaging capabilities for AIN applications which include:

- encoding the data passed by an application
- sending the encoded message to an external database
- receiving a message from the external databased
- decoding the message and returning the result to the application

AIN Service Enablers (0.2) Messaging Enhancements-I provides two major enhancements to the AIN Service Enablers support provided in NA007:

- Support of the new AIN Service Enablers messages and message parameters (both encoding and decoding) that were not previously implemented in the AIN messaging component but are now required by the AIN feature

  Note: *New messages are defined as messages that, as of NA007, are not supported by the AIN messaging component and are required in NA008.*
- Support of GR-1298 definitions of existing messages and parameters

Valid package types are query, response, conversation, and unidirectional. Descriptions of the package types are as follows:

- When a transaction capabilities application part (TCAP) transaction is maintained, the message is sent in a conversation package.
- When an TCAP transaction is not maintained, the message is sent in a response package.
- When a TCAP transaction is first established, the message is sent in a query package.
- Non-call related messages are sent in unidirectional packages.

  Note: *Unidirectional messages do not maintain a TCAP transaction.*

Valid component types are invoke (last), invoke (not last), return (error) and return results (last). When an invalid response message is received from the SCP for a given query message, the AIN messaging component returns an unexpected message operation to the SCP.

The following new outgoing messages are supported in NA008:

- O_CALLED PARTY_BUSY-trigger detection point-request (TDP–R)
- O_NO_ANSWER-TDP–R
- NETWORK_BUSY-event detection point-request (EDP–R)

- T_BUSY-EDP–R
- T_NO_ANSWER-EDP–R

The following new non-call related messages are supported in NA008:

- ACG_OVERFLOW-unidirectional
- ACG_GLOBAL_CTRL_RESTORE-query
- ACG_GLOBAL_CTRL_RESTORE_SUCCESS-response

Note: *There are no new incoming messages in NA008, just changes to existing incoming messages.*

Existing messages are defined as messages that, as of NA007, are supported by the AIn messaging component. In NA008, the AIN messaging component supports encoding, decoding, error handling and detection of existing messages according to GR-1299 Issue 3, rather than TR-1285 definitions. The changes affect only AIn Service Enablers; AIN Service Essentials continues to analyze these messages according to TR-1285 specifications.

The following existing outgoing messages are modified in NA008:

- O_Called_Party_Busy-EDP–R
- O_No_Answer-EDP–R
- Info_Collected trigger request
- Info_Analyzed trigger request
- Network_Busy trigger request
- Termination_Attempt trigger request
- Resource_Clear message

The following existing incoming messages are modified in NA008:

- Analyze_Route
- Authorize_Termination
- Forward_Call
- Send_To_Resource

The following existing non-call related messages are modified in NA008:

- Automatic call gapping (ACG)
- Request_Report_BCM_Event (RRBCME)

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

The AIN messaging component uses the client interface to the operational measurements (OM) base, in order to peg OMs as appropriate. The AIN Service Enablers OM feature counts messages passed between the SSP and the SCP. This feature counts call-related AIN Service Enablers messages and all AIN non call-related messages. Service Enablers messages are defined as: messages which are part of a transaction initiated by a trigger which was datafilled in tables TRIGDIG or TRIGINFO with field MSGSET equal to R02.

The purpose of these message counts is to provide traffic engineering, monitoring, and maintenance capabilities.

Service Order

NONE

AMA Changes

AIN is an existing service-control architecture that is engaged during basic call processing when a designated condition is encountered. The condition can indicate that a certain event has occurred and pre-specified criteria are satisfied. Once engaged, pre-defined logic using a common set of service independent functions directs subsequent call processing actions. After the AIN service-control functions are completed, basic call processing resumes.

Two new TCAP parameters are introduced:

- AMAMeasure
- AMAMeasurement

The AMAMeasure parameter is accepted from the SCP message Send_To_Resource. This parameter is used to notify the SSP that duration timing of the resource connection must be performed. It further indicates that either the resource timing module (MC290) should be appended to the AMA record, or that the timing information should be sent back to the SCP in the Resource_Clear message.

The AMAMeasurement parameter is added to the Resource_Clear message. This parameter contains the resource connection duration timing being sent back to the SCP. The AMATimeGuard field is part of the AMAMeasurement parameter as well. AMATimeGuard indicates the validity of the timing measurement.

Notes

NONE

Alarms

NONE

Interactions

The messaging component interacts with call processing, as well as non-call processing applications. Refer to the Description section of this document for more details.

Restrictions/Limitations

NONE

LAYER		TRK-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	XA-Core
XA1063	XA-Core – Killer Trunks Unblocking	

Description

This feature addresses a portion of the Trunk Base Call Processing software so that the multi-processor architecture of XA-Core is minimally blocking. Unblocking this code contributes toward achieving the real-time performance goals of the XA-Core project.This is accomplished through data domain analysis, and modifying the trunk base code such that data contention is removed or minimized.

This feature unblocks the Trunk Base Call Processing code in the following areas:

- "Killer Trunks" feature implementation
- OM pegging of WIDEBAND and NWMTGCNT groups
- many miscellaneous global symbols

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature depends on the following features, which introduced interfaces in CSP06/ CSP07:

- OM interfaces, in feature AR1869/AR2069

Engineering hardware information

The modified software will continue to properly execute on a 68K or 88K based Supernode. The XA-Core hardware platform will benefit most from the changes.

Restrictions/Limitations

NONE

TRK-LATER

This section identifies changes and/or additions to trunk functions that are Traffic sensitive or affecting, which require activation after the new software load insertion. These changes may include tables, log reports, or OM reporting and generation.

NA008 PRODUCT

LAYER		TRK-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	AMA
AF6738	Billing Enhancements	

Description

This feature also provides functionality to feature AF6697, Billing Enhancements, for CNA changes and includes the following enhancements related to DMS-100 billing:

- Multiunit Message Rate (MUMR) support of interchangeable numbering plan areas (NPA)
  - — This enhancement consists of the modification of table MUMRTAB and associated call processing software to support the definition of message-rate serving areas (MRSA) which include multiple office codes in multiple area codes where these office and area codes may consist of the same 3-digit sequence.
- Billing for operator-assisted (OA) calls
  - — This enhancement enables the production of Automatic Message Accounting (AMA) records on calls terminated to operator (OP) trunks for 0+ and 0– OA call types. This service provides the operating company with the ability to designate, on a per-OP trunk group basis, which operator-assisted calls will produce a billing record.
- Improved accuracy of flash timing for line concentrating module (LCM) and remote lines.
  - — This enhancement increases the billing accuracy of the flash timing adjustment performed on calls involving lines with the flash capability.
- Call Code 021 for Common Control Switching Arrangement (CCSA) data calls
  - — This enhancement provides an office-wide control that allows the Bellcore format AMA call code for the CCSA option to take precedence over the call code for data calls.
- Billing software robustness enhancements
  - — This enhancement provides additional space for AMA software to store information that is used in formatting billing records and improves support for certain types of billing patches.

Command Changes

NONE

Data Schema Changes

This feature introduces the following table changes:

- CCSADATA option added to table AMAOPTS
  — The CCSADATA option in table AMAOPTS controls the precedence of Call Code 021 over Call Code 072 for CCSA data calls. This option has no effect on non-CCSA calls. With the CCSADATA option set to ON, the Call Code 072 record is replaced by a Call Code 021 record. With the CCSADATA option set to OFF, a Call Code 072 record is produced. The following is an example:

```
TABLE: AMAOPTS
OPTION                              SCHEDULE
-------------------------------------------------
CCSADATA                                     OFF
```

- OABILL option added to table AMATKOPT
  — The OABILL option in table AMATKOPT controls whether an OA call using a member of the trunk group should generate a local AMA record in the originating office. When OABILL is assigned in table AMATKOPT for an OA-type call, a billing record is generated. This option applies to North American offices for Bellcore-format AMA billing. The following is an example:

```
TABLE AMATKOPT
CLLI                                OPTIONS
-----------------------------------------------
AL10ATCOGS7                     OABILL   $
```

- Changes to table MUMRTAB tuple format.
  — The key for MUMRTAB is modified so that the code type of the dialed digits is specified in each tuple. This is required so that two tuples can exist with the same MRSANAME and dialed digits but with different Multiunit Message Rate Message Billing indices (MUMRMBI). The key field, CODETYPE, is the context of the dialed digits and can be set to ANY, NPA, or OFC. When the code type is NPA, the dialed number must consist of any prefix digit(s) followed by at least 10 digits in order for the tuple to match. When the code type of OFC, the dialed number must be a number that is less than ten digits (that is a 7-digit number) in order for the tuple to match. When the code type is ANY, any dialed number beginning with the table MUMRTAB digits will match. The following are examples:
  — Initial:

```
TABLE: MUMRTAB
KEY                                        MUMRMBI
-------------------------------------------------
MRSA2      ANY       562       1
MRSA2      ANY       563       5
```

  — Step 1:

```
TABLE: MUMRTAB
KEY                                        MUMRMBI
-------------------------------------------------
MRSA2      ANY       562       1
MRSA2      NPA       562       2
MRSA2      ANY       563       5
```

— Step 2:

```
TABLE: MUMRTAB
KEY                                        MUMRMBI
-------------------------------------------------
MRSA2       ANY       562       1
MRSA2       NPA       562223    2
MRSA2       OFC       562       1
MRSA2       ANY       563       5
```

— Step 3:

```
TABLE: MUMRTAB
KEY                                        MUMRMBI
-------------------------------------------------
MRSA2       NPA       562221    2
MRSA2       OFC       562       1
MRSA2       ANY       563       5
```

Note: *If two tuples appear in table MUMRTAB with the same dialed digits and message rate serving area name (MRSANAME), the tuple for the codetype ANY will be selected by call processing before tuples with either of the other two code types.*

Log Message Changes

The introduction of the CCSADATA option is reflected in the AMA118 log, which contains a list of all the options in table AMAOPTS and the current status of each option.

Log report AMA118

The AMA subsystem generates this report to indicate the status of AMA options in Table AMAOPTS. The generation of AMA118 is controlled by the setting of option LOGOPT in Table AMAOPTS. LOGOPT may be set to OFF so that the AMA118 is never generated, or it may be set PERIODIC so that the AMA118 is generated periodically.

Example

The basic format of the AMA118 log is given below. This log contains a list of all the options in Table AMAOPTS and the current status of each.

```
RTPT      AMA118 NOV07 08:40:00 3400 INFO AMA_OPTIONS
            ACBAR_MOD_CO:        INACTIVE
         ACBAR_STY_IN:         INACTIVE
         APPEND_ISDN_CKT_ID:   ACTIVE
         AUDIT:                ACTIVE
         BCLID_USPAUD:         ACTIVE
         BCLONGCALL:           ACTIVE
         CALL_FWD:             ACTIVE
         CALL_TIMECHG:         INACTIVE
      CCSADATA:             INACTIVE
         CDAR:                 INACTIVE
         CDRDUMP:              INACTIVE
         CDRLONGCALL:          INACTIVE
         CDRSYNC:              INACTIVE
         CHG411:               INACTIVE
         CHG555:               ACTIVE
         CIDSUSPAUD:           ACTIVE
         CITYWIDE:             INACTIVE
         CMCICWK:              INACTIVE
         CMCORIG:              INACTIVE
         CMCTERM:              INACTIVE
         COIN:                 ACTIVE
         CRSEQNUM:             INACTIVE
         CSMI:                 ACTIVE
         DA411:                ACTIVE
         DA555:                ACTIVE
         DSCWID_CONF_AUDIT:    ACTIVE
         ENFIA_B_C:            ACTIVE
         FREECALL:             INACTIVE
         FTRCODE:              INACTIVE
         HIGHREV:              INACTIVE
         INTRASITE:            INACTIVE
         INWATS:               ACTIVE
         ISDNCIRCUIT:          INACTIVE
         LOGAMA:               ACTIVE
         LOGOPT:               ACTIVE
         LOGTEST:              INACTIVE
         LONGCALL:             ACTIVE
         LUSORIG:              ACTIVE
         LUSTERM:              ACTIVE
         OBSERVED:             ACTIVE
         OCCTERM:              ACTIVE
         OUTWATS:              ACTIVE
         OCCOVFL:              ACTIVE
         OVERFLOW:             INACTIVE
         SAID_MOD_SUPPR:       ACTIVE
         SUSP:                 INACTIVE
         TIMECHANGE:           ACTIVE
         TRACER:               INACTIVE
         TWC:                  ACTIVE
         U3WC:                 ACTIVE
         UNANS_AIN:            INACTIVE
         UNANS_LOCAL:          ACTIVE
         UNANS_TOLL:           ACTIVE
         UNANS_TOPS:           ACTIVE
```

OM Changes

NONE

Service Order

NONE

AMA Changes

This enhancement increases the usage of the extension blocks controlled by office parameter CRS_PRU_POOL2_SIZE in table OFCENG. This increase occurs when billing is done for OA calls (controlled by option OABILL in table AMATKOPT). When the OABILL option is ON, the increased usage of extension blocks may be substantial, depending on the number of OA calls using the selected trunk. The CRS_PRU_POOL2 extension block is held from the time it is allocated until the billing record is formatted. The extension block for OABILL is allocated at the beginning of the call.

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER		TRK-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	TFC/TFP
AF6757	TFC/TFP Optional Blocking	

Description

Transfer controlled message/transfer prohibited message (TFC/TFP) optional blocking implements blocking of calls to an adjacent switch during SS7 network congestion. Congestion is indicated by a transfer controlled message (TFC) or isolation, which may be a result of a transfer prohibited message (TFP). This feature provides enhanced capability of blocking the ISUP traffic altogether, as opposed to rerouting the traffic.

Command Changes

NONE

Data Schema Changes

TFC/TFP Optional Blocking adds a new option BLOCK to table TRKSGRP to block the ISUP call during congestion. To activate the blocking option, the technician can go to table TRKSGRP, position the trunk subgroup to be blocked, and enter the BLOCK option at the OPTION prompt.

Changed table: TRKSGRP

The following is an example of datafill for changed table TRKSGRP.

Example

```
CI:
>
>table trksgrp
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: TRKSGRP
>pos ss7ibn 0
         SS7IBN 0    DS1SIG
   C7UP
2W N N UNEQ ACTIVEA Q764 THRL 0 ISUP $ NIL CIC
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
CARDCODE: DS1SIG
>
SGRPVAR: C7UP
>
DIR: 2W
>
ESUPR: N
>
SAT: N
>
ECSTAT: UNEQ
>
ABCNTL: ACTIVEA
>
PROTOCOL: Q764
>
CONTCHK: THRL
>
COTREQ: 0
>
ADJNODE: ISUP
>
OPTION:
>BLOCK
OPTION:
>$
TMRNAME: NIL
>
GLARETYP: CIC
>
TUPLE TO BE CHANGED:
         SS7IBN 0    DS1SIG
   C7UP
2W N N UNEQ ACTIVEA Q764 THRL 0 ISUP RTEBLOCK $ NIL CIC

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
```

Log Message Changes

NONE

OM Changes

TFC/TFP Optional Blocking adds a new OM group ISUPCONG which contains register NUMBLOCK and register ACCDFIL. This is used to peg the total blocked calls due to CCS7 congestion or isolation when the RTEBLOCK option is on.

Register NUMBLOCK counts the total number of blocked calls due to transfer controlled (TFC) and transfer prohibited (TFP) if BLOCK option in table TRKSGRP is on.

Register ACCDFIL is used to peg the number of times that a trunk group detected ACL but, due to missing datafill in table CCS7PPLN, couldn't apply NWM controls.

New OM group: ISUPCONG

OMSHOW example

```
>CI:
>OMSHOW ISUPCONG ACTIVE

ISUPCONG

CLASS:   ACTIVE
START:1997/01/23 17:00:00 THU; STOP: 1997/01/23 17:24:10 THU;
SLOWSAMPLES:        15 ; FASTSAMPLES:        145 ;

       KEY (COMMON_LANGUAGE_NAME)
                                                NUMBLOCK
  638 ISUP2WMCI
                                                 0

  639 ISUP2WITT
                                                 0

  640 ISUP2WITEA
                                                 0

  677 SS7IBN
                                                 0
```

New register: NUMBLOCK

This register keeps track of the total number of blocked calls due to TFC and TFP. If the RTEBLOCK option is on.

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

TFC/TFP may interact with International Congestion Control on SS7. If the blocking option is on, all traffic that would otherwise be rerouted due to international congestion control will be blocked. This feature gives the user of international congestion control an extra option to block the ISUP traffic if needed.

Restrictions/Limitations

NONE

LAYER		TRK-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	E911
AF6848	E911 ISUP Trunking	

Description

This feature provides the ability to route Enhanced 911 Emergency Service (E911) calls directly over Integrated Services Digital Network User Part (ISUP) trunks. This feature adds an intertoll (IT) trunk option called E911. Incoming trunks with this option can process E911 calls by selecting the appropriate route to the public safety answering point (PSAP), using the E911 selective routing database (SRDB). Adding this functionality eliminates the need for additional translations in the tandem office when using ISUP trunks for E911 calls.

Command Changes

NONE

Data Schema Changes

Activation of this feature is accomplished by adding the new option E911 to table TRKGRP for an ISUP IT trunk. Standard trunk datafill rules apply.

Table TRKGRP Changes

Option E911 has the following associated fields:

- ESCO - (Emergency Service Central Office) indicates the default ESCO number for this trunk. This is a 3-digit number representing the EO where the E911 trunk originated.
- ESN - (Emergency Service Number) indicates the default ESN for this trunk. This can be an 1- to 5-digit number associated with the emergency service zone that is used to obtain the DN of the primary PSAP to which this call is to be default routed.
- E911SIG - (Enhanced 911 Signaling) indicates the type of signaling to be used by this trunk. The only valid entry at this time is standard (E911_STD) signaling.

Table OFCVAR Changes

The E911 option on an IT trunk in a DMS-100 end office (EO) has no affect on call processing. However, some offices may choose to datafill this option in order to show that the trunk is dedicated to E911 traffic (outgoing 911 calls to the E911 tandem). To datafill the ESN for the E911 option in the EO, the existing E911_CHECK_DEFAULT_ESN in table OFCVAR must be set to N. In addition, the following warning message is generated:

```
WARNING: ESN NOT PRESENT IN TABLE E911ESN
```

Also, an E911 205 information log report is generated stating that the ESN is not datafilled in table ESN. If the parameter is set to Y, then the following error message is generated:

```
ERROR: ESN MUST BE IN TABLE E911ESN
```

Then the entry is rejected.These warnings can be ignored in the EO since the actual E911 call processing is performed in the DMS E911 Tandem office (the far-end office). Note that the ESCO and ESN fields can be set to any value in this case. An example follows:

```
GRPKEY                                                          GRPINFO
------------------------------------------------------------------------------
 AL7ITICS7
   IT 0 ELO NCRT IC NIL MIDL 909 AT1 NSCR 501 000 N N E911 123 52 E911_STD $
>cha
GRPTYP: IT
>
TRAFSNO: 0
>
PADGRP: ELO
>
NCCLS: NCRT
>
DIRDATA: IC
>
TRAFCLS: NIL
>
SELSEQ: MIDL
>
CONNGNPA: 909
>
PRTNM: AT1
>
SCRNCL: NSCR
>
SNPA: 501
>
TERMTC: 000
>
TOLLCOMP: N
>
CCWKVLD: N
>
OPTION:
>e911
ESCO:
>123
ESN:
>52
E911SIG:
>e911_std
OPTION:
>$
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

This feature needs the following engineering feature to function properly: ENS0001 (E911 Tandem).

Alarms

NONE

Interactions

End office and outgoing trunk datafill of E911 option

Offices that are not E911 tandems do not datafill option E911 on any IT trunks. All incoming calls on an IT trunk with option E911 perform an SRDB lookup to determine the caller's ESN. Since no valid ESNs exist in an office that is not an E911 tandem, these calls are routed to treatment. If a dummy PSAP and ESN are datafilled, this allows the calls to complete but adds an unnecessary step to all incoming calls (the SRDB lookup).

Datafilling option E911 has no effect on outgoing calls.

Datafill of E911 option on non-dedicated trunks

Datafilling option E911 on IT trunks in an E911 tandem office is not recommended if the trunk is not dedicated to E911 traffic for the following reasons:

- All incoming calls on this trunk perform an SRDB lookup to determine the caller's ESN. This step is not necessary on non-E911 calls and increases the time it takes to process these calls.
- Additional logs are generated, such as E911201 (Abnormal Called Digits) and E911203 (Calling Party Has No ESN) reports for all calls that do not have an entry for the calling DN in table E911SRDB or when the called digits are not 911, 11 or 1.
- If no valid ESN is found for the calling DN, calls that normally complete are routed to treatment.

Datafilling option E911 has no effect on outgoing calls.

This feature supports interactions with all other E911 features with the exception of originator hold (ORIGHOLD) and RINGBACK.

Restrictions/Limitations

The following limitations and restrictions apply to E911 ISUP Trunking:

- As with E911 MF trunks, it is strongly recommended that the IT ISUP trunk with option E911 be dedicated to handle only emergency traffic. Dedicated SS7 links are also recommended.
- Option E911 is allowed only when the SGRPVAR field in table TRKSGRP for the trunk is C7UP. (This applies to all subgroups).
- Calls using the default emergency service number (ESN) do not complete if the ESN is not datafilled in table E911ESN.
- An ESN entry that is not datafilled in table E911ESN is accepted if the E911_CHECK_DEFAULT_ESN office parameter in table OFCVAR is set to N. The following warning message is being generated:

  ```
  WARNING: ESN NOT PRESENT IN TABLE E911ESN
  ```

  If the parameter is set to Y, then the entry is rejected with the error message:

  ```
  ERROR: ESN MUST BE IN TABLE E911ESN
  ```

- Originator hold (ORIGHOLD) and RINGBACK are not supported when using ISUP trunks to process E911 calls.
- The IT CELL option is not compatible with option E911.

LAYER		TRK-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	NI-2
AF6860	PRI NA008 Maintenance (MTC)	

Description

Feature AF6860 supports the following National ISDN-2 (NI-2) maintenance functionalities:

- B-channel availability with timer T323
- DS-1 restarts
- Backup D-channel provisioning
- CM D-channel query during One Night Process (ONP)
- RESTart and SERVice Message Collisions

B-channel availability with timer T323

Primary Rate Interface (PRI) B-channel availability signaling procedures provide a coordinated B-channel status at both the network and user ends of the PRI link. This coordinated status is achieved through the exchange of Q931 SERVice and SERVice ACKnowledgement messages. Time T323 is used for timeout response of Q931 SERVice messaging on the B-channels. PRI B-channel availability achieves coordinated status after a D-channel failure through the exchange of Q931 SERVice and ACKnowledgement messages.

When the function for B-channel service messaging is enabled in table LTDATA by default, the B-channel SERV/SERV ACK messages are allowed to be sent. The B-Channel SERV/SERV ACK messages received by the network are handled as described in the NTNA PRI B-channel service messaging.

When the function of B-channel service messaging is disabled by datafill in table LTDATA, the B-channel SERV/SERV ACK messages are not allowed to be sent. The B-channel SERV/SERV ACK received by the network are ignored.

DS-1 restarts

DS-1 restart procedures return all B-channels on the DS-1 link to in-service (InSv) condition. The DS-1 restart capability reduces the number of messages between the network and users. In NA008 DS-1 restarts cannot be initiated from a MAP terminal.

Backup D-channel provisioning

In NA008 only the backup D-channel has to be in INB state while provisioning. If the primary D-channel is in-service while the backup D-channel is being updated, the static data is updated dynamically at the XMS-based peripheral module (XPM).

The following steps allow provisioning of a backup D-channel at the MAP terminal without affecting the primary D-channel:

Execute these steps at the MAPCI:MTC:TRKS:TTP;PRADCH level:

1. post the backup D-channel
2. set the backup D-channel to ManB
3. set the backup D-channel to INB.
4. post the B-channel that is used as the new D-channel.
5. set the B-channel to ManB
6. set the B-channel to INB

Execute these steps from table control:

1. delete the B-channel in table TRKMEM.
2. provision the backup D-channel to the channel location of the old B-channel in table TRKSGRP.
3. assign the old backup D-channel to a B-channel location in table TRKMEM.

Execute these steps at the MAPCI;MTC;TRKS;TTP;PRADCH level:

1. post the new backup D-channel
2. set the new backup D-channel to in-service (InSv).
3. post the new B-channel.
4. set the new B-channel to in-service (InSv).

Note: *This procedure does not apply to the primary D-channel*

CM D-Channel Query during One Night Process (ONP)

For NA008, during the ONP and before SWACT, the ManB and INB D-channel information is not stored. After SWACT, the CM sends a query message to the XPM to obtain all D-channel status (including INB and ManB states), and the layer 2 level of all D-channels that are in the idle state remains in-service.

RESTart and SERVice Message Collisions

RESTart and SERVice message collisions occur when a message, other than the expected ACKnowledgement message, is received after sending a SERVice or a RESTart message.

Command Changes

No commands are new or modified in table PRADCH. However, the procedure flow for the Back-up D-Channel Provisioning is altered by this feature. This functionality is only for the

NTNA and NI PRI Back-up D-Channel provisioning, and it does not apply to the Primary D-Channel nor other PRI variants.

The following describes the procedures for re-provisioning of a Back-up D-Channel, which can be executed at the PRADCH MAP level:

1. Change the Back-up D-Channel state to ManB.
2. Change the Back-up D-Channel state to INB.
3. Change the state of the B-Channel (the new Back-up D-Channel location) to ManB.
4. Change the state of the B-Channel to INB.
5. Delete the B-channel from TRKMEM table.
6. Provision the Backup D-channel into the freed B-channel location in the TRKSGRP table.
7. Assign the old backup D-channel location to a B-channel in TRKMEM table.

As both the Primary D-channel and the Backup D-channel have the same characteristics, if any one of the provisioning parameters is changed in the table TRKSGRP in this feature, then an error message is displayed and the static data is not downloaded to XPM:

```
ONLY BACKUP D CHANNEL DATAFILL ALLOWED
TO CHANGE OTHER DATA DCHANNEL MUST BE INB
```

Provisioning parameters are PSPDSEIZ, PARTDIAL, VERSION, CRLENGTH, BCHNEG, BCHGLARE, IFCLASS, CONFIG, LOCATION, SAT, ECSTAT, NSMATCH, AUTOON, TRKGRDTM, and L1FLAGS.

Data Schema Changes

Table ISDNPROT, the TMR_OPT field, and TIMER_NAME subfield have been modified by this feature. Timer T323 used by PRI B-Channel and its timeout value, the new TIMER_VALUE subfield, are defined in this table. B-Channel availability is activated by the NO_BCH_SERV field in table LTDATA.

The timer T323 can be added only for NI-2 protocol variant as network timer.The following are the scenarios for the addition of timer T323 timeout values.

- Addition of T323 timeout value equal to 0 restores the default timeout value for timer T323:

  ```
  RESTORING DEFAULT TIMER VALUE
  ```

- Addition of the T323 timeout value more than maximum possible value of 180 seconds results in the following error message and the tuple will not be added to the table ISDNPROT:

  ```
  INVALID TIMER VALUE:-TIMER T323 MUST BE LESS THAN OR EQUAL TO 180 sec
  ```

- Addition of timer T323 with protocol variant other than NI-2 protocol variant results in the following error message:

```
The timer T323 can be provisioned only for NI2-PRI
```

- Addition of timer T323 with protocol variant as NI-2 and as a user timer results into the following error message:

```
The timer T323 can be provisioned only as network timer
```

Following is an example of this table:

```
PROTVAR         PVCAPPL         APPLDATA              TMR_OPT
                                                TIMER_NAME    TIMER_VALUE
NIPRI           NETTIMER        PRITIMER        T323              120
```

Note: *If the Primary D-channel is inservice while the provisioning activity is performed on the Backup D-channel, the static data is updated dynamically.*

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

This feature needs the following engineering features to function properly:

- Basic table control utilities
- CI command utilities

Alarms

NONE

Interactions

This feature is built on feature AJ4142, NI-2 PRI Maintenance, and interacts with feature AF6869, PRI NA008 MTC Development. This feature provides functionality for the following features:

- AF6862, PRI Call Processing
- AF6863, PRI Call Screening

- AF6864, PRI Call-By-Call
- AF6786, PRI NA008 Development (CCM)
- AF6787, PRI NA008 Development (Shared)

Restrictions/Limitations

- MAP triggered DS-1 restarts are not supported in NA008.
- If a DS-1 RESTart message has been received, and if the craftsperson takes any one of the B-channels to Out of Service (OOS) state or a SERVice (OOS) message is received from the CTE, then the restart process continues instead of being aborted.
- After receiving a RESTart message, the RESTart ACKnowledgement message is sent even if some of the B-channels in the DS-1 span are in an OOS state. An OOS message is sent afterwards for the OOS B-Channels.
- The Back-up D-Channel provisioning feature provides the provisioning flexibility only for the Back-up D-Channel. It does not provide the same functionality for the Primary D-Channel.

LAYER		TRK-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6862	PRI Call Processing	

Description

This feature provides functionality for the following features:

- AF6786, PRI NA008 Development (CCM)
- AF6787, PRI NA008 Development (Shared)

This feature provides the necessary changes to support National ISDN Primary Rate Interface (NIPRI) Call Processing. This includes TR-NWT-000444 ISUP (ISDN User Part) PRI interworking and TR-NWT-001187 PRI support of redirecting numbers, TR-NWT-001268 and TR-TSY-000448 partial compliancy, and intra-LATA (local access transportation area) competition changes. Intra-LATA Competition also supports the variant Northern Telecom North American (NTNAPRI). NTNAPRI is the existing proprietary Nortel North American implementation of PRI.

Support of redirecting number

Redirecting numbers and information elements are handled on NIPRI trunks interworked between NIPRI trunks, interworked between NIPRI and ISUP trunks, and interworked between NIPRI and many other agents.

This part of the activity provides support of redirecting numbers and redirecting information discussed in TR-NWT-000444 and TR-NWT-001187.

TR-NWT-001268 and TR-TSY-000448 ISDN routing

The NI PRI called number digits sent from the customer premises equipment (CPE) are analyzed for additional E.164 (public network numbering plan) compliancy. ISDN routing and analysis builds upon the NI-2 basic call compliancy.

Intra-LATA Competition changes

The new functionality intra-LATA competition is designed to provide routing flexibility over ISDN PRI and increase intra-LATA competition. This feature expands the routing flexibility by enabling intraLATA calls to be routed through a pre-subscribed carrier or another specified carrier.

The pre-subscribed intraLATA carrier (LCARRIER) is a valid intra-LATA carrier that is datafilled through table control. A specified carrier is a carrier access code (CAC) that is casually dialed by a subscriber or a private branch exchange (PBX) generated transit network selector (TNS). A network selector facility (NSF) information element also

provides a specified carrier through PRI Call-By-Call (CBC) service for the variant NIPRI.

Command Changes

NONE

Data Schema Changes

PRI Call Processing modifies data schema tables LTCALLS and TRKRSEL.

Table LTCALLS Changes

Modifications to table LTCALLS implement the enhancement IntraLATA Competition, the addition of the LPIC option. New fields added are: LPIC, LCARRIER, and LCHOICE. The LPIC option includes the LCARRIER specification which is the pre-subscribed intraLATA carrier and the LCHOICE specification. The LCHOICE specification determines whether the LCARRIER can be overridden by a call.

An example of the table follows:

```
KEY              DATA                    OPTDATA
PRAIC 18 PUB     XLALEC 42               (EA CAR1 Y) (LPIC CAR1 Y)
PRAIC 11 PUB     XLAIBN 49 RESGRP 0 0    (EA CAR1 Y) (LPIC CAR2 Y)
```

Table TRKRCSEL Changes

Table TRKRCSEL provides a way for PRI trunks to optionally turn on or off the capability of routing using any type of ISDN Information Elements (IE) Intra-LATA Competition. In table TRKRCSEL, the warning message that indicates potential outages resulting from turning on the TNS, CDN, and or OSA fields for the NIPRI variant has been removed (this applies to the NIPRI variant only). This is due to the fact that NIPRI has become more NI-2 compliant in the area of Called Party Number digits analysis. The following is the text of the removed warning message:

```
Warning: Altering state for BC TNS OSA or CDN may affect translation and cause
service outage. Proceed with caution.
```

An example of this table follows:

```
KEY      DATA                                                    OPTDATA
(CLLI)   (Routing Characteristics - RCFILTER)
PRITRK   (BC ON) (CDN ON) (TNS ON) (OSA ON) (SR OFF) (PI OFF)
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

- This feature depends on features AF6873, TR 444 PRI RN Support for XPM, and AJ4144, NI-2 PRI Basic Call.
- Feature AF6863, PRI Call Screening, depends on this feature.
- Software optionality control (SOC) is the tool that manages the options that facilitate the definition and delivery of product computing module loads (PCL). The SOC option order number EQA00015 (for the option data LCHOICE) must be ON for Equal Access (EA) if Intra-LATA Competition, the LPIC option, is to be utilized properly.
- The information element Network Selector Facility (NSF) holds carrier digits and is produced by the PBX for the CAll-By-Call Service. The functionality PRI CBC Service (AF6864) is supported in NI PRI.

Restrictions/Limitations

The following limitations and restrictions apply to the PRI Call Processing feature:

- Q.931 redirecting number information elements do not store a redirecting count, so the actual value of the number of previous redirections is lost when interworking with ISUP and other agents that provide a redirecting count.
- Some agents store the redirecting numbers in different places. PRI Call Processing feature interworks with the same agents as ISUP to retrieve the redirecting numbers.
- The RFR (Reason for Redirection) field in the RNIE (call forwarding DTE out of order) is accepted by incoming PRI Call Processing, but stored and sent out as Unknown.
- The TON (Type of Number) field in the RNIE (abbreviated number) is accepted by incoming PRI Call Processing but stored and sent out as Unknown.
- The Numbering Plan Identification (NPI) field in the RNIE (Data Numbering Plan) is not accepted by incoming PRI Call Processing.
- The redirecting number subaddress is not being handled by PRI Call Processing.
- PRI Call Processing supports only a subset of TR-NWT-001268.

- PRI Call Processing does not support full TR-TSY-000448 (ISDN Routing and Digit Analysis), although ISDN routing is enabled by this feature.
- The sending of cause value #11 (location: public network serving the local user) when excessive digits are received, is not supported in this release. This is due to software interface limitations between the CM and the Extended Peripheral Module (XPM).
- The capability Intra-LATA Competition is supported by the LIPC option in table LTCALLS per interface logical terminal identifier (LTID) and public service type (PUBLIC) calls. The service type OUTWATS invokes Primary Inter-LATA Carrier (PIC) through Virtual Facility Group (VFG).

LAYER		TRK-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6863	PRI Call Screening	

Description

This feature provides functionality for the following features:

- AF6786, PRI NA008 Development (CCM)
- AF6787, PRI NA008 Development (Shared)

PRI Call Screening provides the necessary changes to support Calling Number Screening (CGN) for National ISDN 2 (NI-2) primary rate interfaces (PRI) and Nortel North American (NTNA) PRI. PRI Call Screening also provides functionality for Redirecting Number (RN) privacy, screening, billing, and delivery for NI-2 PRI. PRI Call Screening is complaint to TR-NWT-001187 (ISDN Calling Number Identification Services for Primary Rate Interfaces, Issue 1, March 1992, plus Revision 1, December 1994). All functionality is targeted for the National ISDN (NI) PRI variant except CGN service for NTANA PRI trunks.

The feature adds the following functionality:

- CGN per-interface screening for the NTNA variant
- CGN per-interface screening for NI variant
- RN screening for the NI variant
- RN privacy for the NI variant
- RN billing for the NI variant
- RN delivery for the NI variant

PRI Call Screening provides CGN for NIPRI and NTNAPRI trunk groups on an individual trunk basis. Table DNSCRN provides information that is used by call processing to perform call screening and call validation on specified directory numbers (DNs) for the DMS-100 switch. In table DNSCRN, the screening attribute options (ATTROPTS) define up to six logical terminal identifiers (LTID) for each DN. When calling line identification (CLI) is enabled, attributes CLILTID1 and CLILTIDE2 identify LTID tuples in table LTDEF to be used by call processing for screening, editing, and redirection purposes.

Note: *For CGN screening and editing, the tuples in LTDEF must be previously datafilled in table LTDEF with subfield VARIANT =NIPRI or NTNAPRI.*

PRI Call Screening also includes Redirecting Number (RN) screening. RN Screening interacts with CGN screening. RN screening requires datafill in table LTDATA to define CGNs from RNs. RN screening is only applied to NI-2 PRI interfaces.

Table LTDATA stores data associated with the LTID. The LTID key (LTDKEY) consists of three parts: logical terminal group (LTGRP), logical terminal number (LTNUM), and data

type (DATATYPE). The range of values for field DATATYPE is expanded to include an RN subscription parameter. The RN selector is used to enter

- RN screening requirements
- information to enable editing of the RN
- a default presentation indicator (PI)

PRI Call Screening enhances the PRI Redirecting Number Delivery (RND) service by providing the capability to suppress or override the presentation of one or both redirecting party numbers. RND, for incoming calls on an NI-2 PRI, controls presentation of DNs of the first or second instance of redirection to the called party.

RND determines what redirection information to deliver across the PRI interface. One or two sets of RND information can be independently screened based on their respective outgoing trunk and / or the incoming privacy indicator. The first set of RND information is associated with the first instance of redirection, and the second set of RN information (if present) is associated with the latest instance of redirection.

PRI Call Screening with RND also provides for RND privacy. The RND DN may not be displayed at the called party premises due to any of the following reasons:

- The RND DN is not available. This occurs, for example, when interworking with per-trunk signaling (PTS) trunks.
- The redirecting party has restricted presentation of the DN with the PI.
- A subscription on the originating side to suppress the presentation of the DN. Suppression subscriptions are controlled on an individual PRI interface basis.
- An active subscription on the terminating side of the PRI to restrict presentation of the RND DN to the called party.

When the incoming message has no PI value, the results are based on the screening results and subscription of privacy against the interface. When the incoming message has PI values, the results are based on the screening results and PI values. PI is applied to both RNs independently and the presentation or suppression of one does not affect the other.

PRI Call Screening enhances the NI PRI billing function by introducing the Billing Number Selection (BNS) parameter to determine the billing number for AMA recording. The BNS parameter is assignable for each PRI. BNS allows a special billing number (SBN), a user provided but not screened redirecting number (UPNS), or a user provided redirecting number that passed screening to be recorded in the AMA billing record.

Command Changes

NONE

Data Schema Changes

PRI Call Screening modifies the following tables: DNSCRN and LTDATA. In table LTDEF (logical terminal definitions) the tuples defining LTs for screening must be datafilled with

subfield VARIANT = NIPRI or NTNAPRI and respective ISSUEs before datafilling the referencing OPTION CLILTID in table DNSCRN.

Table LTDATA Changes

The SERVICE OPTIONS field is changed and the new SUPPRESS field added. Table LTDATA is used by PRI for subscription of features against the interface. The various options or datatypes currently provisioned against the interface are CLI, DN, SERV. The SERV option/datatype has four mandatory fields followed with an option for Termination Billing Option (TBO), Charge Number (CHG) and NO_BCH_SERV etc.

Field LDTKEY consists of three parts: subfield LTGRP (logical terminal group), subfield LTNUM (logical terminal number), and subfield DATATYPE (data type). An example follows:

```
LTDKEY                  LTDRSLT
-----------------------------------------------
PRAIC 19                SERV SERV N N NEVER NEVER (RNID Y) $
PRAIC 20                SERV SERV N N NEVER NEVER (RNID N) $
```

Subscription parameters related to ISDN PRI, such as calling party number delivery, are supported in table LTDATA. With PRI Call Screening the following subscription parameters are added to table LTDATA:

- In subfield DATATYPE, add RN (redirection number) and OPTION EDITRN (edit RN), and subfields OVLYRN (overlay RN), NPI (network plan indicator), and TON (type of network).
- If subfield DATATYPE = SERV, add entry RNID (RN identification) and refinement SUPPRESS to subfield OPTION.
- If subfield DATATYPE = SERV, add entry RNDELV (RN delivery) screening and refinements ALWAYS, SCREENED, or NEVER to subfield DELIVER.
- If subfield DATATYPE = SERV, add entry BNS (billing number selection) to subfield OPTION.

The range of values for DATATYPE is enhanced to include a Redirecting Number (RN) subscription parameter. The RN selector is used to enter:

- RN Screening Requirement
- Information to enable editing of the RN
- A default Presentation Indicator

The Verify procedure allows the CLI attribute and its options to be datafilled for the NI_PRI variant as well. It also verifies that the PVC is PRI_NI to allow the RN to be datafilled. If the PVC is not PRI_NI, then the following error message is provided:

```
RN DATATYPE SELECTOR IS NOT SUPPORTED FOR THIS PVC
```

The tuple is not added until the craftsperson datafills the PVC in table LTDEF with NI.

The IFCLASS field in table TRKSGRP is checked and the LTDATA RN datatype is not allowed if IFCLASS is datafilled as USER. The error message provided is:

```
RN DATATYPE NOT SUPPORTED WHEN THE IFCLASS FIELD FOR THE ASSOCIATED CLLI IN TABLE
TRKSGRP IS USER.
```

It also verifies that:

- NOSCRN option is not provided by the craftsperson for the PRI_NI variant. The error message provided is:

  ```
  NOSCRN OPTION IS NOT SUPPORTED FOR THIS PVC.
  ```

- TON provided is not International or Unknown. The error message provided is:

  ```
  INVALID TON VALID TON VALUES FOR NI-PRI ARE NATL AND INTL.
  ```

- NPI provided is E164. The error message provided is:

  ```
  INVALID NPI.  VALID NPI VALUE FOR NI-PRI IS E164.
  ```

- OVLYRN does not exceed 10 digits. The error message provided is:

  ```
  INVALID OVLYRN.  OVLYRN LENGTH FOR NI-PRI CANNOT EXCEED 10 DIGITS.
  ```

- OVLYCOUNT does not exceed the number of digits in OVLYRN. Error message provided is:

  ```
  INVALID OVLYCNT SIZE. OVLYCNT SIZE FOR NI-PRI CANNOT EXCEED 10.
  ```

Also, if the PVC is NI and LTDATA table has tuples with RN selector, when the craftsperson tries to change the PVC to NI, the following error message is produced:

```
DELETE TUPLES WITH RN SELECTOR AND EDITRN OPTION in TABLE LTDATA.
```

Therefore, the PVC cannot be changed from NI to NTNA until all datafill pertaining to the NI variant has been undone.

Table DNSCRN Changes

In table DNSCRN, field ATTROPTS is checked for CLISI (calling line identifier screening information), indicating if the DN can be used for screening purposes. If a CLILTID in field ATTROPTS is datafilled for the LTID in table LTDATA, then screening passes.

Following is a datafill example:

```
DN          ATTROPTS
2222         $
1112224444 (CLISI) (CLILTID1 (ISDN 5) (ISDN 6) $) $
1112225555 (CLISI) (CLILTID1 (ISDN 1) (ISDN 2) (ISDN 3) (ISDN 4) (ISDN 5) (ISDN 6))
           (CLILTID2 (ISDN 7) (ISDN 8) (ISDN 9) $) $
3333       (CLISI) (CLILTID1 (ISDN 5) (ISDN 6) $) $
9054523896 (CLISI) (CLILTID2 (ISDN 3) (ISDN 4) $) $
6133934513 (CLISI) (CLILTID1  (ISDN 1) (ISDN 2) $) (CLILTID2 (ISDN 5) (ISDN 6) $) $
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

PRI Call Screening enhances the NI PRI billing function by introducing the BNS parameter to determine the billing number for AMA recording. The BNS parameter is assignable for each PRI interface. BNS allows a special billing number, a user provided but not screened redirecting number, or a user provided redirecting number that passed screening to be recorded in the AMA billing record.

Notes

NONE

Alarms

NONE

Interactions

PRI Call Screening requires the feature PRI Call Processing (AF6862) to function correctly.

Restrictions/Limitations

PRI Call Screening has the following limitations and restrictions:

- RN services are provided for NI-2 PRI variants only.
- NI PRI Per-interface Screening functionality is provided for 12 LTIDs only.
- All sub-features of PRI Call Screening are for NI-2 variance only, except CGN, which is also valid for the NTNAPRI variant.

- No subscription 3-digit NPA code. The NPA code is made available through existing data structure.
- “Provision necessary” and “Discard control” are not supported in NA008.
- Screening treatment of sending a Status message with cause value #100 is not supported in NA008.
- Subscription of RN/CPN preferred as billing number (BN) parameter is not assigned per call type.
- Subscription of special BN parameter is not assigned per call type.
- Subscription of UPNS RN/CPN preferred as BN is not assigned per call type.
- Detailed AMA for network provided (NP) per-interface is not supported in NA008.
- Traffic measurements are used for NTNA implementation.

LAYER	TRK-LATER
NA008 PRODUCT	
	APPLICATION
ACTID FEATURE TITLE	SMA/ESMA
AF6914 SMA/ESMA NTT Upgrade	

Description

This feature provides a configurable parameter in table RDTINV to control the no test trunk (NTT) direct current (dc) signature on a remote digital terminal (RDT) by RDT basis. If field NTTOPT is datafilled as “N” (No), then the NTT dc signature will be disabled for all line types served by that RDT. During a software upgrade from an old release to new release, field NTTOPT is datafilled as “Y”, so that the NTT dc signature is enabled for POTS, coin, and multiparty lines. However, operating companies that have applied the patch to disable the NTT signature must datafill field NTTOPT in table RDTINV as “N” to achieve the needed functionality.

Command Changes

NONE

Data Schema Changes

SMA/ESMA NTT Upgrade adds a new field to table RDTINV called NTTOPT (NTT signature option).

Changed table: RDTINV

RDTINV represents the table for defining RDTs. All information needed to define the remote interface, maintenance requirements, and other information is datafilled here.

Description of new field: NTTOPT

This field indicates whether the NTT signature is enabled for that particular RDT. If the value is YES, then the signature for POTS, COIN and MultiParty lines are provided, otherwise, the signature is not provided for any of the line types.

Example

```
TABLE RDTINV
RDTNAME: RDT1 02 0
ADNUM:5
IDTNAME: SMA 0 2 2
NENAME:ANODE_2_RFT
PRIMOPC:2B6
BACKOPC:2B6
VARTYPE: GENTMC 2 671 N N
CLAPDFLT: Y
MTSTACPT: $
NTTOPT: Y
LINKTAB: (1 0) (2 1) (3 2) (4 3)$
PROT:N
POTSPADG: STDLN
EOC:S
SDPOINTS: $
RDTDN: (NETWORK_ID 1) (SYSTEM_ID 1) (NETWORKELEMENT_ID 12) (EQUIPMENT_ID 1)
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

SMA/ESMA NTT Upgrade interacts with the following features:

- AF5884 RDTINV Table CTL Enhancements 1
- AF5885 RDTINV Table CTL Enhancements 2

Restrictions/Limitations

NONE

LAYER		TRK-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	**FEATURE TITLE**	NS/EP
AQ1574	GETS HPC	

Note: *The use of HPC Network Capabilities is restricted in the United States and U.S. Territories (Puerto Rico and U.S. Virgin Islands) to National Security/Emergency Preparedness (NS/EP) users authorized by the Office of the Manager, National Communication System (OMNCS). Telco deployment of these HPC Network Capabilities must be coordinated with the OMNCS at the following address:*

Office of the Manager
National Communications System
Attn: GETS Program Office
701 South Courthouse Road
Arlington, VA 22204-2198
email: gets@ncs.gov

Description

Government Emergency Telecommunications Service (GETS) High Probability of Completion (HPC) is a service provided by the Office of the Manager, National Communications System (OMNCS) to meet national security and emergency preparedness (NS/EP) requirements for the use of public telephone networks by Federal, state, and local government and other authorized users. Developed in response to White House tasking, GETS provides emergency access and specialized processing in local and long distance telephone networks.

The authorized user dials a GETS access number and is connected to the Personal Identification Number (PIN) authorization system in the IEC network. The user then hears an announcement and is prompted for a PIN validation number. Following validation the user is prompted for the destination number.

The HPC feature allows authorized users to originate a GETS call with a High Probability of Completion (HPC) in the network, and significantly improves the completion of emergency calls under severe network congestion and damaged conditions. HPC is to be employed during periods of national emergencies, such as natural disasters (hurricanes, earthquakes, etc.) or hostile actions (such as the terrorist bombing of Oklahoma City), which generate these conditions.

The HPC feature provides users with enhanced routing and priority treatment in the public switch voice network. The implementation of HPC for GETS software in the NA008 software release consists of the following functionalities:

- Set High Probability of Completion (Set–HPC)
- Pass High Probability of Completion (Pass–HPC)

- High Probability of Completion Trunk Queuing (HPC–TQ)
- Traffic Measurements

Command Changes

Please refer to NTP 297-8991-901 for more details on Software Optionality Control (SOC) utility usage.

Data Schema Changes

The GETS HPC feature introduces the new tables HPCPATTN and TRKOPTS and a new office parameter in table OFCENG. A brief description of each table is provided in the following paragraphs.

New Table HPCPATTN

The Set–HPC portion of the GETS HPC feature introduces table HPCPATTN, which is used to provision HPC patterns. The patterns can be 3,6, or 10 digits in length. For a call to be recognized as an HPC call, the dialed digits must match a pattern specified in this table.

The following example illustrates patterns allowed. The first entry matches only 7106274387. The second entry matches all ten digit patterns starting with 711 (e.g. 711xxxxxxx). The last entry matches all ten digit patterns starting with 710626 (e.g. 710626xxxx).

```
KEY
---------------
7106274387
711
710626
```

If a user tries to add a pattern which is more generic than an existing pattern, an error is generated. The following example illustrates the error condition and message. Assuming that the pattern 5149325002 is in the table, then add 514 pattern.

```
>list
TOP
                  KEY
                  ------------------
                  5149325002
>add 514
TUPLE TO BE ADDED:
               514
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
PROCESSING ERROR
UNEXPECTED ERROR CONDITION
```

If a user tries to add a pattern which is more specific than an existing pattern, an error message is generated. The following example illustrates the error condition and message. Assuming that the pattern 514 is in the table, then add 5149325002 pattern.

```
>list all
TOP
                  KEY
                  ------------------
                  514
BOTTOM
>add 5149325002
TUPLE TO BE ADDED:
        5149325002
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
KEY ERROR
TUPLE ALREADY EXISTS
```

New Table TRKOPTS

The HPC–TQ portion of the GETS HPC feature introduces table TRKOPTS, which is used to provision trunk groups. These trunk groups accept HPC calls over non-HPC calls. The table TRKOPTS need to be datafilled after the tables CLLI, TRKGRP, and TRKSGRP.

The following table presents examples of datafill to provision the trunk queuing option (HPCTQ) in table TRKOPTS. The time-out duration is set to 5 seconds, and the maximum number of queued calls to 100. In the first tuple, the ANNC1 announcement is provisioned, whereas no announcement is provisioned in the second tuple.

```
                  OPTKEY                                  OPTINFO
-------------------------------------------------------------------
     ISUP_MONTREAL_1 HPCTQ      HPCTQ  5 100 Y            ANNC1
     ISUP_MONTREAL_2 HPCTQ      HPCTQ  5 100 N
```

The following warning message is displayed when the HPCTQ option is assigned to an ATC trunk group:

```
TABLE: TRKOPTS
>ADD C0S1_ISUP2W_ATC HPCTQ HPCTQ   3   3 Y ANNC1
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
*** WARNING - The announcement will not be played when the incoming
              agent is an IT trunk during Call Processing Time.
TUPLE TO BE ADDED:
 C0S1_ISUP2W_ATC  HPCTQ                  HPCTQ  3   3 Y ANNC1
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
>
```

The following warning message is displayed when a non-standard announcement is specified with the HPCTQ option:

```
> ADD ISUPITOG2A HPCTQ HPCTQ 5 5 y NON_STD_ANNC
*** WARNING - The announcement will not be played.
              Only STND announcement type will be played.
TUPLE TO BE ADDED:
      ISUPITOG2A     HPCTQ     HPCTQ  5   5 Y       NON_STD_ANNC
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
>
```

The following error message is displayed when attempting to assign HPCTQ option to an unsupported trunk group:

```
>add MFCELLOG2B HPCTQ HPCTQ 5 5 n
*** ERROR - HPCTQ option can only be assigned to TO, T2, IT
            ATC and CELL trunk types.
Error reported by option HPCTQ with VPROC operation defined in module HPCOPTUI.
TUPLE TO BE ADDED:
      MFCELLOG2B     HPCTQ                      HPCTQ  5   5 N
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>
```

The following error message is displayed when attempting to assign HPCTQ option to an incoming trunk:

```
>ADD ISUPITIC2A HPCTQ HPCTQ 5 5 N
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
*** ERROR - Must be 2W or OUTGOING Trunk.
Error reported by option HPCTQ with VPROC operation defined in module HPCOPTUI.
TUPLE TO BE ADDED:
      ISUPITIC2A     HPCTQ                      HPCTQ  5   5 N
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>n
```

New Office Parameter

The GETS HPC feature adds office parameter MAX_HPC_CALLS_QUEUED in table OFCENG. This parameter is set by the operating company to specify the maximum number of queued HPC calls allowed in one office.

Log Message Changes

Please refer to NTP 297-8991-901 and NTP 297-8031-840 for more details on logs generated by the SOC utility.

OM Changes

The GETS HPC feature introduces the following new OM groups: the office-based HPCBASIC and trunk-group based HPCTRKGP.

- HPCBASIC

— includes the following new registers: LINEATT, TRKATT, TERMLINE, TERMTRK, TERMNC, TERMIEC, TERMIECN, EXNMCTRL, TQQATT, TQQOVFL, TQQABDN, TQQTMREX, ACGEXMPT, AFCGBLOCK, HPCATT, HPCOVFL, QUETMREX, and QUEOVFL

— provides HPC call traffic measurements on an office basis

— provides measurements of HPC calls exempted from or blocked by AIN ACG controls

— counts the number of HPC call attempts on lines and trunks

— keeps track of how these calls are handled

The EXNMCTRL register of the HPCBASIC OM group is not pegged in NA008.

The following OMSHOW illustrates this OM group:

```
>OMSHOW HPCTRKGP ACTIVE 154 154

HPCTRKGP

CLASS:   ACTIVE
START:1996/11/21 14:30:00 THU; STOP: 1996/11/21 15:39:22 THU;
SLOWSAMPLES:         3 ; FASTSAMPLES:         27 ;

       KEY (COMMON_LANGUAGE_NAME)
       INFO (HPCTRKGPINFO)
                  HPCATT         HPCOVFL        QUETMREX       QUEOVFL

  154 TERM105
      OG     0     0
                        0              0              0              0
```

- HPCTRKGP
  — provides HPC call traffic measurements on a per trunk group basis, and is used to count the number of:
    – HPC call attempts on the trunk group
    – HPC calls that overflowed because all trunks in the group were busy
    – trunk group queue overflow
    – queued calls encounter time-out treatment

The following OMSHOW example shows the registers:

```
>OMSHOW HPCBASIC ACTIVE

HPCBASIC

CLASS:   ACTIVE
START:1996/11/30 10:15:00 FRI; STOP: 1996/11/30 10:18:53 FRI;
SLOWSAMPLES:         2 ; FASTSAMPLES:         13 ;

          LINEATT     TRKATT   TERMLINE    TERMTRK
           TERMNC    TERMIEC   TERMIECN   EXNMCTRL
           TQQATT    TQQOVFL    TQQABDN   TQQTMREX
         ACGEXMPT   ACGBLOCK

    0           0          0          0          0
                0          0          0          0
                0          0          0          0
                0          0
```

Service Order

NONE

AMA Changes

NONE

Notes

DRAM/EDRAM circuits are required for providing announcements pertaining to trunk queueing operations.

This feature needs the following software features to function properly on the DMS100, DMS200, or DMS100/200:

- BASE0001
- TEL00001
- BAS00003
- ISP70001

NTP 297-1001-527 details the engineering rules for announcements if they are required to be provided to queued HPC calls.

Alarms

NONE

Interactions

The following paragraphs describe the interactions between GETS HPC and other functionalities:

Advanced Intelligent Network(AIN)

The AIN functionality enables end office call processing to use centralized service logic programs located at Service Control Points (SCP), which determine how AIN calls proceed for further call processing. Queries and responses are exchanged between the DMS SuperNode end office equipped with AIN functionality and the SCP using CCS7.

GETS HPC interacts with AIN in the following ways:

- HPC Call identity is retained before, during, and after AIN feature processing.
- If the SCP response instructs the office to perform digit analysis on the SCP supplied called party number and this call is not marked as an HPC call, then the HPC call recognition processing is performed on the new called party number.
- If AIN Default Routing is activated and provisioned with a directory number and this call is not marked as an HPC call, then the HPC Call recognition processing isperformed on the called party number supplied by AIN Default Routing.
- Call forwarding via an AIN Forward Call SCP response retains the HPC identity.

Automatic Line (AUL)

The AUL feature connects to a predetermined location when an off-hook condition is reported from a line with the AUL feature. The calling station does not receive dial tone. The automatic connection is made to a stored number consisting of 1 to 11 digits.

Calls made using the AUL feature are subject to HPC call recognition processing.

Call Conferencing/Call Transfer

The Call Conferencing and Call Transfer feature packages allow an end user to add an additional party to an existing connect for a three-way conference, or to transfer a call, using Call Transfer (CXR) or Three-Way Call (3WC).

If a new call is initiated by the originating or the terminating subscriber from an HPC call in conversation phase as part of call conferencing or call transfer, the new call does not inherit the HPC call identity. HPC Call recognition processing is performed on the second leg.

The Call Forward feature package allows the subscriber to forward an incoming call from one base station to another. There are over fourteen “flavours” of call forward. Some examples are:

- Call Forward Universal (CFU) for IBN and Call Forward All Calls (CFW) for POTS and RES – forwards all incoming calls from the subscriber’s base station to the forwarded base station.
- Call Forward Busy (CFB) for IBN and Call Forward Busy Line (CFBL) for POTS and RES– provides the ability to forward an incoming call from the subscriber’s base station to another station when the subscriber line is busy.

- Call Forward Don't Answer (CFD) for IBN, Call Forward Don't Answer (CFDA) for POTS and RES; also Call Forward Group Don't Answer (CFGDA) for POTS and RES hunt groups and Call Forward Group Don't Answer (CFGDA) for IBN hunt groups – provides the ability to forward an incoming call from the subscriber's base station to another station when the subscriber does not answer ringing. A time-out occurs and the call is forwarded.

An HPC call forwarded by any Call Forwarding feature retains its HPC identity.

A non-HPC call which is call forward is subject to HPC call recognition processing on the forwarded leg.

Call Forward

The Call Forward feature package allows the subscriber to forward an incoming call from base station to another. There are over fourteen "flavours" of call forward. Some examples are:

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An HPC call forwarded by any Call Forwarding feature retains its HPC identity.

A Non-HPC call which is call forward is subject to HPC call recognition processing on the forwarded leg.

Speed Call

The Speed Call feature package contains the following options:

- Speed Calling Long List (L30)(SC2): allows subcribers to program up to 30 frequently called numbers. The two-digit speed calling codes available for SC2 range from 20 to 49.
- Speed Calling Long List (L50) (SC3): allows subscribers to program up to 50 frequently called numbers. The two-digit speed calling codes available for SC3 range from 20 to 69.
- Speed Calling Short List (SC1): allows subscribers to program up to eight frequently called numbers. The one-digit speed calling codes available for SC1 range from 2 to 9.

Speed Calling features are subject to HPC call recognition processing if the call is not already marked as an HPC call.

Warmline (WML)

A line with the WML feature is associated with another directory number (DN – a target warm line DN). When the WML subscriber goes off-hook, a timer is started. If dialing does not begin before the timer expires, the subscriber's call is automatically set up to a target warm line DN. If dialing begins before the timer expires, the timer is canceled, and normal call processing continues.

By dialing two octothorpes (##), the subscriber can avoid the time-out period and immediately outpulse to the target warm line DN.

The target warm line DN is initially assigned by the operating company. If permitted, the subscriber can change this line.

The WML feature is subject to HPC call recognition processing if the call is not already marked as an HPC call.

Inter-nodal Interactions

Feature key activation and flash initiations are ignored in an office in which HPC–TQ processing is taking place.

When both features AIN Multiple Carrier Routing (MCR) and NextEventList [network_busy] and HPC–TQ are active on the same call, HPC–TQ is completed first.

Intra-nodal Interactions

A flash initiation originating from a previous office from the office processing HPC–TQ, is processed as normal in that office.

Restrictions/Limitations

The following restrictions and limitations apply to the GETS HPC feature:

- An HPC call respects restrictions on non-HPC features have placed on a subscriber's line, unless otherwise specified in this document. For example, an agent will be prevented from dialing long distance to an HPC access number if the subscriber's line is restricted from placing long distance calls.
- A called party number returned by the SCP as part of E800, or AIN Primer (AIN 0.0) feature processing are not subject to HPC Call REcognition processing. (no comparison is made against the DN returned from the SCP). (An E800 number dialed by the user, or an AIN 0.1 response from the SCP is subject to HPC Call Recognition processing.)
- The HPC Call Recognition process requires that all the dialed digits be present before comparing the digits to the HPC database patterns. As a consequence, overlap outpulsing is not permitted for HPC calls.
- The Set–HPC feature is limited to the trunk agents supported by Forward HPC Identity.

- The Pass–HPC feature is limited to the trunk agents supported by HPC Call Recognition Based on SS7 IAM, and trunk agents supported by Forward HPC Identity.
- DMS switches use only the CPC parameter of the incoming SS7 IAM message to determine whether the call is an HPC call. The message priority of the incoming SS7 IAM message is not used in the HPC call recognition process.
- If the GETS SOC state is IDLE and the CPC parameter of the incoming SS7 IAM message is NS/EP, the call is not marked as an HPC call for GETS processing. However, the received CPC parameter value is forwarded to the next office if the call is routed via an SS7 trunk supported by Forward HPC Identity.
- Once the call is routed out of the processing office, the call is no longer eligible for HPC–TQ processing in that office, unless another feature (such as AIN Multiple Carrier Routing (MCR)) causes the call to route again. That is, if the route busy indication is received from another office via SS7 signaling, then it is the responsibility of other features to cause the call to route again.
- If a glare condition occurs after an idle trunk is offered to the queued HPC call, the glare handling procedure applies. Assignment of HPCTQ option on a two way trunk group may increase the occurrence of a glare condition particularly when HPCTQ is assigned to both ends of the two way trunk group.
- If a continuity test failure occurs after an idle trunk is offered to the queued HPC call, then the normal continuity test failure handling procedures applies as the HPC–TQ processing is completed after the idle trunk is offered to the queued HPC call.
- Idle trunks, which are made available as a result of maintenance action are not offered to queued HPC calls.
- Queued calls are cleared (taken down) during all restarts and SWACTs.
- The MEM selector is incompatible with HPC–TQ. HPC–TQ is not invoked when the MEM selector is active. MEM selector limits the range of trunk group members offered to a call.
- The CND route selector with RND condition may cause a route element with HPC–TQ to be skipped.
- The NOT route selector will cause a route element with HPC–TQ to be skipped.
- If an announcement is datafilled for an instance of an ATC trunk group, a warning is issued indicating a potential billing problem created by providing the announcement to the caller. The warning message is “The announcement will not be played when the incoming agent is an IT trunk group during call processing time.”
- During call processing time, if an announcement is to be provided to an equal access call incoming on an IT trunk group, the HPC–TQ feature does not provide the announcement to the caller. The HPC–TQ feature processes the instance of HPC–TQ as if no announcement were datafilled.
- In the event of announcement failure, the HPC–TQ feature provides appropriate signaling but the announcement is not heard.
- A datafilled announcement is played to the caller, even if the call has been identified as a data call.
- An HPC–TQ call will cleared when protocol timers have expired.

LAYER		TRK-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	PRI
AR2400	PRI TBCT Feature Interactions	

Description

This feature is described in the feature description for AR2401, PRI TBCT (CNA) in the ***TRK-LATER*** section of this manual. The general description of feature AR2401 is provided in the following paragraphs.

Primary rate interface (PRI) two B-channel transfer (TBCT) capability on National ISDN 2 (NI-2) PRI trunks gives customer premises equipment (CPE) more efficient use of trunk connections for calling traffic. With a Private Branch Exchange (PBX), or a network of PBXs, multiple call forward and transfers are typical. When a forwarded or transferred call is set up using two B-channels in a PRI trunk, the original channels can be released and made available for future calls.

The CPE requests TBCT by sending a Facility message to the SSP. This message includes a TBCT invoke component. If the SSP determines that all validation criteria pass (for example, bearer capabilities and feature interactions), then the SSP performs TBCT. The SSP responds with a Facility message that acks/nacks the TBCT request.

Billing (not just AMA billing) proceeds as if the TBCT transfer never occurred.

Typical applications that TBCT enhances on NI-2 PRI are traffic routing and call set up of:

- PBX
- Intelligent Peripherals (IP)

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER		TRK-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	PRI
AR2401	PRI TBCT (CNA)	

Description

Two B-Channel Transfer (TBCT) capability on ISDN 2 (NI-2) Primary Rate Interface (PRI) trunks give the Customer Premises Equipment (CPE) more efficient use of trunk connections for calling traffic.

TBCT allows a user (i.e. controller) on a National ISDN–2 (NI-2) PRI trunk to request the Signaling Switching Point (SSP) to connect two independent calls on the user's interface. If the SSP accepts the request, the controller is released from the calls and the other two users are directly connected.

The TBCT feature is associated with an ISDN PRI interface. The PRI interface may terminate on an Intelligent Peripheral (IP), a Private Branch Exchange (PBX) or other Customer Premise Equipment (CPE).

Command Changes

NONE

Data Schema Changes

Two tables have been modified by this feature: LTDATA and LTDEF.

Table LTDATA Changes

The OPTIONS vector of TABLE LTDATA is expanded to include TBCT option. A new error message applies when there is an attempt to provision TBCT option in Table LTDATA to a Local Trunk Identification (LTID) representing a non-NIPRI VARIANT or a non-PRA agent type:

```
TBCT  OPTION IS ONLY  SUPPORTED FOR VARIANT NIPRI
```

All PRI trunk groups are datafilled in Table TRKGRP and mapped to logical terminals (LTDEF) by Table LTMAP. Table LTDATA contains data pertaining to a logical interface that is related to Directory Number (DN), Service (SERV) or Calling Line Identification (CLI).

Following is sample TBCT datafill to Table LTDATA:

```
LTDKEY                                          LTDRSLT
-------------------------------------------------------------------------
ISDN  906 SERV        SERV N N ALWAYS ALWAYS  CHG TBCT $
```

Or at the prompt of the OPTION vector, type TBCT as follows:

```
OPTION:
> TBCT
> $ (to end datafill sequence)
```

The key to LTDATA consists of two parts:

- LTID (made of LTGRP+LTNUM)
- LTDATATYPE, (a selector) is one of: { DN, SERV, CLI }

For LTDATATYPE = SERV, the tuple refinement includes mandatory attributes as well as an OPTIONS vector, which contains the optional services and their refinements. TBCT is added to this OPTIONS vector.

A new error message is added to TABLE LTDEF to prevent protocol variant changes if TBCT has been provisioned in Table LTDATA.

Table LTDEF Changes

The following data is required for successful TBCT datafill:

- Protocol variant corresponding with the logical terminal must be NIPRI in Table LTDEF.
- Logical terminal class (LTCLASS) in Table LTDEF must be PRA.

To preserve the integrity of TBCT datafill, a check is added to TABLE LTDEF to prevent changing the protocol variant once TBCT has been provisioned. Verification of protocol variant VARIANT = NIPRI and LTCLASS = PRA (as datafilled in Table LTDEF) is performed.

A new error message is added to LTDEF verification to prevent changing the protocol variant if Two B-Channel Transfer (TBCT) has been provisioned for the logical terminal in Table LTDATA:

```
Cannot change VARIANT: TBCT provisioned on LTID in Table LTDATA
Delete TBCT from the tuple in LTDATA first
```

Sample tuple for a logical terminal in table LTDEF is:

```
LTKEY LTAP CLASSREF
------------------------------------------------------------------------------
ISDN 504 B PRA 23 23 5 5 NIPRI NI2V1 NIL (NOPMD ) $
```

Log Message Changes

NONE

OM Changes

TBCT performs validation and bridges the calls. TBCTSUCC is pegged after successful bridging of calls.Two operational measurements for TBCT attempts and TBCT successes are kept for TBCT in a new OM group PRISVCS.

One set of registers is created for each LTID in table LTDATA where TBCT is provisioned. OMSHOW outputs the TRKGROUP/CLLI corresponding to the LTID instead of the LTID name.Service Order. The pair of new registers in each LTID are:

- TBCTATT
- TBCTSUCC

TBCTATT register measures the number of Two B-Channel Transfer attempts, that is the number of times a Q.931 FACILITY message with invoke component for TBCT is received by the CM. TBCTSUCC register measures the number of successful Two B-Channel Transfers, that is the number of times TBCT successfully bridges the two calls.TBCTATT register is related to TCBTSUCC in that it counts all TBCT attempts.

This OM is not pegged if the following situations occur, as the CM will not see the attempt or will not be able to identify the logical terminal to which the OM peg refers:

- LTID has not subscribed to TBCT.
- Format of the FACILITY message and/or contents does not correspond to protocol specifications.
- TBCT FIE is NOT the first FIE in the message.
- Software load in the CM has not been upgraded to NA008 or greater.
- Linkid of second call identified does not correspond to protocol specifications.

Service Order

NONE

AMA Changes

All billing proceeds as if the TBCT transfer never occurred.

Notes

TBCT uses medium Feature Data Blocks (FDBs), 32 bytes in size, one allocated per call involved in the TBCT request (two per TBCT request).

TBCT functionality is available only for the North American DMS-100 and supported on standard DMS-100 NI-2 ISDN peripherals:

- Digital Trunk Controller ISDN (DTCI)
- Line Trunk Controller (LTC) ISDN

Alarms

NONE

Interactions

The following switch-based and AIN/LNP feature interactions are supported by TBCT. All other feature interactions are not validated and, therefore, not supported.

Note: *If TBCT is denied, there is no impact to the end user. The calls remain in the same state as before the TBCT request, the B-Channels are* ***NOT*** *released.*

For feature interactions where the returned error code is "Invalid call state" this implies that the controller may reattempt TBCT at a later time.

Switch-based feature interactions

- Virtual Facility Groups (VFG)
- Analog Call Hold
- HOLD Button on Analog Set
- HOLD Button on Analog Set
- Call Hold (CHD) - activated via access code
- Residential Call Hold (RCHD) - activated via access code
- Analog Call Transfer
- Flexible Calling
- ISDN Hold
- Emergency (911)
- Directed Call Pickup - Barge In (DCBI)
- Executive Busy Override (EBO)
- Call Waiting (CWT)
- Three Way Call (3WC)
- Release Link Trunk (RLT)
- Multiple Appearance Directory Number (MADN) - Bridging
- MADN - Hold
- TBCT with TBCT

The DMS-100 version of a Simulated Facility Group (SFG) counter is called a VFG counter. These counters are used to throttle the number of calls through a specific route. The TBCT service does NOT decrement the VFG counters associated with the PRI trunks of call #1 and call # 2 when the calls are bridged. The counters are decremented when the transferred call is cleared.

Two B-Channel Transfer functionality allows analog user A and/or analog user B to hold the calls before or after a TBCT request is processed.

CHD may be activated and deactivated before TBCT, and after TBCT. If CHD is active, TBCT is denied.

RCHD may be activated and deactivated before TBCT, and after TBCT. If RCHD is active, TBCT is denied.

Two B-Channel Transfer functionality allows analog user A and/or analog user B to transfer the calls before or after a TBCT request is processed.

TBCT is denied during Call Transfer setup as part of standard DMS behavior during flash processing.

A FlexCall transfer request from ISDN user A and/or ISDN user B to a third user (user C) before or after receiving a TBCT request from the controller is supported. Transfer shall be treated independent of TBCT.

TBCT is denied if one of the calls to be TBCTed is the Flex call controller.

A hold request from ISDN user A and/or ISDN user B before or after receiving a TBCT request from the controller is supported.

TBCT is denied on 911 calls. This includes calls to Emergency Service (ES) line, ES trunk and OPerator (OP) trunk with TERMHOLD.

Directed Call Pickup- Barge In denies TBCT.

Executive Busy Override denies TBCT.

Two B-Channel Transfer functionality supports Call Waiting before or after TBCT request is processed.

Two B-Channel Transfer functionality supports Three Way Call before or after TBCT request is processed.

TBCT is denied during Three Way Call setup as part of standard DMS behavior during flash processing.

Release Link Trunk and Two B-Channel Transfer are similar features for NTNAPRI and NIPRI respectively. The first feature to activate denies the other feature at initiation.

TBCT requests are supported when the MADN Bridging feature is active.

TBCT requests are supported when the MADN Hold feature is active.

TBCT denies subsequent TBCT attempts on either call until the processing of the first TBCT request is completed.

AIN/LNP feature interactions

Two B-Channel Transfer support transfer of AIN calls in AIN Essentials and AIN Enablers in a transparent manner (as if TBCT request was not processed) with the exception of AIN capabilities that may REROUTE alerting calls or advance protocol states:

- Send To Resource (STR) denies Two B-Channel Transfer while Send To Resource is active, since the call state is not valid for TBCT to activate.
- If Next Event List (NEL) is active on origination and/or termination events and a TBCT request is detected, then a Close message is sent to the SCP and NEL deactivates itself.
- During Query on Release (Local Number Portability), TBCT is denied.
- If the O_NoAnswer trigger is armed, TBCT requests processed *before the NoAnswer timer expires* transfers the calls and the O_NoAnswer trigger is disarmed.The Return Error component indicates ‘invalid call state’.

Restrictions/Limitations

Two B-Channel Transfer has the following current limitations and restrictions:

- Transfer request is limited to two independent calls associated with the SAME D-Channel.
- The calls that are to be transferred together via TBCT must have been set up using the public E.164 Dial Plan as the Numbering Plan Identification and using Local, National, or International as the Type Of Number in the Called Party Number information element.
- TBCT requests are rejected for agents with the following terminating characteristics:
  - MADN calls that are NOT answered due to possible race conditions during answer by a MADN member
  - Attendant Console due to limited support on PRI and AIN
  - COIN lines (defined as lines where a coin deposit is required, e.g. CCF, CDF; lines that use calling cards are not considered COIN lines in this context as they are treated like PBX lines)
  - Multi-party lines due to possible race conditions during answer by a multi-party subscriber
  - Data line due to potential loss of data during transfer mean (i.e. data unit lines with the specifically provisioned as data unit lines, and NOT data bearer capabilities)

    Note: *If TBCT is denied, there is no impact to the end user. The calls remain in the same state as before the TBCT request, the B-Channels are* ***NOT*** *released.*
- TBCT requests are rejected for agents with the following originating characteristics:
  - COIN lines due to interactions with coin return (i.e. if a coin user is transferred to an alerting agent that does not answer, the coin is not returned)
  - Attendant Console due to limited support on PRI and AIN
  - Data line (i.e Data Unit) due to potential loss of data during transfer
- TBCT does not provide any interface to the telco OAM systems outside of standard Table Editor.
- Transfer request is limited to the local SSP, that is the SSP that first receives the TBCT request. The request is NOT in tandem to the next office.
- Interactions with ISUP CCTO are not being supported. ISUP CCTO is used to release ISUP trunks that are made redundant as a result of the bridging of the two users. For example, if users A and B were on one DMS and the controller on another DMS, then the ISUP trunks connecting the two switches are not released.
- The functionality provided by this feature is limited to the North American DMS-100 only and is supported on standard DMS-100 NI-2 ISDN peripherals DTCI and LTC.
- The SSP processes the first FIE in a FACILITY message (with multiple FIEs) and ignores the rest. Thus, TBCT must be in the FIRST FIE to be processed. This implies that NO FACILITY with Return Result is sent to the controller if TBCT is not in the first FIE.
- Checking of duplicate invoke ids is not done by the SSP.
- The invoke id length is restricted to one byte.

- Clipping of speech may occur during TBCT, but the clipping is minimal.
- TBCT does not support the transfer of AIN Primer calls due to the fact that AIN Primer is being discontinued in the future.

SF-NOW

This section identifies changes and/or additions to service features that affect Traffic functions and occur immediately upon the new software load insertion. This includes changes or additions to commands, data schema, logs, and OMs which affect Traffic activities.

NA008 PRODUCT

LAYER		SF-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	MADN
AF6638	MADN/EKTS CACH–Call Processing	

Description

The Multiple Appearance Directory Number Electronic Key Telephone Set (MADN/EKTS) Call Appearance Call Handling (CACH)–Call Processing feature adds to the existing implementation of the DMS-100 MADN/EKTS platform. The MADN CACH feature provides for up to 16 call appearances (CA) for each MADN CACH DN. Each CA can have up to 32 members. Each member is referred to as a terminal call appearance (TCA). The maximum number of appearances for each DN is 512 (16 CAs x 32 members for each CA).

When one CA of a MADN CACH DN is busy, the idle CAs of the same MADN CACH DN can originate and receive calls. Calls terminating to a MADN CACH DN are offered to the first available CA depending on the CA search order. The default search order is a sequential search 1-16. The search order can be changed through SERVORD.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The following sections describe the interactions between MADN/EKTS CACH–Call Processing and other functionalities.

Call Forwarding Services

The following call forwarding services interact with MADN/EKTS CACH–Call Processing.

From an end user perspective, the call forwarding features work identically for both CACH and MADN SCA DNs. However, from a provisioning perspective, the deployment of these features on a CACH terminal differs from the MADN SCA deployment.

When any of the call forwarding types are provisioned on a MADN SCA DN, the features can only be assigned to the primary member of the MADN SCA group. When provisioned on a CACH MADN, these features can only be assigned to the CACH controller key 1.

Call Forwarding Universal

From an end user perspective, the Call Forwarding Universal (CFU) feature, which currently is not supported, works identically for both CACH and MADNSCA DNs. However, when CFU is provisioned on a MADN SCA, the feature can only be assigned to the primary member of the MADN SCA group. When provisioned on a CACH MADN, CFU and all other types of CFU may only be assigned to the CACH controller. This CACH controller does not have to be the primary DN.

The CFU feature allows a Centrex call forward base station to forward calls inside and outside the base station's customer group. The CFU feature can be assigned to either a DN key on a single set or business set (including ISDN sets), or a feature key on a business or ISDN set. Only the CACH controller may activate, deactivate, and program call forwarding on a station at any time. All other members need to have secondary member CFP to do this.

Call Forwarding Don't Answer

From an end user perspective, the Call Forwarding Don't Answer (CFD) feature works identically for both CACH and MADN SCA DNs. However, when CFD is provisioned on a MADN SCA DN, the feature can only be assigned to the primary member of the MADN SCA group. When provisioned on a CACH MADN, CFD and all other types of CFD may only be assigned to the CACH controller.

Note: *The CFD feature can only be assigned to the primary DN on a set.*

The CFD feature allows calls to be forwarded after a number of ring cycles have occurred without an answer at the call forwarding (CF) base. Allocation of the feature includes three types of CFD controls:

- N (normal) default
- F (fixed)
- P (programmable)

With CFD N, the call forward state of the CF base is ACTIVE. With CFD F, the initial call forward state is INACTIVE. With CFD P, only the CACH controller may activate, deactivate, and program CFD on a station at any time. The CFD feature can only forward to intragroup destinations.

Call Forwarding Busy

From an end user perspective, the Call Forwarding Busy (CFB) feature works identically for both CACH and MADN SCA DNs. However, from a provisioning perspective, the deployment of this feature on a CACH terminal differs from the MADN SCA deployment.

When CFB is provisioned on a MADN SCA DN, the feature can only be assigned to the primary member of the MADN SCA group. When provisioned on a CACH MADN, CFB and all other types of CFB may only be assigned to the CACH controller.

Note: *CFB may only be assigned to the primary DN on a set.*

Call Forward Busy (CFB) allows calls to be forwarded when a busy CF base is called. Allocation of the feature includes three types of CFD controls:

- N (normal) default
- F (fixed)
- P (programmable)

With CFB N, the call forward state of the CF base is ACTIVE. With CFB F, the initial call Forward state is INACTIVE. With CFBP, only the CACH controller may activate, deactivate, and program CFB to different destinations. The CFB feature can only forward to intragroup destinations.

Conference services

The following conference services interact with MADN/EKTS CACH–Call Processing.

Flexible Calling

The interaction between Flexible Calling and ISDN EKTS DNs is not changed by the CACH feature. Non-bridged calls on both CACH and MADN SCA appearances of an ISDN EKTS MADN are compatible with Flexible Calling.

The following restrictions are enforced for both CACH and MADM SCA DNs:

- If one or more MADN members are bridged onto a call on the shared DN, none of the MADM members can initiate Flexible Calling.
- If a MADN member initiates Flexible Calling using the shared DN (while none of the other members are bridged), none of the other MADN members can bridge onto the call on the shared DN.

Three-Way Calling

The introduction of MADN CACH does not change the existing interaction between analog MADN members and Three-Way Calling (3WC). For example:

- A non-ISDN member who shares a CACH MADN can initiate 3WC, regardless of whether or not other members on a MADN are bridged to the call.
- If other MADN members are bridged onto a 3WC, the DMS switch does not process an on-hook from the 3WC controller as a transfer request.
- Once an analog member on a CACH MADN initiates 3WC, no other member on the MADN can bridge onto the conference leg associated with the shared DN.

Meet Me Conference

The interaction between EKTS DNs and the Meet Me Conference service is not changed by the CACH feature. When a CACH or MADN SCA member calls the DN associated with a Meet Me Conference, none of the other members who share the MADN can bridge to the Meet Me Conference call.

Preset Conference

The introduction of CACH MADN does not change the existing interaction between the Preset Conference feature and EKTS MADN. When a MADN (CACH or MADN SCA) is part of a preset conference list, only the primary member of the called MADN appearance can answer the call. Secondary ISDN members on the same MADN appearance receive alerting, but requests to answer the call are rejected. In this scenario, secondary Meridian Business Sets (MBS) that share the called MADN appearance receive lamp updates, but do not ring. Once the call is answered, the secondary ISDN members continue to send alert signaling. This alerting ceases when the secondary member responds to the alerting by going off-hook and bridging onto the answered preset conference call or the preset conference call is cleared.

Emergency services

The following emergency services interact with MADN/EKTS CACH–Call Processing.

E911 calls routed via ES trunks, ES lines, & E911 VFGs

A CACH MADN member that originates an emergency (for example, 911) call over one of the following facilities is subject to the same 911 functionality as a MADN SCA member. No MADN members (whether CACH or MADN SCA) can hold or bridge onto an emergency call that is:

- routed over an emergency service (ES) trunk
- routed to an ES line
- routed through an E911 virtual facility group (VFG)

E911 calls routed over OP trunks

Regardless of whether an emergency call was originated by a CACH or MADN SCA member, the DMS switch always provides identical handling of E911 calls routed over operation (OP) termhold trunks. When processing such calls, the DMS switch permits other members who share the calling EKTS MADN (whether CACH or MADN SCA) to bridge onto the E911 call.

Ringback and the application of receiver off-hook (ROH) tone may not work properly in the case of a bridged MADN call to an E911 agent. Although E911 calls can be routed over OP termhold trunks, Nortel's stated position is that E911 traffic are not routed over OP Trunks. Two reasons for this position are: ringback and ROH work correctly when E911 traffic is routed over ES trunks or through E911 VFGs, and any change Nortel makes to OP trunk behavior (for example, blocking MADN bridging) also impacts calls routed to the Traffic Operator Position System (TOPS).

EKTS services

The following EKTS services interact with MADN/EKTS CACH–Call Processing.

Bridging

The EKTS Bridging feature works the same for all EKTS MADN call arrangements, regardless of whether they are CACH or MADN SCA DNs. For MADN CACH, Bridging is configured for each call appearance group.

Privacy

The EKTS Privacy feature works the same for all EKTS MADN call arrangements, regardless of whether they are CACH or non-CACH DNs. For MADN CACH, Privacy is configured for each call appearance group.

The Bridged Call Exclusion option (referred to as privacy) may be used to restrict members from bridging into a call. If the feature is enabled on a call, bridging is not allowed. Conversely, if disabled (released on a call), bridging is allowed.

Two versions of this option are available:

- Automatic Bridged Call Exclusion
- Manual Bridged Call Exclusion

The following statements apply to each version:

- Only one Bridged Call Exclusion version may be assigned for each MADN group.
- For every call, every member is notified of the initial privacy status of the call.
- The privacy status of a call may be changed by an active member only.
- A member who changes the privacy status of a call is referred to as the privacy status controller. A member ceases to be the privacy status controller when the initial privacy status of the call is restored.
- Notification is given to each member when the privacy status of a call changes.
- The privacy status of a call may be changed as many times as desired during the lifetime of a call.
- Only one member can control the privacy status of a call at one time.
- The privacy status of a call cannot be changed if the remote party has disconnected from the call or if the MADN conference size has reached its limit.
- Both the Automatic Bridged Call Exclusion and the Manual Bridged Call Exclusion can currently be datafilled on the same terminal since the terminal may have more then one MADN DN with different initial privacy states.

Only one privacy (PRV) and one privacy release (PRL) key can be assigned to an EKTS terminal, and these keys are used to individually set the privacy status for all MADN CACH and MADN SCA DNs subscribed to that terminal. If an EKTS member presses the PRV or PRL key while the terminal is engaged in two or more simultaneous calls on separate MADN keys, the privacy activation or deactivation request only applies to the active call on the terminal. If a privacy activation or deactivation request contains the call reference of a held call, the request is ignored.

EKTS Hold and MADN Hold

The EKTS Hold and MADN Hold feature works the same for all EKTS MADN call arrangements, regardless of whether they are CACH or non-CACH DNs. For MADN CACH, EKTS Hold, and MADN Hold are configured for each DN.

Hold is a feature that allows a user to disconnect from an active call without clearing that call or interrupting the billing process. The user who initiates hold on active call may reconnect to the call any time by means of the Retrieve feature.

Two hold operation modes are available for MADN. Each operation mode interacts with Bridged Call Exclusion differently. The operation modes are as follows:

- MADN (default) –This mode is identical to the MDC MADN SCA Hold feature.
- EKTS–This mode parallels the EKTS Hold functionality specified by BellCore.

MADN Hold

The following MADN Hold services interact with MADN/EKTS CACH–Call Processing.

- Non-bridged calls
  - — If a member initiates hold on a non-bridged call, each member receives notification indicating that the call is held. Any member receiving a call from MADN hold restores the initial privacy status of the call and a privacy status update is sent to each member.
- Bridged calls
  - — If a member initiates hold on a bridged call, only that member's portion of the call becomes held. The remaining connection(s) are retained.
  - — A held portion of a bridged call can be retrieved only by the holding member.
  - — Hold events on bridged calls do not affect the current privacy status nor subsequent bridging attempts and privacy status changes.

EKTS Hold

The following EKTS hold services interact with MADN/EKTS CACH–Call Processing.

- Non-bridged and non-private calls
  - — If a member initiates hold on a non-bridged and non-private call, every member receives notification indicating that the call is held.
  - — Any member may retrieve the call. If a member retrieves the call, every member receives notification indicating that the call has been retrieved. If the retrieving member is not the holding member, the initial privacy status was private, and the holding member had activated privacy release prior to hold. The network enables privacy and notifies each member of the privacy status change. In this case, the member who originally held the call ceases to be the privacy status controller of the call. If the retrieving member is the holding member and the holding member had activated privacy release prior to hold, no privacy status change occurs.
  - — If the network is unable to provide to each associated member notification indicating that the call is held, only the holding member is permitted to retrieve the held call. In this case, the current privacy status of the call is not affected by hold and retrieve events.
- Non-bridged and private calls
  - — If a member initiates hold on a non-bridged and private call, no member receives notification indicating that the call is held.
  - — Only the holding member is permitted to retrieve the held call.
  - — The current privacy status of the call is not affected by hold and retrieve events under these circumstances.
- Bridged calls
  - — If a member initiates hold on a bridged call, only that member's portion of the call becomes held. The remaining connection(s) are retained.

— A held portion of a bridged call can be retrieved only by the holding member (regardless of the current privacy status).

— Hold events on bridged calls do not affect the current privacy status nor affect subsequent bridging attempts and privacy status changes.

MADN Ring Forward

The MADN Ring Forward (MRF) feature, also know as EKTS Abbreviated and Delayed Ringing (ADR), works the same for all EKTS MADN call arrangements, regardless of whether they are CACH or non-CACH DNs. For MADN CACH, MRF or ADR are configured for each DN.

When MRF is assigned to a MADN group, the following ring alerting options may be assigned to the individual appearances of the MADN:

- ALWAYS – The MADN appearance rings from the time the call completes to the MADN group until it is answered or abandoned.
- NEVER – Calls completing one the MADN group never cause ring alerting for this appearance of the MADN.
- ABBReviated – The MADN appearance rings from the time the call completes on the MADN group until it is answered or abandoned, or until MRF takes effect either automatically or manually.
- DELAYed – The MADN appearance begins ringing when MRF takes effect on the incoming call.

MRF can be activated either automatically or manually. When the MADN group is designated for Manual MRF, only manual activation can instigate MRF for that group. When a MADN group has AUTO MRF assigned, MRF can be activated either automatically or manually.

When assigning a MADN ring forward manual (MRFM) key to a user's terminal, SERVORD prompts for a keylist. The ringing pattern for all the CACH and MADN SCA DNs in this keylist changes (for example, from abbreviated to delayed) when the associated MRFM key is pressed. More than one manual MRFM key can be added to an EKTS terminal. Potentially, each MADN can be controlled by its own MRFM key. Similarly, SERVORD also allows a single MRFM key to control a number of MADN DN keys.

Intercom services

Intercom (ICM) calls established from either a CACH or MADN SCA terminal are Flex Call blocked. That is, such calls cannot be bridged or transferred using the Flexible Calling feature. Group Intercom (GIC) calls are fully compatible with Flexible Calling.

Message waiting services

The following message waiting services interact with MADN/EKTS CACH–Call Processing.

Message Waiting

From an end user perspective, the Message Waiting (MWT) and Leave Message (LVM) features work identically for both CACH and MADN SCA DNs. However, when MWT and LVM are provisioned on a MADN SCA DN, the features can only be assigned to the primary member of the MADN SCA group. When provisioned on a CACH MADN, these features can only be assigned to the CACH controller.

Both CACH and MADN SCA DNs are subject to the following restrictions when assigned MWT or LVM:

- Message Waiting (and its Call Return (CAR) subfeature) only apply to calls routed to and from the primary DN (Key 1) in the EKTS terminal.
- If a MADN member is assigned an MWT key with the CAR subfeature, the user can go off-hook and press the MWT key in response to an MWT indication (a lit MWT lamp). When the MWT lamp is illuminated as a result of an LVM request and the MADN member presses the MWT key, the DMS switch initiates CAR and automatically attempts to recall the party who initiated LVM. When the MADM member uses Simplified Message Desk Interface (SMDI) for Voicemail and the MWT lamp is lit due to a waiting message, the MADN member can automatically dial into the message center by pressing the MWT key.
- The LVM feature can only be initiated on outgoing calls from the primary DN on a terminal.
- The LVM feature can only be initiated on a terminal that supports MWT.

Name and number services

Different types of calling name and number services can be assigned to a DN, DN-key, customer group, or the office. These services are divided into two categories described as follows:

- services that suppress or allow delivery of the calling party’s name and number
- services that prevent or allow the delivery of the calling party’s name and number to the called party

Interaction of calling name and number services with the ISDN member

The following describes calling name and number services that apply to the ISDN member.

Block Calling Number

The Block Calling Number (Block CGN) feature interaction affects terminating call processing. Block CGN is an existing DMS-100 ISDN service. This service is assigned to the terminating party.

The default behavior for ISDN is to deliver both the originator’s name and number to the called user during call termination. However, by using the Block CGN feature the originators calling number (CGN) can be withheld from delivery to the terminating user.

This option is datafilled (activated) through SERVORD on an LTID-key (member) basis for MADN SCA or MADN CACH. Only this member has CGN blocking on. All of the other applicable members of the MADN group receive the originator's CGN during call termination.

The interaction between Block Calling Number and ISDN EKTS DNs is not changed by the CACH feature.

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This option is datafilled (activated) through SERVORD on an LTID-key (member) basis for MADN SCA or MADN CACH. Only this member has CGN blocking on. All of the other applicable members of the MADN group receive the originators CGN during call termination.

The interaction between Block Called Number and ISDN EKTS DNs is not changed by the CACH feature.

Block Called Party Number

The Block Called Party Number (BLOCKCDN) option blocks the delivery of the called party number (CDN) information element in the SETUP message.

This option is datafilled (activated) through SERVORD on an LTID-Key (member) basis for MADN SCA or MADN CACH. Only this member has CDN blocking on. All of the other applicable members of the MADN group who have not activated BLOCKCDN receive the CDN during termination.

The interaction between Block Called Number and ISDN EKTS DNs is not changed by the CACH feature.

Calling Number Delivery

The Calling Number Delivery (CND) feature controls the delivery of the originator's number to the called user during call termination. If CND is active, the number is delivered. If CND is inactive, the number delivery is suppressed.

This option is datafilled through SERVORD on an LTID-Key basis. This feature can also be activated by feature key or access code. If the feature is datafilled through SERVORD, delivery occurs for every call. If the feature key or access code is used to activate the feature, delivery occurs until the user turns the service off by feature key or access code.

For MADN SCA and MADN CACH, activation causes only one member to have CND on. All of the other members of the MADN group continue to have CGN delivery suppressed during call termination.

Calling Name Delivery

Calling Name Delivery (CNAMD) is incompatible with MADN SCA and CACH in release NA008.

Caller ID Delivery and Suppression Suppression

Calling Name and Number Blocking was developed for RES and Meridian Digital Centrex (MDC) lines. The feature allows the originating subscribers to control the availability of their DN for display to the terminal equipment of terminating subscribers on each call. Calling Name/Number Delivery (CNND) is the functional opposite of CNNB, setting the DN and name presentation statuses to allowed, regardless of the default value, on each call.

For ISDN BRI, the functional equivalent of CNNB is Caller ID Delivery and Suppression Suppression (CIDSSUP). CIDSSUP enables the subscriber to block the delivery of one's name or number or both on each call. The CIDSSUP feature can be provisioned on an ISDN terminal through SERVORD. The option can be added to DN option key 1 (primary DN on a terminal) or to a feature key which can be assigned to a subset of DN keys on the terminal. As the subscription to this service is on an LTID or key basis, this service is assigned and activated on a member basis for a MADN SCA and MADN CACH group.

Caller ID Delivery and Suppression Delivery

For ISDN BRI, the functional equivalent of CNND is Caller ID Delivery and Suppression Delivery (CIDSDLV). The CIDSDLV feature can be assigned to ISDN BRI sets on either the primary directory number (PDN) key or on a feature key and is applicable to a selected set of DNs on the set. Once this option is provisioned and activated by the existing IBNXLA activation code CIDSDLV or by a feature key, this feature delivers the subscriber's name and number for a given call. Because the subscription to this service is on an LTID or key basis, this service is assigned and activated on a member basis for a MADN SCA and MADN CACH group.

MADN group name

Currently, the MADN group name is provisioned against the DN. For calls originating from or terminating to a MADN group, the MADN group name is used on the other party's display. The interaction between MADN group name and ISDN EKTS DNs is not changed by the CACH feature.

MADN member name

The interaction between MADN member name and ISDN EKTS terminals is not changed by the CACH feature.

A name may be datafilled through service orders or table control for each member of a MADN group. The identity of all MADN members can be associated with two names: aMADN group name and a MADN member name. If a member name is not datafilled, the group name is used (if datafilled). The primary MADN member is treated like any other member with respect to the datafill and use of a personal name. On calls originated by a MADN member, the member name is given on the terminating party's display (if applicable). On calls terminating on a MADN member, the group name is given to the originating party's display before answer; the member nameis given after answer.

This option is datafilled (activated) through SERVORD on an LTID-Key (member) basic for MADN SCA or MADN CACH. A terminal that is datafilled with multiple appearances of a CACH DN has multiple name entries for that CACH DN (one for each CA in which the terminal has a member). The operating company personnel can make each name match or make each name different.

Interaction of calling name and number services with the MBS member

Any primary or secondary member provisioned on a Meridian Business set is delivered if the calling name and number services are turned on for the customer group that the member belongs to. A primary or secondary member being a member of a CACH call appearance does not affect the interaction with calling name or number services.

Interaction of calling name and number services with the IBN line member

Calling name and number services that affect the calling and called parties are provisioned to a DN and LEN combination for a MADN member whose LCC type is IBN. The services are provisioned to a member, whether the member belongs to a MADN SCA group or a MADN CACH group.

The calling name and number services currently interact with MADN SCA members and they interact in a similar manner with MADN CACH group members.

Recall Services

The following recall services interact with MADN/EKTS CACH–Call Processing.

Ring Again

The Ring Again (RAG) feature is an intraswitch DMS feature.

The Ring Again feature allows a user encountering a busy destination the option of being notified when the busy number becomes idle. This feature is valid only if the originating and terminating parties are served by the same DMS-100 switch and belong to the same customer group.

The interaction between Ring Again and MADN CACH when a MADN CACH member originates a call and activates RAG is not changed by the MADN CACH feature. However, the MADN CACH feature does change the interaction between

Ring Again and MADN CACH when a call terminates on a MADN CACH group with all CA groups (which accept terminating calls) busy, and the calling party activates RAG. When one of the CA groups become idle, as the recall occurs, the call is re-offered to the MADN CACH group. This call is subject to the idle CA search. Like the initial call, the initiator of RAG has no control over which CA gets the call.

Network Ring Again

Network Ring Again (NRAG) allows the Ring Again feature to work when the calling and called parties are on different switches connected by PRI trunks or by a combination of PRI and CCS7 links. An end user located in any of the switching nodes in the combined PRI/CCS7 network can apply NRAG against a busy station located in any of the nodes in the same network and customer group. The Ring Again feature allows an end user who calls a busy station to queue against that station and be recalled when it becomes idle.

The NRAG feature supports four types of network transports: PRA, SS7, DPNSS virtual call, and BTUP.

- The NRAG feature supports MADN for PRA and SS7.
- The NRAG feature does not support MADN for DPNSS. This pre-existing restriction applies to all types of MADN call arrangements. Any MADN members attempting to RAG across a network are blocked by call processing.
- The NRAG feature supports MADN for BTUP.

The interaction between MADN CACH and NRAG is similar to MADN CACH and RAG.

Call Back Queuing

Call Back Queuing (CBQ) allows a station user encountering an all trunks busy condition to request notification when a trunk becomes idle and automatically access the same number using the Call Back Queue feature. The CBQ feature is an extension of the Ring Again feature.

The interaction between MADN and CBQ is not changed by the MADN CACH feature.

Automatic Call Back

The Automatic Call Back (ACB) feature enables a subscriber to place a call to the last station called by the subscriber. If the called station is busy, the subscriber may queue a call back request against that station and be recalled when it becomes idle. The CLASS service ACB may be provisioned for IBN sets, business sets, ISDN sets (in NA008), and residential lines.

Any member of a MADN SCA group may initiate ISDN ACB if the called DN is busy. When the called DN becomes idle, the member of the MADN SCA group that initiated ACB is notified. With MADN CACH, no member of that CACH group is allowed to initiate ACB.

Automatic Recall

The Automatic Recall (AR) feature (currently incompatible with MADN) enables a subscriber to place a call to the last station called by the subscriber. If the called station is busy, the subscriber may queue a call back request against that station and be recalled when it becomes idle. The CLASS AR service currently can be provisioned for IBN sets, business sets, and residential lines.

Speed Call Services

The following speed call services interact with MADN/EKTS CACH–Call Processing.

The speed call services work the same for all terminals in a CACH group, regardless of whether they are CACH or non-CACH terminals. The interaction between MADN CACH terminals and the following speed call features is not changed by the MADN CACH feature.

Speed Call Short

Speed Call Short (SCS) list allows an end user to store up to ten frequently dialed DNs in a list so that they care outpulsed automatically by dialing a single-digit code. This is done by dialing the speed call short list feature access code, which consists of an asterisk plus a single-digit code (0-9), instead of dialing all the digits of the desired DN. After adding SCS to the set, any DN that is in the SCS list may access this list. Moreover, because SCS is a terminal-based feature, all DNs on that set have access to the SCS list. The list has one line designated as the controller and only this line may edit the SCS list. However, other members that are on the same set may access the list.

The interaction between terminals in a CACH Group and Speed Call Short is not changed by the MADN CACH feature.

Speed Call Long

Speed Call Long (SCL) list allows an end user to store 30, 50, or 70 of the most frequently dialed directory numbers (DNs) in a list so that they are outpulsed automatically byu dialing a two-digit code. This is done by dialing the speed call long list feature access code, which consists of an asterisk plus a double-digit code (00-69), instead of dialing all the digits of the desired DN. After adding SCL to the set, this option may be activated by pressing any DN key in the SCL list followed by the pressing of the SCL key. Because SCL is a terminal-based feature, all DNs on that set have access to the SCL list. The list has one line designated as the controller and only that line may edit the SCL list. However, other members that are on the same set may access the list.

The interaction between terminals in a CACH group and Speel Call Long is not changed by the MADN CACH feature.

Speed Call Group

Speed Call Group (SCU) is a feature that provides end users the ability to have access to a speed calling long list. They can only use the numbers stored in the long list; they cannot add or change the original list that the primary set has provided. One end user is designated as the controller and has the capability to add or change the list. The controller may be any end user that has speed calling long list. Users who wish to access the SCL list must have SCU on their sets; these users have DNs in the SCL list that they may use based on the primary set's discretion. Also, because SCU is a terminal-based feature, if SCU is provisioned on a set, then all DNs on that set may use the SCU capability.

The interaction between terminals in a CACH group and speed call group is not changed by the MADN CACH feature.

Terminating Billing Option

Terminating Billing Option (TBO) is a feature that provides the operating company (OC) with the ability to generate an automatic message accounting (AMA) record when a call terminates to a line or through a VFG. This feature allows the OCs to have an access charge for each termination and to assign up to 200 unique call codes for various plans. The TBO is provided on POTS, MBS, RES, IBN, and ISDN sets. The TBO gives the OC a way to charge the terminating party for a call. Originations from all CAs is supported, but terminating calls are offered only to the CACH controller.

The TBO is only assignable (using SERVORD) to the primary member of a MADN SCA group and is provisioned on a DN-basis. With MADN CACH, TBO may only be assigned to the CACH controller.

Emergency stand-alone

Emergency stand-alone is a condition that occurs when the connection between the computing module (CM) and XPM has been broken. Once this happens, the switch is said to be in ESA mode, meaning all of the knowledge that is used to perform call processing, resides in the XPM. Call appearances are supported in ESA mode, but are only limited to one for each call.

With MADN SCA, only the primary member of a group is used for call processing. For MADN CACH, only the CACH controller's call appearance is supported in the NA008 time frame.

Directed Call Pickup

The Directed Call Pickup (DCPU) option allows a station to answer a ringing line within the same customer group before it has been answered by the called party. The Directed Call Pickup Barge-In (DCBI) option gives the subscriber the same capabilities as DCPU. Also, if the called party has answered the call, the DCBI option allows the subscriber to barge-in to the answered call and be connected as a three-way call.

Directed Call Barge-In (DCBI) and DCPU on a CACH DN is not allowed.

Executive Busy Override

The Executive Busy Override (EBO) option allows a station user to gain access to a busy station by flashing the switch-hook during busy tone and then dialing an access code. On business sets, EBO is activated by pressing the EBO key. The calling station thereby establishes a three-way conference with the busy station. MADN CACH members can initiate EBO if EBO is assigned to their sets.

Using EBO on a MADN CACH call is not allowed.

Restrictions/Limitations

Refer to feature AF6647, MADN/EKTS Call CACH–Table Control, for features that are incompatible with MADN CACH DNs, MADN CACH CAs, and MADN CACH members in the ***SW-NOW*** section of this document.

LAYER		SF-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	CFW
AF6826	Sourcing of Patches DWC30 and JYS11	

Description

This feature activity provides the following:

- Prevents the ring splash from sounding like a distinctive ring in a three-way conference (3WC) call scenario within the same customer group.
- Updates Call Forward (CFW) Incoming Call Identifier (ICI) key on the Meridian Services Attendant Console (MSAC) for call forwarded Integrated Services Digital Network User Part (ISUP) calls.
- Lights the CFW ICI key in addition to the LDN ICI key for calls that are forwarded over an ISUP trunk to an MSAC if the following conditions are met:
  - MESSAGE WAITING INDIRECT ICI and SERIALCALL ICI not active
  - Call forwarded to MSAC over EXTN/ATT/ATT-OTHER/NET/REPL route selector
  - Call forwarded to MSAC over ISUP or PIE trunk

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

This feature activity prevents the ring splash from sounding like a distinctive ring on a 3WC call scenario within the same group. It does not affect any other ringing or any other call scenario.

Any type of set other than IBN is not affected by this feature.

LAYER		SF-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	MPH/MADN SCA
AF6827	Sourcing Patches KWN03 and RPG29	

Description

This activity supports two functionalities:

- Allowing a Multiple Position Huntgroup (MPH) to work with a Conveyant console in non-50B mode
- Enhancing the interworking of Preset Conference and Multiple Appearance Directory Number (MADN) Single Call Arrangement (SCA) feature

Conveyant Console Compatibility with MPH feature

This feature is designed to allow an MPH with Queuing feature (MPHQ) to work with a Conveyant console in a non-50B mode along with 50B mode consoles. It allows more than one call to be terminated to a Conveyant console.This functionality has already been developed for the field via feature patch KWN03.

Preset Conference and MADN SCA Interaction

This feature adds optional functionality to the interaction between Preset Conference (PRECONF) and MADN SCA. This functionality enables the MADN SCA non-primary member to answer the call when MADN SCA is included as a conferee in Preset Conference. This functionality has already been developed for the field via feature patch RPG29 since BCS32.

- MPHQ feature adds a new field MPHTYPE to the existing table MPHGRP which holds the information whether an MPH group is Conveyant or 50B mode type.
- This feature provides optionality for the MASN SCA group such that any one member of the group can answer the call, and after the call is answered, ringing for the MADN SCA group stops and their key lamps (in case of EBS set) turn solid to indicate the group is busy.

The functionality provided by the patch RPG29 can be used as an Emergency Alert System. It is currently being used as Crash Alarm System at Los Angeles International Airport, in the form of the patch RPG29. Now this functionality can be activated/ deactivated through table control.

Command Changes

NONE

Data Schema Changes

This feature adds a new table MPHTYPE with fields MPHGRPNO and MPHTYPE for dump and restore purpose only.

This feature adds a new field to table MPHGRP. This new field MPHTYPE holds the information determining whether an MPH group is of conveyant or 50B type.This field is added to allow a conveyant console to work with an MPH feature.

New table: MPHTYPE

If the patch was active on the old load, then table MPHTYPE is present in the old load and during ONP, table specific reformat of this table updates the field MPHTYPE of the table MPHGRP for the MPH group whose tuple is transferred.

Dump and restore of table MPHTYPE is done after table MPHGRP.

New fields

MPHGRPNO

MPH group number is assigned to this field.

MPHTYPE

The type of MPH group is assigned to this field. The type is conveyant or fiftyb.

Changed table: MPHGRP

New field: MPHTYPE

The type of MPH group is assigned to this field. The type is conveyant or fiftyb.

Table MPHGRP is datafilled prior to tables MPHCON, HUNTGRP, IBNLINES, and HUNTMEM.

During a software load upgrade, MPHTYPE table data in old load (if patch KWN03 is applied) is mapped to table MPHGRP in new load to preserve the functionality provided by the patch KWN03. This is achieved by creating a skeleton of table MPHTYPE in order to dump and restore the data. This table should be dump-restored after table MPHGRP. Type reformat procedure for table MPHGRP adds a new field MPHTYPE to the table MPHGRP with the default value FIFTYB for all tuples. If the patch was active on old load, then table specific reformat for table MPHTYPE modifies the MPHTYPE field of the table MPHGRP for the MPHGRP whose tuple is transferred.

Changed table: PRECONF

This feature adds a new option to table PRECONF: MADNOPT. With this option datafilled and PRECONF number is dialed, any one member of the MADN SCA group

can answer the call. Once the call is answered by one of the members, ringing for MADN SCA stops, and the key lamps turn solid to indicate the MADN group is busy.

Changed field: OPTION

The option field in table PRECONF has been altered to recognize the option MADNOPT. When PRECONF number is dialed and this option assigned to the tuple with conferee = 0, it is possible for any one member of the MADN SCA group to answer the call.

During a software load upgrade, the table PRECONF data in the old load is mapped to the table data in the new load. To preserve the functionality provided by the patch RPG29, type reformat procedure is called. If the patch was active in the old load, the new option MADNOPT is assigned to the tuples with conferee = 0.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature enhances interaction between PRECONF and MADN SCA.

The following features or options are compatible with this feature:

- ISDN sets
- Call Forwarding
- MADN hold

- MADN Ring Forward (MRF)
- Keyset display: Display works the same for PRECONF/MADN/MADNOPT as it does for PRECONF/MADN.

The following features or options are incompatible with this feature:

- Call Waiting (CWT)
- Three Way Calling (3WC)
- Busy verification of lines and trunks
- Flash recall
- Executive Busy Override (EBO)
- MADN bridging
- MADN Privacy release (PRL)
- MADN Release (MREL)
- MADN Lamp (MLAMP)
- Uniform Call Distribution (UCD)
- Circuit Switched Digital Data Systems (CSDDS)
- Do Not Disturb (DND)
- Hunt Groups, all types
- Group Intercom (GIC)
- Customer Originated Trace (COT)
- Private Business Line (PBL)
- Call Forwarding for SMDI (SMDI)

Any feature interaction not listed in this document is considered to be incompatible with this feature and needs to be addressed via a feature enhancement.

Restrictions/Limitations

This feature is not compatible with the new MADN type CACH.

LAYER		SF-NOW
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	BRI ISDN
AF6936	SERVORD ISDN Terminal Type Based Feature Screening	

Description

This feature provides basic rate interface (BRI) integrated digital service network (ISDN) service order (SERVORD) with call processing (CALLP) feature compatibility screening. Its purpose is to ensure that a feature and the terminal type to which it is being assigned during a NEW or ADO SERVORD are compatible.

The ISDN terminal types screened for are national ISDN 1 (NI1), 2B non-initializing (2B-NIT), 2B fully initializing (2B-FIT), NI2-NIT, NI2-FIT, and ISDN primary rate interface (PRI).

The compatibility screening provided by this feature prevents:

- unsupported pre-NA008 features from being assigned to NI2 type terminals
- NA008 features from being assigned to NI1, 2B-FIT and 2B-NIT type terminals

This feature is executed when a NEW or an ADO SERVORD command is issued for BRI ISDN line provisioning.

If the compatibility screening fails, the service order is rejected and an error message is displayed to the user stating that the terminal type and the line option are not compatible.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

SERVORD ISDN Terminal Type Based Feature Screening feature affects SERVORD commands NEW and ADO. Each time a service order is performed using one of these commands, a compatibility check is made between the option or feature entered in the command and the terminal to which it is being applied. If the screening process detects an incompatibility between the option or feature entered in the command and the terminal to which it is being applied, the service order is rejected and an error message is displayed. The error message states that the feature and the terminal are not compatible.

Servord Error Messages

Only one type of expected error message is output by this feature. The message includes the feature and the terminal-type. Its syntax is as follows:

```
*********************************************************
This Line Option/Terminal-Type combination is NOT supported :
“line option” is the Line Option.
“terminal type” is the Terminal Type.
*********************************************************
```

The “line option” is the blocked/rejected feature and is of the format: ex. TRANSFER, AR, ACB, GIC, ... The “terminal type” is one of the following:

- BRA Stimulus Terminal
- BRA MFT Terminal
- NI1 Initializing Terminal
- 2B Initializing Terminal
- 2B Non-Initializing Terminal
- NI2 Initializing Terminal
- NI2 Non-Initializing Terminal

Other “terminal type” types which NEVER are seen but may occur in the future for some reason are:

- PRA Functional Terminal
- SS7 Functional Terminal

An exact example of a rejected terminal type/line option combinations is :

```
*********************************************************
This Feature/Terminal-Type combination is NOT supported :
TRANSFER is the Line Option.
NI1 Initializing Terminal is the Terminal Type.
*********************************************************
```

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

SERVORD ISDN Terminal Type Based Feature Screening does not have any direct interactions with other features. However, it does have a dependency on feature AF6641 which adds new NI2 terminals.

Restrictions/Limitations

The following limitations and restrictions apply to SERVORD ISDN Terminal Type Based Feature Screening:

- applies only to NA100 software loads
- applies only to BRI ISDN
- applies only to software release NA008 or greater

SF-LATER

This section identifies changes and/or additions to service features that affect Traffic functions or results and require activation after the new software load insertion. These changes may include tables, log reports, OM reporting and generation, or service orders.

NA008 PRODUCT

LAYER		SF-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	**FEATURE TITLE**	ISDN BRI
AF6619	ISDN BRI Access to CLASS ACB/AR	

Description

ISDN Basic Rate Interface (BRI) Access to CLASS ACB/AR provides ISDN BRI subscribers using National ISDN 2 (NI-2) terminals access to the Custom Area Local Signaling Services (CLASS) Automatic Call Back (ACB) and Automatic Recall (AR) features.

The ISDN ACB feature enables a subscriber to place a call to the last station called by the subscriber. The ISDN AR feature enables a subscriber to place a call to the last station that called the subscriber. With ISDN ACB, the last station called by the subscriber can be busy or idle, answered or unanswered. With ISND AR, the last call received by the subscriber can be answered or unanswered. The subscriber need only complete the ISDN ACB or AR activation procedure, and both the busy or idle status and the class of service of the destination line are checked. If the terminating line is idle and the class of service permits, call setup is attempted. If the call cannot be completed immediately because of a busy line, the call is queued, and the call completion is attempted when both stations are idle. As part of the completion attempt, the calling station is given special ringing. When the subscriber answers, the call is set up, and the called station is given regular ringing.

ISDN ACB and AR provide the same functionality as CLASS ACB and AR to subscribers using ISDN terminals. ISDN ACB and AR apply to both voice and data calls, and are supported for the following bearer capabilities datafilled in table BCDEF (Bearer Capability Definition): SPEECH, 3_IKHZ, 64KDATA, and 56KDATA.

Command Changes

NONE

Data Schema Changes

Table KSETFEAT (Business Set and Data Unit Feature) is automatically datafilled when the ACB or AR option is provisioned on an ISDN BRI terminal using the Service Order System (SERVORD).

Parameter ISDNCIRCUIT in table AMAOPTS needs to be set to TRUE in order for a module to be appended to an ISDN ACB/AR billing record. The bool *record_isdn_circuit_info* is checked in procedure *create_acbar_usp_billing_record.*

Log Message Changes

NONE

OM Changes

NONE

Service Order

ISDN BRI Access to CLASS ACB/AR enables the ACB and AR options to be provisioned on ISDN BRI terminals using SERVORD via tables LCCOPT and OPTCTL.

AMA Changes

If option ISDNCIRCUIT is set to ON in table AMAOPTS (Automatic Message Accounting Options), an Automatic Message Accounting (AMA) record with module code 071 is generated for each ACB or AR request activated from an ISDN terminal. Module code 071 provides the BC and call type of the terminal that activated the ACB or AR request.

New billing format

This feature provides the capability of indicating calls set up using the ACB/AR feature from an ISDN Terminal. This is done using the module code 071 and datafilling the bearer capability field in this module code. ACB/AR generates Bellcore format AMA records using existing structure code 1030 and existing call code 330.

Module 071 contains a bearer capability field for the activator of the ACB/AR feature. It is appended to the record produced for a normal ACB/AR activation or deactivation from an NI-1 or NI-2 terminal.

Billing Record

No changes are made to the existing record. However, the bearer capability field of the module code slot is updated. This field contains the bearer capability of the ISDN terminal that activated the ACB/AR request.

Bearer Capability/Call type, table 412, requires four characters. The list below gives the range of values for bearer capability field in module code (table 412) and indicates the order of the characters:

- Bearer Call Type (character 1)
  - 1 = Voice/voiceband data
  - 2 = Circuit-mode data
  - 3 = Packet-mode data
- Bearer Capability [characters 2-3]
  - 01 = Circuit mode: Speech
  - 02 = Circuit mode: 3.1 kHz
  - 03 = Circuit mode: Unrestricted 64 kbps digital information transfer
  - 04 = Circuit mode: Unrestricted 64 kbps digital information transfer rate adapted from 56 kbps.

  - 05 = Packet mode: Unrestricted digital information transfer
  - 07 = Circuit mode: Unrestricted digital information transfer at a rate greater than 64 kbps.
  - 99 = Bearer Capability not recorded.
- SIGN (hex-C) [character 4]

Example of record

The following gives an example of the generated record:

```
*HEX ID:AA  STRUCTURE CODE:41030C  CALL CODE:330C  SENSOR TYPE:036C
 SENSOR ID:0619351C  REC OFFICE TYPE:036C  REC OFFICE ID:0619351C
 DATE:70122C  CLASS FEATURE:063C  ORIG NPA:613C  ORIG NUMBER:6213008C
 OVERSEAS IND:0C  TERM NPA:00613C  TERM NUMBER:6213007C
 CONNECT TIME:1504589C  ELAPSED TIME:000000000C  CLASS FUNCTION:000C
 FEATURE STATUS:000C  SCRN LIST SCF:FFFF  SCRN LIST SCR:FFFF
 SCRN LIST DRCW:FFFF  MODULE CODE:071C BEARER CAPABILITY:101C
 MODULE CODE:000C
```

Notes

NONE

Alarms

NONE

Interactions

ISDN BRI Access to CLASS ACB/AR interacts with the following other functionalities:

- Additional Call Offering
- Anonymous Caller Rejection
- Attendant console
- Automatic Call Distribution
- Caller Identity Delivery on Call Waiting
- Call Forwarding
- Call Forwarding Busy
- Call Forwarding Don’t Answer
- Call Forwarding Remote Access
- Calling Identity Delivery and Suppression
- Calling Number Delivery and Calling Number Delivery Blocking
- Call Pickup and Directed Call Pickup
- Call Waiting
- Coin lines
- Customized Code Restriction
- Denied Termination

- Distinctive Ringing/Call Waiting
- Flexible Calling
- Hunt groups
- ISDN Hold
- Make Set Busy and Do Not Disturb
- Multiparty lines
- Multiple Appearance Directory Number
- Private Branch Exchange
- Selective Call Acceptance
- Selective Call Forwarding
- Selective Call Rejection
- Speed Calling
- Teen Service
- Uniform Call Distribution

Restrictions/Limitations

This feature only applies to BELLCORE AMA format records.

The following limitations and restrictions apply to ISDN BRI Access to CLASS ACB/AR:

- ISDN ACB and AR are supported only on NI-2 ISDN terminals.
- ISDN ACB and AR do not support Universal Access.
- ISDN ACB and AR are incompatible with packet-switched data.
- ISDN ACB and AR are incompatible with the following Multiple Appearance Directory Number (MADN) variants: CACH (call appearance call handling), EXB (extension bridging), and MCA (multiple call arrangement). ISDN ACB and AR are compatible with MADN SCA (single call arrangement).
- ISDN ACB and AR cannot be provisioned on the same line with the following options:
  - Automatic Line (AUL)
  - Denied Origination (DOR
  - Denied Termination (DTM)
  - Ring Again (RAG)
- For the following call types, the call memory (ICM or OCM) is not updated with the DN; therefore, ISDN ACB and AR do not apply to these DNs:
  - operator-assisted calls
  - calls directed to an emergency number
  - directory assistance calls
  - 800, 888, or 900 calls

- ISDN ACB and AR do not support Calling Name Delivery (CNAMD). That is, the calling name is not stored in call memory and is not included in the ACB or AR notification. When call setup occurs following a successful ACB or AR request, basic call delivers the name.
- The originating line must be assigned one or both of the ISDN ACB and AR features.
- Both the originating and terminating switches must support the ISDN ACB and AR features.
- A subscriber is allowed up to 30 combined ISDN ACB or AR requests concurrently (not 30 ISDN ACB requests and 30 ISDN AR requests).
- A subscriber cannot query the status of ISDN ACB or AR requests outstanding for individual lines or block the use of a set of CLASS features.
- For interoffice ISDN ACB and AR, CCS7 links must be in operation between the originating and terminating switches:
  - — ISUP (CCS7 call setup used to forward the calling number to ISDN AR subscribers)
  - — CLASS TCAP (CCS7 application used to scan the status of busy lines)
  - — SCCP (CCS7 message routing capability used to route TCAP messages)
- The following restriction applies to the use of ISDN ACB and AR with Automatic Call Distribution (ACD) and Uniform Call Distribution (UCD) groups: in the case where ACB blocking is applied to interoffice calls, the terminating end office (EO) must have ACB blocking enabled.

The following additional limitations and restrictions apply to the ACB/AR Scans Entire Hunt Group feature:

- The entire multiposition hunt (MPH) group for idle members is not scanned.
- Interactions between preferential hunt (PRH) group members and the stop hunt (SHU) option have no significant effect on ISDN ACB or AR scanning to determine an idle DN.
- The LOD (line overflow to DN) and LOR (line overflow to route) options are not considered when determining whether a line is available for termination. If, for example, a hunt group has option LOD and a line with ISDN ACB tries to call back the hunt group when all members are busy, the presence of the LOD option is ignored. If, after the ISDN ACB line has received and answered distinctive ringing, all members of the hunt group go busy, the LOD option is used. It is as if the ISDN ACB line phoned the hunt group directly; therefore, the ISDN ACB line is routed to the DN specified by the LOD option.
- When ISDN ACB or AR involves scanning of hunt groups that contain members with the Anonymous Caller Rejection (ACRJ) feature, ACRJ is not considered in determining an idle DN. Upon call setup to the ISDN ACB or AR DN, incompatibility checks are performed, and the call is denied if the DN is in the ACRJ list.

LAYER		SF-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	CFW
AF6622	ISDN Redirection Services (CFW)	

Description

This feature contains the CCM software changes associated with ISDN Redirection Services (CFW).

ISDN Redirection Services, or Call Forwarding (CFW), is enabled on National ISDN-2 (NI-2) ISDN terminals for Basic Rate Interface (BRI) lines on a per directory number (DN) per call type (CT) basis by SERVORD option CFXDNCT. Prior to this feature, ISDN subscribers could not forward differing call types to different locations. NI-2 ISDN Call Forwarding is not compatible with pre-NI-2 CFW for the same terminal.

NI-2 ISDN Call Forwarding allows previous CFW functionality for ISDN BRI lines, with changes from pre-NI-2 CFW in the following areas:

- multiple CT forwarding
- activation
- validation
- reminder notification

Multiple call type forwarding

A single DN can have separate subscriptions to voice information (VI), circuit-mode data (CMD), and packet-mode data (PMD) CTs on an NI-2 ISDN device. CFW is offered on each DN and for each CT. (CFW does not apply to a call type of PMD). NI-2 devices support multiple call appearances with distinct CTs for a DN. A terminal can forward call types VI and CMD to different destinations. Option CFXDNCT in table KSETFEAT provisions CFW by SERVORD.

Activation

CFW subfeatures are activated by a single feature activator (FA) depression, rather than the two key depressions required in pre-NI-2 CFW. An FA is a key assigned to a feature. An FA can be provisioned to apply to one CT only, and can apply to many DN call appearances.

Validation

ISDN Redirection Services introduces terminal option CFXVAL, which functions exactly the same as the pre-NI-2 customer group option CFWVAL. These options provide remote DN validation or courtesy call, or both. Option CFXVAL validates the call forward remote DN as well as the call type. Depending on the data entered, either

DN validation or a courtesy call, or both, occur during programming of the remote DN. Option CFXVAL is datafilled by SERVORD in table KSETLINE. Prior to this feature, CFWVAL was the customer group option for group members provisioned with CFW in table CUSTSTN. CFXVL makes the same functionality available for each ISDN terminal. CFXVAL functionality takes precedence over CFWVAL if both options are provisioned.

Reminder notification

This functionality introduces a SERVORD prompt used to toggle Reminder Notification. Parameter NOTIFY is prompted for during the SERVORD addition of CFW subfeatures by option CFXDNCT.

Command Changes

NONE

Data Schema Changes

See feature AF6901 in the ***SF-LATER*** section of this manual for data store information.

Log Message Changes

NONE

OM Changes

Changed OM Group CALLFWD

OM group CALLFWD is used to count the usage of Integrated Business Network (IBN) CFW on a customer group basis. These registers record CFW events for CFW subfeatures for all agent types (single terminals, business terminals, and ISDN terminals). Pre-NI-2 OM group CALLFWD tracks CFW events for the NI-2 call type VI.

This feature creates new OM group CALLFWD registers to track CFW events for the NI-2 call type CMD. The new CMD registers work with and are additional to the existing registers. The following new registers are created: CFDATTD, CFDATT2D, CFBATTD, CFUATTD, CFDXMPTD, and CFBXMPTD.

Register list

The following is a list of the new registers created for the CMD call type:

- CFDATTD (Call Forward Don’t Answer Attempt Data)
  - — CFDATTD measures the number of CFD attempts, regardless of call success. This register will be pegged only if the call type is CMD and CFD is active.
  - — Option IECFD may exist with the CFD option on a CFD base terminal. IECFD allows incoming internal and external calls to be forwarded to

separate destinations. IECFD does not affect and is not affected by CFDATTD register usage.

— CFDATT2D is an extension peg for this register. The CFDATT2D register is used if CFDATTD is full.

- CFDATT2D (Extension peg for CFDATTD)
  — See CFDATTD.
- CFBATTD (Call Forward Busy Attempt Data)
  — CFBATTD is a peg for CFB attempts, regardless of whether or not the call is successful. The register is not incremented unless the call type is CMD and CFB is active.
  — Option IECFB may exist with the CFB option on a CFB base terminal. IECFB allows incoming internal and external calls to be forwarded to separate destinations. IECFB does not affect and is not affected by CFBATTD register usage.
- CFUATTD (Call Forward Universal Attempt Data)
  — CFUATTD measures the number of CFU attempts, regardless of whether or not the call was successful. This register is incremented for each CFU, CFI or CFF attempt. The CFUATTD register is only pegged for CMD call type.
- CFDXMPTD (Call Forward Don’t Answer Exempt Data)
  — CFDXMPTD measures the number of exempted CFD calls if the CFD base terminal has CDE or CDI and the call is restricted. CDE and CDI are additional options and must coexist with CFD on the CFD base terminal.
    – If a terminal has the CDE option, it does not forward an intergroup originated call.
    – If the terminal has CDI, intragroup originated calls are not forwarded.
    – In each case the CFDXMPTD register is pegged.
    – This register is incremented only if CFD is active and the call type is CMD.
- CFBXMPTD (Call Forward Busy Exempt Data)
  — CFBXMPTD measures the number of exempted CFB calls if the CFB base terminal has CBE or CBI and the call is restricted. CBE and CBI are additional options and must coexist with CFB on the CFB base terminal.
    – If a terminal has the CBE option, it does not forward an intergroup originated call.
    – If the terminal has CBI, intragroup originated calls are not forwarded.
    – In each case the CFBXMPTD register is pegged.
    – This register is pegged only if CFB is active and the call type is CMD.

OMSHOW example

```
>omshow callfwd active 14
CALLFWD
CLASS:   ACTIVE
START:1996/11/15 07:45:00 FRI; STOP: 1996/11/15 07:54:15 FRI;
SLOWSAMPLES:         6 ; FASTSAMPLES:         54 ;

INFO (OMIBNGINFO)
        CFDATT     CFDATT2      CFDFAIL      CFDEXMPT
        CFDOVFL    CFDCNCL      CFDCNCL2     CFBATT
        CFBFAIL    CFBEXMPT     CFBOVFL      CFUATT
        CFUFAIL    CFUOVFL      CFUIFSOV     CFBSOV
        CFDSOV     CMCFIOV      CMCFEOV      CUSPACT
        CUSPFAIL   CUSPDEA      CUSPOVR      CFTBATT
        CFTBFAIL   CFTDATT      CFTDFAIL     CFDATTD
        CFDATT2D   CFBATTD      CFUATTD      CFDXMPTD


        CFBXMPTD

14      IBNTST
        0          0            0            0
        0          0            0            0
        0          0            0            0
        0          0            0            0
        0          0            0            0
        0          0            0            0
        0          0            0            0
        0          0            0            0
```

Service order

See feature AF6901 in the ***SF-LATER*** section of this document for SERVORD details.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Attendant Console (AC) Call Forward Station (CFS)

Attendant Console CFS to an NI-2 ISDN terminal with option CFXDNCT is not allowed. The AC display shows *disallowed* for an attempted CFS to an NI-2 ISDN terminal with option CFXDNCT.

Automatic Call Back/Automatic Recall (ACBAR)

ACBAR attempts to a busy call forward base station fail with call type CMD. These calls receive a treatment common to failed ACBAR attempts: an *unexpected data value* in the transaction capabilities application part (TCAP).

All pre-NI-2 CFW interactions remain unchanged.

Restrictions/Limitations

The following limitations and restrictions apply to ISDN Redirection Services (CFW):

- Pre-NI-2 CFW functionality can exist on an NI-2 terminal, but both pre-NI-2 CFW and NI-2 ISDN Redirection Services cannot coexist on the same NI-2 terminal.
- Call Forward Fixed (CFF) is assignable to DN/CT appearance. CFF cannot be assigned by an FA.
- Call Forward per Key (CFK) is not supported by option CFXDNCT.
- Call Forward Busy (CFB) and Call Forward Don’t Answer (CFD) (control type K) are not supported by option CFXDNCT.

LAYER		SF-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	ISDN
AF6634	ISDN Service Keywords and Descriptions Table	

Description

ISDN Service Keywords and Descriptions Table identifies DMS feature keywords and their corresponding service descriptions that can be downloaded to a National ISDN-2 (NI-2) terminal. These DMS feature keywords do not always match the Bellcore feature keywords. The new table feature description (FEATDESC) tuple uses the DMS keyword as an index and provides the corresponding Bellcore keyword. There are some DMS features without corresponding Bellcore keywords. In such cases, the Bellcore keyword field indicates "_" (underscore). Parameter downloading (PD) uses this table to find the Bellcore feature keywords and user alterable service description that corresponds to the DMS feature on a user's terminal.

This feature provides information for the implementation and management of paired Feature Activator/Feature Indicator (FA/FI) with initial default service descriptions. These FA/FIs are a DMS-100 NA008 ISDN BRI product-supported subset of FA/FIs as indicated in Bellcore TR-NWT-001281. This table includes DMS family supported feature codes which are not yet included by Bellcore in its list of features. ISDN Service Keywords and Descriptions Table also provides table control (TC) for the new table FEATDESC to accomplish this task.

Command Changes

NONE

Data Schema Changes

New table: FEATDESC

This feature defines a new table FEATDESC which contains DMS Feature Keywords, Bellcore Keywords, and Service Descriptions. Parameter Downloading uses this table to find the Bellcore feature keywords and TelCo alterable service descriptions that correspond to the DMS features on a user's terminal.

The addition and deletion of tuples in this table are not allowed. Therefore, the usage of "ADD" and "DELETE" commands is prevented. Only the Service Description text can be changed via the table control commands "CHANGE" or "REPLACE". For this reason, DMOPRO commands - REM and INP are not supported.

Description of FEATDESC new fields

Each tuple of FEATDESC contains the following three fields:

- DMSKEY - DMS defined feature keywords. Key of the table. 1 to 8 characters. This field cannot be modified. Maximum key size is 128.
- BCRKEYWD - Bellcore defined feature keywords. 1 to 8 characters. This field cannot be modified.
- SERVDESC - Service Description. 1 to 20 characters. A craftsperson may modify it, if necessary. This is the only field that is datafillable in this table.

Example datafill

```
DMSKEY          BCRKEYWD        SERVDESC

ACB             ACBT1           Call_Back
PRV             BCEA            MAKE_CALL_PRIVATE
```

The above examples show that for the DMSKEY of ‘ACB’, the service description was entered using single quotes. For the DMSKEY of ‘PRV’, the service description was entered without quotation.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Parameter downloading the contents of ISDN Service Keywords and Descriptions Table is accomplished using ISDN Parameter Downloading – FPE & Messaging.

Notification to a subscribers terminal is accomplished using ISDN Parameter Downloading Notification.

Restrictions/Limitations

ISDN Service Keywords and Descriptions Table has the following limitations and restrictions.

Since the keywords are fixed and defined by Bellcore, they are not modifiable. Only the service description field of each tuple may be modified. The adding or deleting of a tuple in this table is not allowed.

Service description text must use an underscore for the space/blank character. Spaces/blanks are used by PD when corresponding FA service description is transmitted to the subscriber's terminal.

The following rules must be followed when modifying service description text:

- Use underscore for representing a space between words in a service description text.
- Underscore as a character on an ISDN terminal display is not supported, since it is used for representing a space/blank character.
- Single quotes must be used to supply strings with mixed case or special characters.
- If single quotes are not used for the service description string, all the characters, except underscore, are displayed in upper case.
- Since DMS-100 switches are required to perform downloading of parameters independently of call processing, the DMS-100 switch downloads data to terminals that request the download but places the terminal in a call processing busy state while doing the download. This precludes interacting with call handling and other feature interactions.

LAYER		SF-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	CCM
AF6901	ISDN Redirection CFW Service Order/Table Control	

Description

This feature contains the CCM software changes associated with feature AF6901, Integrated Services Digital Network (ISDN) Redirection Call Forwarding (CFW) Service Order/Table Control. See AF6622, ISDN Redirection Services CFW, for information on programming, validation, termination, operation, administration, and maintenance.

ISDN Redirection provisions CFW on NI-2 ISDN terminals for Basic Rate Interface (BRI) lines on a per directory number (DN) per call type (CT) basis. This feature creates two options, options CFXDNCT and CFXVAL, which provision CFW on NI-2 terminals through SERVORD. NI-2 ISDN CFW is not compatible with pre-NI-2 CFW for the same terminal.

Command Changes

The QLT (query logical terminal) and QDN (query DN) commands list options CFXDNCT and CFXVAL for a terminal provisioned with them.

The QLT command shows the FAs and DN appearance provisioned with CFW.

Data Schema Changes

The ISDN Redirection (CFW) Service Order/Table Control translations tables that are modified by this feature are: KSETFEAT, KSETLINE, CFX, OPTOPT, and CFXCMD.

Changed table: KSETFEAT

Table KSETFEAT (Business Set and Data Unit Features) lists the line features that are assigned to the business sets and data units in table KSETLINE.

Description of changed/new fields

Option CFXDNCT, the call type, and reminder notification are automatically updated in table KSETFEAT when assigned by SERVORD. Option CFXVAL, courtesy call, and route validation are also automatically updated in table KSETFEAT when assigned by SERVORD.

Option CFXDNCT

Field KVAR has been modified to store the CALLTYPE and NOTIFY boolean identified as being applicable for the call forward service. This field is used as a

refinable area. Specifically, each feature entered into this field contains different data. Each feature uses this field as needed.

Feature CFX is automatically datafilled into table KSETFEAT by SERVORD when the call forward service is provisioned on a device. Craftspersons do not manipulate table KSETFEAT directly. SERVORD must be used as an interface between data entry and data storage.

The refinement area for KVAR is enhanced for the CFX option to include new parameters CALLTYPE and NOTIFY.

The CALLTYPE field stores data associated with the calltype of the DN which is forwarded. This field is referenced where appropriate during call processing, e.g. during validation for programming, call forward termination, parameter downloading, etc.

Its presence in a CFX tuple enables the NI-2 ISDN Call Forward service.

Option CFWVAL

CFWVAL is a new option for the FEATURE field.

As with CFXDNCT, CFWVAL refines the KVAR field to store its associated data. The data to be stored is a bool. CFWVAL is also automatically datafilled in table KSETFEAT by SERVORD when a craftsperson enters data. The craftsperson does not modify table KSETFEAT directly to add the CFWVAL option.

The presence of CFWVAL enables the service for the specified terminal.

Example

The following example shows both CFXDNCT and CFWVAL datafilled for an NI-2 device.

```
>table ksetfeat
TABLE: KSETFEAT
>pos func 1 14 cfx
FEATKEY FEATURE KVAR
--------------------
FUNC 1 14 CFX CFX CFU N Y  Y CFB P N N (1,2,5,6) VI $
>pos func 1 1 cfx
FEATKEY FEATURE KVAR
--------------------
FUNC 1 1 CFWVAL CFWVAL Y $
```

Changed table: KSETLINE

Table KSETLINE (Business Set and Data Unit Line Assignment) contains the DN appearances for business sets and data units. One entry is required for each DN-related key on a business set and a data unit. The key is LTID. It is automatically datafilled by SERVORD. The craftsperson does not add/delete/modify data in table KSETFEAT directly.

Option CFXDNCT

When provisioned, table KSETLINE contains an entry of the new CFXDNCT option. No data associated with CFXDNCT is stored in this table. This option is automatically updated in this table when assigned by SERVORD.

Option CFXDNCT is added to the area refinement of the DNRESULT. The field itself does not change. Specifically, CFXDNCT is now part of the Options List of DNRESULT.

Option CFWVAL

As option CFWVAL is a terminal based option, it is also present in table KSETLINE. Only the presence of the option is available in KSETLINE. Data associated with the option is stored in KSETFEAT.

New option CFWVAL is also added to the area refinement of the DNRESULT. The field itself does not change. Specifically, CFWVAL is now part of the Options List of DNRESULT.

The presence of CFWVAL and CFXDNCT datafill activates functionality of the features.

Example

```
>table ksetline
TABLE: KSETLINE
>pos func 1
FUNC 1 1 DN Y 6215910 IBNTST 0 0 613 (CFXDNCT) (CFWVAL)   $
```

Note: *This example shows a call forward feature associated with a DN appearance stored as "key" 1.*

Changed table: OPTOPT

Table OPTOPT is not datafillable. It is not modified by SERVORD. It is used as a repository for feature incompatibilities. While craftspersons may refer to table OPTOPT, it cannot be modified directly from the Maintenance and Administration Position (MAP).

Table OPTOPT relies on default data upon restarts and upgrades.

Description of changed or new fields

CFXDNCT is added to the OPTION field as a tuple entry and is used in table OPTOPT to disallow incompatible features from interacting.

Incompatible options added to the INCOMPAT field for option CFXDNCT are:

- BNN (Bridged Night Number)
- FNT (Free Number Terminating)
- HOT (Hotel/Motel)
- TBO (Terminating Billing Option)
- TRMBOPT (Terminating Billing Option on Hunt Group)
- CFK (Call Forward per Key

The presence of CFXDNCT datafill activates functionality of disallowing incompatible features.

Example

```
>table optopt
TABLE: OPTOPT
>pos cfxdnct
CFXDNCT (BNN) (FNT) (HOT) (TBO) (TRMBOPT) (CFK) $
```

Changed table: CFX

Table CFX (Call Forwarding) formats and displays CFW information on the basis of individual LENs and keys for VI call type information and non-call type specific information. This table indicates whether the CFW feature on a line is active or inactive and the DN to which it is forwarding. Option CFXDNCT and its associated CFW subfeatures for the VI call type are automatically updated in this table when assigned by SERVORD.

Table CFX is not manually datafillable. It is modified by SERVORD and Call processing (call forward programming.) It is used as a repository for feature data storage. While

craftspersons may refer to table CFX, it cannot be modified directly from the Maintenance and Administration Position (MAP). Option CFXDNCT and its associated CFW subfeatures for the VI call type are automatically updated in this table when assigned by SERVORD.

Description of changed or new fields

Changes to field CFXLEN are minor. Historically, the Key portion of CFXLEN displays a 0 (zero) as call forward could only be assigned one time to a device and knowledge of the feature activator (or DN key) was not required for indexing into the table. This is true in all cases except when Call Forward per Key (CFK) is provisioned on a device. In such cases as when CFK is present, the Key portion reflects the valid telephone "key" to which the feature is assigned. New option CFXDNCT uses the same mechanism to store valid provisioned instances of the call forward features and subfeatures.

While this activity is provisioned on a DN/CT basis, data store continues to function as if it is still key based. For example, DN 555-1234, Calltype VI can be provisioned by the craftsperson to have call forward. However, the DMS automatically maps and stores the feature on the appropriate key in which call forward has been assigned. This allows for a DN/CT provisioning perspective for the craftsperson while enabling DMS key based call processing functionality.

As table CFX cannot be modified by craftspersons, the visibility of the change is insignificant. The data stored in the table remains unchanged.

The presence of call forward datafill activates functionality appropriately for the call forward features and subfeatures.

There are no changes to the activation and deactivation of call forward through table control.

Example

```
>table cfx
TABLE: CFX
>pos cfxdnct
FUNC 1   14   Y   N   I   $   N
```

Note: *The only change in this table is that indexing into the table now takes into consideration the appropriate "key" to which the feature is assigned. In this example, "key" 14 is the feature activator for call forward.*

Changed Table: CFXCMD

Table CFXCMD (Call Forwarding Circuit Mode Data) is a repository for CFW data storage for call type CMD for NI-2 and NI-3 ISDN terminals. Option CFXDNCT and its associated CFW subfeatures for the CMD call type are automatically updated in this table when assigned by SERVORD.

Log Message Changes

NONE

OM Changes

NONE

Service Order

The following is a sample configuration of option CFXDNCT on an NI-2 ISDN set.

- DN1 includes VIs 1 and 2, PMD 3, and CMD 4.
- DN2 includes VIs 5 and 6, and CMD 7.
- DN3 includes VIs 8 and 9, and PMD 10.
- DN4 includes VIs 11, 12, and 13, and CFU 14 and 15.

FA 14 can be provisioned to offer CFW for CT VI on DNs 1 and 2, with a list of DNs (or DN appearances) that contain all or some of the VI call type DN appearances. If DNs 1 and 2 are selected during provisioning, the keylist stored in table KSETFEAT is Call Reference Busy Limit (CRBL) master keys 1 and 5.

FAs 15 and 16 can be provisioned for either CMD or VI in the same manner. Multiple FAs can be assigned by option CFXDNCT, up to one appearance for each DN/CT pair. FA 15 can be provisioned to offer CFW for CT CMD for DNs 1, 2, 3, and 4. FA 16 can be provisioned to offer CFW for CT VI for DNs 3 and 4.

For NI-2 ISDN CFW functionality, options CFXDNCT and CFXVAL are provisioned by SERVORD. These options operate independently of one another, and do not require one another to function.

Option CFXDNCT

CFW subfeatures are added by option CFXDNCT for NI-2 terminals. SERVORD ensures that supported CFW features are added by option CFXDNCT if at least one appearance of CFXDNCT has been provisioned. For example, if CFU has been provisioned on an NI-2 device by option CFXDNCT, then an ADO of CFB is disallowed. CFB must also be added using CFXDNCT.

The DNs entered as the forwarding DNs are converted to a keylist by SERVORD. The check procedures for the SERVORD transaction look for all the appearances of a DN call type pair on an NI-2 device and create a keylist.

The following CFW subfeatures can be added to a DN/CT appearance by option CFXDNCT:

- Call Forwarding Universal (CFU)
- Call Forwarding Intragroup (CFI)
- Call Forwarding Fixed (CFF)
- Call Forwarding Busy (CFB)

- Call Forwarding Don't Answer (CFD)
- CFB Universal (CBU)
- CFB Internal (CBI)
- CFB External (CBE)
- CFD Universal (CDU)
- CFD Internal (CDI)
- CFD External (CDE)
- Internal/External for CFB (IECFB)
- Internal/External for CFD (IECFD)

These CFW subfeatures are supported if they are provisioned by option CFXDNCT through SERVORD. However, if these features are added to a terminal as options before option CFXDNCT is provisioned, option CFXDNCT cannot be added to the same terminal. These features cannot be added to a terminal as options if option CFXDNCT has already been provisioned. Option CFXDNCT must be used again to add the supported CFW subfeatures.

The following new SERVORD prompts are created with this feature:

- NOTIFY
- CALLTYPE
- CFXTYPE
- DN_OR_KEYLIST

Option CFXVAL

The functionality of terminal option CFXVAL is identical to the pre-NI-2 customer group option CFWVAL provisioned in table CUSTSTN. These options permit routing and terminating validation of the forwarding DN when the user activates CFW. CFXVAL validates the remote DN as well as the call type. CFXVAL allows validation for each LTID rather than for an entire customer group. New prompt TERMOPTN is created with this feature.

The options are provisioned differently. CFXVAL is a terminal option provisioned in table KSETFEAT by SERVORD. CFWVAL is a customer group option provisioned by SERVORD. CFWVAL is a customer group option provisioned by SERVORD in table CUSTSTN. CFXVAL is added once for each LTID that requires validation.

Option CFXVAL takes precedence over pre-NI-2 customer group option CFWVAL.

SO commands used with CFXVAL

Option CFXVAL is added by the ADO or NEW command. At the OPTKEY prompt, a DN appearance of key 1 (not an FA) must be specified. When a QLT command is done, CFXVAL appears to be assigned as a terminal option. CFXVAL is deleted by the DEO command. This does not delete or negate the pre-NI-2 customer group

option CFXVAL, if provisioned. The OPTKEY is always the DN appearance 1. The CHF command can be used to change the feature.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

ISDN Redirection (CFW) Service Order/Table Control (option CFXDNCT) is incompatible with the following functionalities:

- Attendant Console (AC) Call Forward Station (CFS)
- Bridged Night Number (BNN)
- Call Forwarding Remote Access (CFRA)
- Call Forward Per Key (CFK)
- Call Forward Busy/Call Forward Don’t Answer Per Key Destination
- Call Management of Call Forwarding (CMCF)
- Call Forward for Secondary MADN Member (CFMDN)
- Call Forward Timed for CFB (CFTB)
- Call Forward Timed for CFD (CFTD)
- Circuit Switched Digital Data Service (CSDO/CSDDS)
- Directory Number Hunting (DNH)
- Distributed Line Hunting (DLH)
- Free Number Terminating (FNT)
- Hotel/Motel (HOT)
- Inhibit Ring Reminder (IRR)
- Line Appearance on a Digital Trunk Public Safety Answering Point (LDTPSAP)
- Multiline Hunting (MLH)
- Network Resource Selector (NRS)
- Operator Number Identification (ONI)
- Packet Mode Data (PMD)
- Preferential Hunt (PRH)
- Pre-NI-2 Call Forwarding

- Terminating Billing Option (TBO)
- Terminating Billing Option on Hunt Group (TRMBOPT)

Restrictions/Limitations

The following limitations and restrictions apply to ISDN Redirection CFW Service Order/ Table Control:

- Options CFXDNCT and CFXVAL are exclusive to NI-2 ISDN terminals.
- NI-2 ISDN CFW is not compatible with pre-NI-2 CFW for the same terminal.
- The CFW subfeatures CFU, CFI, CFF, CFB, CFD, CBI, CBU, CDE, CDI, CDU, EICFB, and IECFD are supported only if they are provisioned through option CFXDNCT. If these features are added to a terminal as options before CFXDNCT is provisioned, CFXDNCT cannot be added to the same terminal. These features cannot be added to a terminal as options if CFXDNCT has already been provisioned. CFXDNCT must be used again to add CFW subfeatures.
- CFF is assignable to a DN/CT appearance. CFF cannot be assigned by way of an FA. CFF is activated by dial access only.
- CFK is not supported by option CFXDNCT.
- CFB and CFD control type K are not supported with option CFXDNCT.
- The following terminal options prohibit termination to a CFW remote terminal and case the CFWVAL option to disallow CFW activation: Denied Termination (DTM), Suspend Service (SUS), Plug UP (PLP), Requested Suspension (RSUS), Denied Incoming (DIN), and Denied Call Forwarding (DCF).
- If call type packet-mode data (PMD) shares the same DN as a voice information (VI) or circuit-mode data (CMD) call type, a dollar sign ($) cannot be used to indicate that all DNs of a device are selected in a SERVORD transaction. Each DN appearance must be entered manually for assignment of CFXDNCT on the VI and CMD appearances.
- Option CFXDNCT provisioning for VI and CMD cannot share the same feature activator (FA) key or DN appearance. Each CFW for the VI CT and reside on a separate virtual key. For example, CFW for the VI CT and CFW for the CMD CT cannot both be provisioned on the primary DN (PDN). Only one can be provisioned on the PDN, and the other can be provisioned on an FA that has a keylist containing the PDN. Both can be provisioned on separate FAs that have keylists containing the PDN.
- The number of digits in a DN appearance on a base station is limited to 10 digits, and the number of DNs in a DN list is limited to 4.
- Option CFXVAL is allowed to be provisioned even if a pre-NI-2 CFW feature is provisioned on an NI-2 terminal.

LAYER		SF-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	MADN
AF6921	Service Order Simplification for Extension Bridging	

Description

Multiple Appearance Directory Number (MADN) Extension Bridging (EXB) is a RES feature that allows operating company personnel to assign the same directory number and features to two or more different line equipment numbers (LENs) using only software commands.

One common use for this feature is broadband loop bridging. As the utilization of integrated digital loop carriers and broadband facilities has increased, the need and frequency of use for this feature has also increased significantly.

This feature allows simplification of the Service Order System (SERVORD) capability associated with the administration of MADN EXB.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

This feature simplifies SERVORD provisioning by adding seven SERVORD commands. These commands change the ability of MADN EXB provisioning from single members to the group as a whole. The seven commands described in the following paragraphs are: EXBADD SERVORD, EXBADO, EXBCHG, EXBDELG, EXBDELM, EXBDEO, and EXBEST.

EXBADD SERVORD command

The EXBADD command performs the following functions:

- This command allows the primary LEN to be changed to an existing secondary LEN of the group.
- This command also changes an existing feature for all members of the group.

EXBADO command

The EXBADO command adds features and options to the primary and all secondary LENs.

EXBCHG command

The EXBCHG command performs the following functions:

- This command allows the primary LEN to be changed to an existing secondary LEN of the group.
- This command also changes an existing feature for all members of the group.

EXBDELG command

The EXBDELG command performs the following functions:

- Allows the user to delete all secondary LENs from the EXB group.
- The OUT_PRIMARY prompt allows the primary LEN to be unassigned and the user to assign the intercept name.

EXBDELM command

The EXBDELM command allows the deletion of one or multiple secondary LENS from the MADN EXB group. The primary LEN cannot be mistakenly deleted with this command.

EXBDEO command

The EXBDEO command deletes features from the primary and all secondary LENs of the MADN EXB group.

EXBEST command

The EXBEST command performs the following functions:

- This command creates a MADN EXB group from an existing POTS DN or LERN.
- This command allows the addition of a maximum of 31 secondary LENs.
- Optionally, this command allows features to be copied from the primary member to all of the secondary members.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The following limitations and restrictions apply to Service Order Simplification for MADN Extension Bridging:

- This feature datafills lines in the same way as if they were added through existing SERVORD commands. Therefore, any restrictions/limitations imposed by SERVORD are imposed by all of these commands.
- Only POTS (such as 1FR, 1MR, and others) or RES LCCs that are compatible with MADN EXB are allowed.
- For commands EXBEST and EXBADD, the customer group and other line information for the new member, such as the LCC, subgroup, NCOS, SNPA, LATA name, and LTG, are the same as the Primary member.
- Secondary LENs added through commands EXBEST or EXBADD must be Hardware Assigned Software Unassigned (HASU).
- Commands EXBADO, EXBDEO, and EXBCHG do not allow the MDN option to be manipulated and an error message is displayed.
- MADN EXB group size is limited to the maximum MADN group size, currently 32 members.

LAYER		SF-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	CNA
AF6997	Billing Enhancements	

Description

This feature contains the CNA changes (MUMR and OABILL) associated with feature AF6738, Billing Enhancements. A description of AF6738 follows.

Billing Enhancements includes the following enhancements related to DMS-100 billing:

- Multiunit Message Rate (MUMR) support of interchangeable numbering plan areas (NPA)
  - — This enhancement consists of the modification of table MUMRTAB and associated call processing software to support the definition of message-rate serving areas (MRSA) which include multiple office codes in multiple area codes where these office and area codes may consist of the same 3-digit sequence.
- Billing for operator-assisted (OA) calls
  - — This enhancement enables the production of Automatic Message Accounting (AMA) records on calls terminated to operator (OP) trunks for 0+ and 0- OA call types. This service provides the operating company with the ability to designate, on a per-OP trunk group basis, which operator-assisted calls produce a billing record.
- Improved accuracy of flash timing for line concentrating module (LCM) and remote lines
  - — This enhancement increases the billing accuracy of the flash timing adjustment performed on calls involving lines with the flash capability.
- Call Code 021 for Common Control Switching Arrangement (CCSA) data calls
  - — This enhancement provides an office-wide control that allows the Bellcore format AMA call code for option CCSA to take precedence over the call code for data calls.
- Billing software robustness enhancements
  - — This enhancement provides additional space for AMA software to store information that is used in formatting billing records and improves support for certain types of billing patches.

Command Changes

NONE

Data Schema Changes

This feature introduces the following table changes:

- added option CCSDATA to table AMAOPTS
  - — This option controls the precedence of Call Code 021 over Call Code 072 for CCSA data calls. It has no effect on non-CCSA calls. With option CCSADATA set to ON, the Call Code 072 record is replaced by a Call Code 021 record. With option CCSADATA set to OFF, a Call Code 072 record is produced.
- added option OABILL to table AMATKOPT
  - — This option controls whether an OA call using a member of the trunk group generates a local AMA record in the originating office. When OABILL is assigned in table AMATKOPT for an OA-type call, a billing record is generated. This option applies to North American offices for Bellcore-format AMA billing.
- changed tuple format in table MUMRTAB
  - — The key for MUMRTAB is modified so that the code type of the dialed digits is specified in each tuple. This means that two tuples can exist with the same MRSANAME and dialed digits but with different Multiunit Message Rate Message Billing indices (MUMRMBI). The key field CODETYPE is the context of the dialed digits and can be set to ANY, NPA, or OFC. When the code type is NPA, the dialed number must consist of any prefix digits followed by at least 10 digits in order for the tuple to match. When the code type is OFC, the dialed number must be a number that is less than ten digits (that is a 7-digit number) in order for the tuple to match. When the code type is ANY, any dialed number beginning with the table MUMRTAB digits will match.

Log Message Changes

This feature introduces option CCSADATA in log AMA118, which contains a list of all the options in table AMAOPTS and the current status of each option.

OM Changes

NONE

Service Order

NONE

AMA Changes

This enhancement increases the usage of the extension blocks controlled by office parameter CRS_PRU_POOL2_SIZE in table OFCENG. This increase occurs when billing is done for OA calls (controlled by option OABILL in table AMATKOPT). When option OABILL is ON, the increased usage of extension blocks may be substantial, depending upon the number of OA calls using the selected trunk. The CRS_PRU_POOL2 extension block is held from the time it is allocated until the billing record is formatted. The extension block for OABILL is allocated at the beginning of the call.

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER		SF-LATER
NA008 PRODUCT		
		APPLICATION
ACTID	FEATURE TITLE	SDS
AG5139	FAX-Thru Service	

Description

The DMS-100 FAX-Thru Service (FTS) feature is a Special Delivery Service (SDS) enhancement. The FTS feature routes an outgoing FAX message to a FAX Messaging Platform (FMP) if the destination FAX machine is busy or does not answer. The FMP generates calls with the stored FAX to the original destination.

FTS is made up of two components:

- End Office (EO) feature that provides busy and no-answer detection and rerouting of the FAX message to the FMP
- FMP that provides the FAX delivery service for the FAX originator

This document describes the DMS-100 FTS feature and covers the requirements of the DMS originating EO that supports the FTS feature. It does not cover the requirements of the FMP, or the description of the SDS feature.

Command Changes

MAP displays for commands QDN and QLEN have been modified to include the FTS feature when applicable.

Data Schema Changes

The following changes have been made to data schema tables:

- Option FTS added to field OPTLIST of table IBNLINES
- In table SDSINFO, field SDSKEY is split into selector fields OFFICE, SDSOFC, SDSRNA, SDSBSY, and FTS.

Provisioning rules for the following office parameters in OFCENG have been modified for FTS service:

- NUMCPWAKE
- NO_OF_MEDIUM_FTR_DATA_BLKS
- NO_OF_HIST_DATA_BLKS
- NO_OF_SDS_EXT_BLKS

Examples

- Sample datafill of table SDSINFO, tuple OFFICE

```
>Add

SDSKEY:
>OFFICE
SERVICE:
>OFFICE
BILLING:
>Y
REVXLA:
>N
INTERLAT:
>Y
DNSCRN:
>454
DNSCRN:
>$
ALLOWCAR:
>MCI
ALLOWCAR:
>$

TUPLE TO BE ADDED:
OFFICE
OFFICE Y N Y (454) (MCI) $

SDSKEY SERVICE
------------------------------------------------------------------------------
OFFICE OFFICE Y N Y (454) $ (MCI) $
```

- Sample datafill of table SDSINFO, tuple SDSOFC

```
>Add

SDSKEY:
>SDSOFC
SERVICE:
>SDSOFC
RPTKEY:
>1
HELPKEY:
>0
RNAHELP:
>SDSHELP
BSYHELP:
>SDSHELP
SUBSMODE:
>SUBSCR

TUPLE TO BE ADDED:
SDSOFC
SDSOFC 1 0 SDSHELP SDSHELP SUBSCR

SDSKEY SERVICE
------------------------------------------------------------------------------
SDSOFC SDSOFC 1 0 SDSHELP SDSHELP SUBSCR
```

- Sample datafill of table SDSINFO, tuple SDSRNA

```
>Add

SDSKEY:
>SDSRNA
SERVICE:
>SDSRNA
RNAMODE:
>MSG
MSGACKEY:
>4
RNATIMER:
>33
MSGANNC:
>SDSANN
INTERRNA:
>3434332
INTRARNA:
>3434334

TUPLE TO BE ADDED:
SDSRNA
SDSRNA MSG 4 33 SDSANN 3434332 3434334

SDSKEY SERVICE
------------------------------------------------------------------------------
SDSRNA SDSRNA MSG 4 33 SDSANN 3434332 3434334
```

- Sample datafill of table SDSINFO, tuple SDSBSY

```
>Add

SDSKEY:
>SDSBSY
SERVICE:
>SDSBSY
BSYMODE:
>MSG
MSGACKEY:
>4
MSGANNC:
>SDSANN
INTERBSY:
>3434331
INTRABSY:
>3434333

TUPLE TO BE ADDED:
SDSBSY
SDSBSY MSG 4 SDSANN 3434331 3434333

SDSKEY SERVICE
------------------------------------------------------------------------------
SDSBSY SDSBSY MSG 4 SDSANN 3434331 3434333
```

- Sample datafill of table SDSINFO, tuple FTS

```
>Add

SDSKEY:
>FTS
SERVICE:
>FTS
FTSTIMER:
>28
FTSINTER:
>3434335
FTSINTRA:
>3434336

TUPLE TO BE ADDED:
FTS
FTS 28 3434335 3434336

SDSKEY SERVICE
--------------------------------------------------------------------------
FTS FTS 28 3434335 3434336
```

- Sample result of LIST ALL

```
>list all

SDSKEY SERVICE
--------------------------------------------------------------------------
OFFICE
OFFICE Y N Y (454) (MCI) $

SDSOFC
SDSOFC 1 0 SDSHELP SDSHELP SUBSCR

SDSRNA
SDSRNA MSG 4 33 SDSANN 3434332 3434334

SDSBSY
SDSBSY MSG 4 SDSANN 3434331 3434333

FTS
FTS 28 3434335 3434336
```

Log Message Changes

No new logs are added, but the text reason of log SDS601 is modified as follows:

```
MTLEN04AG SDS601 ARP03 12:10:15 3800 INFO SDS log report

CALL ID: 67
CALLING DN: 6137224065

SDS DN: 6138211040

Reason: Fails to reroute call

Treatment: GNCT
```

Since the calling and re-routing DNs are contained in the log, identification of SDS and FTS failures can be made with the same reason texts.

OM Changes

A new FTS OM group has been created with the following registers:

- ACTIVATE: Pegged when a call originating from an FTS subscribed line meets all the screening criteria and FTS can be offered on the call
- ACTIVAT2: Overflow for ACTIVATE
- BSYACTIV: Pegged when a call is rerouted to the FTS DN because the called party was busy
- RNAACTIV: Pegged when the ringing-no-answer timer expires and the call is rerouted to the FTS DN

New OM group: FTS

The FTS OM group is introduced to measure the number of activations of the FTS service.

Register list

The following lists the registers in the FTS OM group:

- ACTIVATE
- ACTIVAT2
- BSYACTIV
- RNAACTIV

OMSHOW example

The following is an example of how the OMSHOW looks like when it displays information on the FTS OM group.

```
> OMSHOW FTS ACTIVE

  CLASS: ACTIVE
  START:1995/03/29 11:30:00 MON; STOP: 1995/03/29 11:38:33 MON;
  SLOWSAMPLES:         5 ; FASTSAMPLES:         50 ;

                  ACTIVATE             ACTIVAT2    BSYACTIV    RNAACTIV

                         9                    0      2             3
```

New registers

ACTIVATE

This register measures the number of calls that meet the SDS screening criteria and cause FTS to be invoked. It is pegged each time the FTS feature is invoked. It is used in conjunction with the FTS OM register ACTIVAT2. As long as the upper-bound of ACTIVATE is not reached, ACTIVAT2 is not pegged. When the upper-bound of ACTIVATE is reached, ACTIVAT2 is pegged, and ACTIVATE starts over from zero.

ACTIVAT2

This register is the complementary register of ACTIVATE. ACTIVAT2 is pegged only when the upper-bound of ACTIVATE is pegged and FTS is invoked.

BSYACTIV

This register measures the number of times the FTS service has rerouted a call due to busy conditions.

RNAACTIV

This register measures the number of times the FTS service has rerouted a call due to ringing no-answer conditions.

Service Order

The service order system (SERVORD) is enhanced to add FTS to subscribing lines. Assigning the FTS option to a POTS line converts that line to a RES line if the RES_AS_POTS field of office parameter RES_SO_SIMPLIFICATION in table OFCVAR is set to Y.

AMA Changes

An AMA record is generated on an FTS call depending on the value of field BILLING of the tuple OFFICE in table SDSINFO as follows:

- If field BILLING is set to N (no), an AMA record is not generated.
- If field BILLING is set to Y (yes), FTS generates an AMA record for the call leg between the originating end office and the FAX Message Platform (FMP) if applicable.

Note: *FTS does not bill on the first leg of an FTS call.*

Notes

8Kbytes of Program and Data store are required for FTS.

Alarms

NONE

Interactions

FTS has the same feature interactions as SDS with the following exceptions:

- The SDS Enhancements feature provides compatibility between the SDS option and the Conference (CNF) feature and the Three-Way Call (3WC) feature. FTS is not compatible with CNF and 3WC even when the SDS Enhancements feature or Selective Call Messaging is active. SDS is allowed on the second leg of a three-way call. FTS is not allowed on the second leg of a three-way call.
- There is no dependency between the SDS and FTS supports line class codes.

Restrictions/Limitations

When SDS is offered to a customer group (using SDS Enhancements), or office-wide (using Selective Call Messaging), and FTS is assigned to a line, FTS takes precedence over SDS.

FTS is not compatible with the following line options:

- Automatic Recall Dialable Directory Number (ARDDN)
- Automatic Line (AUL)
- Automatic Call Back (ACB)
- Automatic Recall (AR)
- Call Hold (CHD)
- Calling Line Identification On Flash (CLF)
- Conference (CNF)
- Call Park (PRK)
- Call Pick-Up (CPU)
- Call Screening Monitoring and Interception (CSMI)
- Call Transfer (CXR)
- Call Waiting Ringback (CWR)
- Call Waiting (CWT)
- Call Waiting Originator (CWO)
- Directed Call Pick-Up with Barge-In (DCBI)
- Directed Call Park (DCPK)
- Distinctive Ringing (DRING)
- Deluxe Spontaneous Call Waiting Identification (DSCWID)
- Distinctive Ringing/Call Waiting (DRCW)
- Executive Busy Override (EBO)
- Essential Line (ELN)
- Executive Message Waiting (EMW)
- Feature Group (FTRGRP)
- Hold (HLD)
- In-Service Activation (ISA)

- Last Number Redial (LNR)
- Message Waiting (MWT)
- Network Facility Access (NFA)
- Residential Call Hold (RCHD)
- Ring Again (RAG)
- Special Delivery Service (SDS)
- Teen Service (Secondary DN (SDN))
- Service Group (SVCGRP)
- Three-Way Call (3WC)

Index

A

Alarms, New

AMA Activity

C

Commands, Changed

Commands, New

Country-Specific Features

L

Log Reports, Changed

Log Reports, New

O

Office Parms, Changed

Office Parms, New

OM Groups, Changed

OM Groups, New

T

Tables, Changed

Tables, New

Acronyms

2B1Q . . . . . Two-Binary One-Quaternary
3WC . . . . . Three Way Calling

A

AABS . . . . . Automatic Alternate Billing System
ABCD . . . . . ABCD Bits
ABS. . . . . Authorized Bearer Service
AC . . . . . Attendant Console
ACB . . . . . Automatic Call Back
AC15 . . . . . Alternating Current NO 15
ACD . . . . . Automatic Call Distribution
ACEES . . . . . Attendant Console End-to-End Signalling
ACG . . . . . Automatic Code Gap
ACO . . . . . Additional Call Offering
ACO . . . . . Attendant Console Camp-On
ACOU . . . . . Additional Call Offering Unrestricted
ACR . . . . . Account Code Required
ACRJ. . . . . Anonymous Caller Rejection
ACTS . . . . . Automated Coin Toll Service
ADACC. . . . . Automatic Directory Assistance Call Completion
ADD . . . . . Add Member to Hunt or CPU Group
ADO . . . . . Add Options
AFC. . . . . Additional Functional Call
AIN . . . . . Advanced Intelligent Network
AISUP. . . . . Australian ISUP
ALT . . . . . Automatic Line Test
AM . . . . . Access Module
AMA . . . . . Automatic Message Accounting
AMADNS . . . . . AMA Data Networking System
AN. . . . . Access Node
AND . . . . . Abbreviated Number Directory
ANI . . . . . Automatic Number Identification
ANM . . . . . Answer Message
ANSI . . . . . American National Standards Institute
AOC . . . . . Advice of Charge
AQ. . . . . Autoquote
AR. . . . . Analyze Route
AR. . . . . Automatic Recall

ARAN . . . . . Automated Room and Authorization Number
ARU . . . . . Automated Response Unit
ASDI . . . . . Advanced Services Display Interface
ASU. . . . . Application Specific Unit
AT . . . . . Access Tandem
ATC. . . . . Access to Carrier
ATUP. . . . . Australian Telephone User Part
AUD . . . . . Automatic Dialing
AUL. . . . . Automatic Line

B

BAF. . . . . BellCore AMA Format
BBG . . . . . Basic Business Group
BC . . . . . BellCore
BC . . . . . Bearer Capability
BCD . . . . . Binary Coded Decimal
BCS. . . . . Bulk Change Supplement
BCSMON . . . . . BCS Monitor
BELLCORE . . . . . Bell Communications Research Inc.
BERP . . . . . Bit Error Rate Performance
BERT. . . . . Bit Error Ratio Test
BI. . . . . Blocking Indicator
BITS . . . . . Building Integrated Timing Supply
BLV. . . . . Busy Line Verify (synonymous for Busy Verify)
BOC . . . . . Bell Operating Company
BRA . . . . . Basic Rate Access
BRI . . . . . Basic Rate Interface
BTUP . . . . . British Telephony User Part

C

C7TU. . . . . CCS7 Test Utilities
C-SIDE . . . . . Side of DMS100 Closer To The Network
CAC . . . . . Carrier Access Code
CACH . . . . . Call Appearance Call Handling
CAMA. . . . . Centralized Automatic Message Accounting
CAR . . . . . Call Request
CAS. . . . . Channel Associated Signalling
CBSY . . . . . C-Side Busy
CC . . . . . Central Control Complex
CCDR D&A . . . . . Calling Card Denial Reasons Displays and Announcements
CCF. . . . . Call Control Function

CCM . . . . . 100 Common
CCI . . . . . Computer Consoles Inc. (Now Northern Telecom NAS)
CCIS . . . . . Common Channel Interoffice Signalling
CCITT. . . . . International Telegraph And Telephone Consultive Committee
CCS7. . . . . Common Channel Signalling Number 7
CDM . . . . . Configuration Data Management
CDN . . . . . Change Directory Number
CDP. . . . . Customized Dialing Plan
CDPA . . . . . CalleD Party Address
CDPD . . . . . Cellular Digital Data Packet
CDR . . . . . Call Detail Record(ing)
CENTREX . . . . . Central Exchange
CFB. . . . . Call Forward Busy
CFBL . . . . . Call Forward Busy Line
CFD. . . . . Call Forward Don't Answer
CFDA . . . . . Call Forward Don't Answer
CFF . . . . . Call Forward Fixed
CFFP. . . . . Call Forward Fraud Prevention
CFGDA. . . . . Call Forward Group Don't Answer
CFRA . . . . . Call Forward Remote Access
CFU. . . . . Call Forward Universal
CFW . . . . . Call Forwarding
CFWP . . . . . Call Forward Progrmmable
CFWVAL . . . . . Call Forwarding Validation
CGNIE . . . . . CallinG Number Information Element
CHF. . . . . Change Feature Information
CH. . . . . Consultation Hold
CI. . . . . Command Interpreter
CIC . . . . . Carrier Identification Code
CID . . . . . Calling Number Identification
CIDS . . . . . Calling Identity Delivery and Suppression
CIF . . . . . Controlled Interflow
CIFROUTE . . . . . Controlled Interflow Route
CLASS . . . . . Custom Local Area Signalling Services
CLF . . . . . Calling Line Identity With Flash
CLI . . . . . Calling Line Identity
CLIP . . . . . Connected Line Identification Presentation
CLLI . . . . . Common Language Local Identifier
CLN. . . . . Change LEN (Line Equipment Number)
CM . . . . . Computing Module
CMC . . . . . Central Message Controller

CMD . . . . . Circuit Mode Data
CMS . . . . . Call Management Services
CNA . . . . . Connection Not Admitted
CNAMD . . . . . Calling Name Display
CND . . . . . Calling Number Delivery
CND . . . . . Calling Number Display
CNIS . . . . . Calling Number Identification Services
CNNB . . . . . Calling Name and Number Blocking
CNND . . . . . Calling Name and Number Delivery
CO . . . . . Cut Off Relay on a Line Card
COD . . . . . Cut Off on Disconnect
COMPID . . . . . Component Identifier
CONG . . . . . Congestion
CPE . . . . . Customer Premises Equipment
CPM . . . . . Common Peripheral Module
CPU . . . . . Central Processor Unit
CRR . . . . . Call Request Retrieve
CS . . . . . Capability Set
CSDI . . . . . Calling Card Account Number Service Denial Indicator
C-SIDE . . . . . Control Side
CSP06 . . . . . Communication Service Platform, Release 06
CT4Q . . . . . Call Type for Queuing
CTD . . . . . Carrier Toll Denied
CUIF . . . . . Control Unit Interface
CW . . . . . Call Waiting
CXR . . . . . Call Transfer

D

DA . . . . . Directory Assistance
DACC . . . . . Directory Assistance Call Completion
DAS . . . . . Directory Assistance System
DASS2 . . . . . Digital Access Signaling System Number 2
DBIC . . . . . Data Enhanced Bus Interface Card
DBNN . . . . . Delete Bridged Night Number
DC 5 . . . . . Direct Current No. 5
DCH . . . . . D-Channel Handler
DCME . . . . . Digital Circuit Multiplication Equipment
DCPK . . . . . Directed Call Park
DDI . . . . . Direct Dial Incoming
DDM . . . . . Distributed Data Manager
DDN . . . . . Dialable Directory Number

DEL . . . . . Delete Member From Hunt or CPU Group
DEO . . . . . Delete Options
DFT . . . . . DPNSS Feature Transparency
DID . . . . . Data Identifier
DIRP . . . . . Device Independent Recording Package
DISA . . . . . Direct Inward Systems Access
DLC . . . . . Digital Loop Carrier
DLH . . . . . Distributed Line Hunt
DMA . . . . . Direct Memory Access
DMO . . . . . Data Modification Order
DMS . . . . . Digital Multiplex System
DN . . . . . Directory Number
DNH . . . . . Directory Number Hunt
DNID . . . . . Dialed Number Identification
DP . . . . . Dial Pulse
DPNSS . . . . . Digital Private Network Signalling System
DRU . . . . . Development Release Unit
DS . . . . . Downstream Data Transmission From The Dms
DS1 . . . . . Digital Signal Level 1
DS30 . . . . . DMS Signaling 30
DTA . . . . . Digital Test Access
DTC . . . . . Digital Trunk Controller
DTC7 . . . . . CCS7 DTC
DTMF . . . . . Dual Tone Multi-Frequency
DTU . . . . . Digital Test Unit
DUAQ . . . . . Dial-Up Autoquote

E

E800 . . . . . Enhanced 800 Service
E911 . . . . . Enhanced 911 Emergency Service
EA . . . . . Equal Access
EAEO . . . . . Equal Access End Office
EAIT . . . . . Equal Access Intermediate Tandem
EAOSS . . . . . Exchange Access Operator Services Signalling
EASP . . . . . Equal Access Switching Point
EBAF . . . . . Enhanced BellCore AMA Format
EBS . . . . . Electronic Business Set
EBCR . . . . . Enhanced Busy Call Return
EBO . . . . . Executive Busy Override
ECL . . . . . Effective Code Length
ECR . . . . . Enhanced Cluster Routing

EDCH . . . . . Enhanced D-Channel Handler
EDDS . . . . . Enhanced Dynamic Data Sync
EDTK . . . . . Event Driven Trunk Call Processing
EDTU . . . . . Enhanced Digital Test Unit
EIN . . . . . European Intelligent Networks
EISP . . . . . Enhanced ISDN Signal Pre-Processor
EKTS. . . . . Electronic Key Telephone Service
ENET . . . . . Enhanced Network
EO . . . . . End Office
EOC. . . . . Embedded Operations Channel
EPS . . . . . Enhanced Permanent Signal
ESB . . . . . Emergency Service Bureau
ESCO . . . . . Emergency Service Central Office
ESDN . . . . . Enhanced Secondary Directory Number
ESMA . . . . . Expanded Subscriber Carrier Module-100 Access
ESMU . . . . . Enhanced Subscriber Carrier Module Urban
ESN. . . . . Emergency Service Number
ESP . . . . . Enhanced Service Provider
ESZ . . . . . Emergency Service Zone
ET . . . . . Exchange Termination
ETAS. . . . . Emergency Technical Assistance Service
ETS . . . . . Enhanced Time Switch
ETSI . . . . . European Telecommunications Standards Institute

F

FAC . . . . . Feature Access Code
FAM . . . . . Final Address Message
FC . . . . . Flexible Calling
FCI . . . . . Furnish Charging Information
FCTD . . . . . Full Carrier Toll Denied
FDN. . . . . Forward DN
FGB. . . . . Feature Group B
FGD. . . . . Feature Group D; a type of signalling for trunks
FIE. . . . . Facility Information Element
FNCTS . . . . . Functions
FP . . . . . Fraud Prevention
FPE . . . . . Feature Processing Environment
FS . . . . . Functional Signalling Terminal
FSD . . . . . Feature Specification Document
FXO. . . . . Foreign Exchange Office
FXS . . . . . Foreign Exchange Subscriber

G

GETS. . . . . Government Emergency Telecommunications Service
GIC . . . . . Group Intercom Calls
GOS. . . . . Grade Of Service
GTT. . . . . Global Title Translations

H

HADS . . . . . Hotel Administration Data System
HMI. . . . . Human Machine Interface
HOBIC . . . . . Hotel Billing Information Center
HOC . . . . . Host Operator Centralization
HPC. . . . . High Probability of Completion
HSDA . . . . . High Speed Data Access

I

IAC . . . . . ISDN Access Controller
IAI. . . . . ISN Auto Imaging
IAM. . . . . Initial Address Message
IBERT . . . . . Integrated BERT
IBM. . . . . International Business Machines
IBN . . . . . Integrated Business Network
IBN7 . . . . . Nortel's Proprietary Version of ANSI ISUP
IBN7-ISUP . . . . . ANSI ISUP signalling trunks with proprietary parameters. ANSI ISUP +.
IBNT2. . . . . Integrated Business Network Two-Way
IBNTO . . . . . Integrated Business Network Outgoing
IC. . . . . Interlata Carrier
ICB . . . . . Integrated Channel Bank
ICI. . . . . Incoming Call Identifier
ICTS . . . . . Integrity Check Traffic Simulator
IDDD. . . . . International Direct Distance Dialing
IDID . . . . . Integrated Direct Inward Dialing
IDLC. . . . . Integrated Digital Loop Carrier
IDPL . . . . . Identifier Pool
IDT . . . . . Integrated Digital Terminal
IEC . . . . . Interexchange Carrier
IEM. . . . . Integrated Event Manager
IFAM. . . . . Initial and Final Address Message
ILD . . . . . ISDN Line Drawer
ILM. . . . . Integrated Link Maintenance
IMON . . . . . Instrumentation Monitor
IN . . . . . Intelligent Networks

INAP . . . . . Intelligent Networks Application Part
INM. . . . . Integrated Node Maintenance
INODE . . . . . Integrated Node
INSV . . . . . In Service
IP. . . . . Intelligent Peripheral
IPC . . . . . Inter Process Communication Buffer
IPF. . . . . Integrated Processorlf-Bus
IPL. . . . . Initial Program Load
IPML. . . . . Inter-Peripheral Message
ISDD . . . . . Incoming Start-to-Dial Delay
ISDN . . . . . Integrated Services Digital Network
ISG . . . . . ISDN Signalling Group
ISL. . . . . ISUP Signaling Loopback
ISLC . . . . . ISDN SRI Line Card
ISLC . . . . . Standard lSDN Line Card
ISM . . . . . Integrated Service Module
ISN . . . . . Intelligent Switch Network
ISP. . . . . ISDN Signalling Preprocessor
ISP. . . . . ISDN Signal Pre-Processor
ISTB . . . . . In Service Trouble
ISUP . . . . . ISDN User Part
IT. . . . . Integrated Terminal
IT. . . . . Intertoll
ITU . . . . . International Telecommunications Union (formerly CCITT)
IVD . . . . . Integrated Voice and Data
IXC . . . . . Inter-Exchange Carrier

J

JF. . . . . Journal File

K

KSH. . . . . Key Short Hunt

L

LA . . . . . Local Agent
LAPB . . . . . Link Access Procedure Balanced, X.25 Layer 2
LAPD . . . . . Link Access Procedure D Channel, X.25 Layer 2 for ISDN
LATA. . . . . Local Access And Transport Area
LCC. . . . . Line Class Code
LCD. . . . . Line Concentrating Device
LCDCUT. . . . . LCD Cut-over Command Interpreter Program

LCM . . . . . Line Concentrating Module
LCME . . . . . Enhanced ISDN Line Concentrating Module
LCMI. . . . . ISDN Line Concentrating Module
LDC. . . . . Line Drawer Controller
LDT. . . . . Line Appearance on a Digital Trunk
LEAS. . . . . LATA Equal Access System
LEN. . . . . Line Equipment Number
LGC. . . . . Line Group Controller
LGCI . . . . . ISDN Line-Group Controller
LGCO . . . . . Offshore Line Group Controller
LGP. . . . . Link General Processor
LIDB . . . . . Line Information Database
LIM . . . . . Link Interface Module
LIU7 . . . . . Link Interface Unit for CCS7
LLM . . . . . Logical Link Manager
LMB . . . . . Line Maintenance Busy
LMCUT. . . . . Line Maintenance Cut-over Command Interpreter Program
LMS . . . . . Local Message Switch
LMSP . . . . . LMS Processor
LNINV . . . . . Line Inventory Table
LNR. . . . . Last Number Redial
LOD . . . . . Line Overflow DN
LOGUTIL . . . . . Log Utility
LPIC . . . . . Primary Intra-LATA Carrier
LPP . . . . . Link Peripheral Processor
LRB. . . . . Loop Reverse Battery
LSG. . . . . Line Subgroup
LTC . . . . . Line Trunk Controller
LTCI . . . . . ISDN Line-Trunk Controller
LTG . . . . . Line Treatment Group
LTID . . . . . Logical Terminal Identifier
LTP . . . . . Line Test Position

M

MADN . . . . . Multiple Appearance Directory Number
MAP . . . . . Maintenance and Administration Position
MAPCI . . . . . Maintenance and Administration Position Command Interpreter
MBG . . . . . Multi-Switch Business Group
MBS . . . . . Meridian Business Set
MCA . . . . . Multiple Call Arrangement
MCCS . . . . . Mechanized Calling Card Service

MCH . . . . . Malicious Call Hold
MDC . . . . . Meridian Digital Centrex
MDS . . . . . Message Delivery System
MEC . . . . . Meridian Digital Centrex
MEL . . . . . Match Enable Latch
MDR . . . . . Message Detail Recording
MDR7 . . . . . CCS7 MDR
MF. . . . . Multi-Frequency
MFC . . . . . Multi-Frequency Compelled
MLH . . . . . Multiline Hunt
MMI . . . . . Man Machine Interface
MNA7 . . . . . Multiple CCS7 Network Address
MP. . . . . Multi Purpose
MPC . . . . . Multi Protocol Converter
MPDT . . . . . Message Protocol and Downloadable Tones
MPH . . . . . Multiposition Hunt
MPX . . . . . Type of Operator Position
MRU . . . . . Module Recording Unit
MS. . . . . Message Switch
MSB . . . . . Make Set Busy
MSB7 . . . . . Message Switch And Buffer for CCS7
MSN . . . . . Multiple Subscriber Number
MSU . . . . . Message Signal Units
MTA . . . . . Metallic Test Access
MTCARB . . . . . Maintenance Arbitrator
MTM. . . . . Maintenance Trunk Module
MTM. . . . . Matcher Transient Mismatch
MTP . . . . . Message Transfer Part
MTS . . . . . Message Telecommunications Service
MVI. . . . . Multi-Vendor Interface

N

NACD . . . . . Networked ACD
NANP . . . . . North American Numbering Plan
NAS. . . . . Network Administration Services
NBEC . . . . . Non-BOC Exchange Carrier
NDC . . . . . No Double Connect
NE . . . . . Network Element
NFA. . . . . Network Facility Access
NI-1. . . . . National ISDN - 1
NI-2. . . . . National ISDN - 2

NIS . . . . . Nortel Interface Specification
NIU . . . . . Network Interface Unit
NOTIS. . . . . Notification Information System TTY
NPA. . . . . Numbering Plan Area
NPD. . . . . Numbering Plan Digit
NSN. . . . . National Significant Number
NT . . . . . Northern Telecom
NXX . . . . . Central Office Code

O

OAM . . . . . Operations, Administration, And Maintenance
OAMP . . . . . Operations, Administration, And Maintenance Processor
OC. . . . . Operator Centralization
OCFA . . . . . Override Call Forward on Account
OCM . . . . . Outgoing Call Memory
OCM . . . . . Originating Call Model
OGT . . . . . Out Going Trunk
OHBT . . . . . Off-Hook Bal-Net (Balanced Network) Test
OHD . . . . . Off-Hook Delay
OLI . . . . . Originating Line Identity
OLNS . . . . . Originating Line Number Screening
OM . . . . . Operational Measurements
OMP . . . . . Outbound Modem Pooling
OMRS . . . . . Operational Measurement Reporting System
ONA . . . . . Open Network Architecture
ONP. . . . . One Night Process
OOS . . . . . Out Of Service
OPP . . . . . Open Position Protocol
OSI . . . . . Open System Interconnection
OSS . . . . . Operator Services System

P

PARS. . . . . Personal Audio Response System
PB . . . . . Provisioned B Channel
PBUS. . . . . Process Bus Terminator Card
PBX. . . . . Private Branch Exchange
PC . . . . . Phase Comparator
PCM . . . . . Pulse Code Modulation
PD . . . . . Problem Data
PDTC . . . . . PCM30 Digital Trunk Controller
PE . . . . . Processing Element

PEC . . . . . Product Engineering Code
PH . . . . . Packet Handler
PI . . . . . Peripheral Interface
PI . . . . . Presentation Indicator
PICS . . . . . Protocol Implementation Conformance Statement
PIN . . . . . Personal Identification Number
PKT . . . . . Packet
PLL . . . . . Phase Loop Lock
PM . . . . . Peripheral Module
PMD . . . . . Packet Mode Data
PMOVLD . . . . . Peripheral Module Overload OM Group
PODP . . . . . Public Office Dialing Plan
PODPFEAT . . . . . Public Office Dialing Plan Feature
PORGDENY . . . . . Peripheral Origination Deny OM Field
POTS . . . . . Plain Old Telephone Service
PPXL . . . . . Pre-Patched XPM Loads
PRA . . . . . Primary Rate Access
PRH . . . . . Preferential Hunt
PRI . . . . . Primary Rate Interface
PRK . . . . . Call Park
PRL . . . . . Peripheral Remote Loader
PRSM . . . . . Post Release Software Manager
PRU . . . . . Primary Recording Unit
PS . . . . . Program Store
PSAP . . . . . Public Service Answering Point
PSDI . . . . . Personal Identification Number Service Denial Indicator
PSTN . . . . . Public Service Telephone Network
PSTN . . . . . Public Switched Telephone Network
PTS . . . . . Per Trunk Signalling Task
PVC . . . . . Protocol Version Control
PVC . . . . . Permanent Virtual Circuit
PVN . . . . . Private Virtual Network

Q

Q.92I . . . . . Layer 2 Data Link Protocol
QCM . . . . . Query Call Memory
QDN . . . . . Query Directory Number

R

R2 . . . . . International Trunks Signalling Method
RAG . . . . . Ring Again

RAM . . . . . Random Access Memory
RAO . . . . . Revenue Accounting Office
RBS. . . . . Robbed Bit Signaling
RCC . . . . . Remote Cluster Controller
RCF. . . . . Remote Call Forwarding
RCFEA . . . . . Remote Call Forwarding Equal Access
RCO2 . . . . . Offshore Remote Cluster Controller
RCS. . . . . Remote Carrier SLC-96
RCU . . . . . Remote Carrier Urban
RDT. . . . . Remote Digital Terminal
REL. . . . . Release
RES . . . . . Residential Enhanced Service (Custom Options)
RES . . . . . Restore
REX. . . . . Routine Exercise
RMI. . . . . Remote Message Indicator
RMM. . . . . Resource Maintenance Manager
RN. . . . . Redirecting Number
RNAM. . . . . Redirecting Name Delivery
RND . . . . . Redirecting Number Delivery
RNIE . . . . . RN Information Element
ROC . . . . . Remote Operator Centralization
ROH . . . . . Receiver Off Hook
RONI. . . . . Remote Operator Number Identification
RSA. . . . . Registered Site Access
RT . . . . . Remote Terminal
RTRS. . . . . Real-Time Rating System
RTS . . . . . Return To Service
RWOK. . . . . Read/Write OK

S

SA . . . . . Stand Alone
SAC. . . . . Service Access Code
SACB . . . . . Subscriber Activated Call Blocking
SAID . . . . . Speech Activated Intelligent Dialing
SAPI . . . . . Service Access Point Identifier
SC . . . . . Speed Call
SCA. . . . . Single Call Arrangement
SCAI . . . . . Switch-to-Computer Application Interface
SCCP. . . . . Signalling Connection Control Part
SCF . . . . . Selective Call Forwarding
SCM . . . . . Selective Call Messaging

SCM . . . . . Subscriber Carrier Module
SCP . . . . . Service Control Point
SDM . . . . . Service Data Manager
SDN. . . . . Secondary Directory Number
SEAC . . . . . Signalling Engineering And Administration Center
SEAS. . . . . Signalling Engineering And Administration System
SEN. . . . . Subscriber Engaged
SERVORD . . . . . Service Order System
SFC . . . . . Specific Feature Code
SHI . . . . . Secondary HSDA Interface
SHR. . . . . Shared
SHU. . . . . Stop Hunt
SIGP . . . . . Signalling Processor
SLC . . . . . Subscriber Loop Carrier
SLE . . . . . Selective Listing Editing
SLM . . . . . System Load Module
SLS . . . . . Signaling Link Selection
SLT . . . . . Setup Logical Terminal
SMA . . . . . Subscriber Carrier Module Access
SMDI. . . . . Simplified Message Desk Interface
SMDR. . . . . Station Message Detail Recording
SMS . . . . . Subscriber Carrier Module SLC-96
SMSR . . . . . SMS Remote
SMU . . . . . Subscriber Carrier Module - Urban
SNPA. . . . . Serving Numbering Plan Area
SOC. . . . . Software Optionality Control
SOOO . . . . . Subscriber Out Of Order
SOR. . . . . Station Origination Restrictions
SORC . . . . . Station Origination Restrictions Controller
SOS . . . . . Software Operating System
SP . . . . . Single-Purpose (TOPS Position)
SP . . . . . Signalling Processor
SPC . . . . . Service Profile Configuration
SPMS . . . . . Switch Performance Monitoring System
SPOAMI . . . . . Single Point OA&M for ISDN Node
SRDB . . . . . Selective Routing Database
SRF . . . . . Specialized Resource Function
SRT . . . . . Station Ringer Test
SRU. . . . . Shared Resource Unit
SS7 . . . . . Signalling System #7
SSF . . . . . Service Switching Function

SSMAN. . . . . Silent Switchman Test
SSN . . . . . Subsystem Number
SSP . . . . . Service Switching Point
STP . . . . . Signal Transfer Point
STR . . . . . Subscriber Transferred
SUS . . . . . Suspend Service
SUSP. . . . . Subscriber Usage Sensitive Pricing
SVC. . . . . Switched Virtual Circuit
SWACT . . . . . Switch Of Activity
SWERR. . . . . Software Error

T

TA . . . . . Toll and Assistance
TABS. . . . . Talking Alternate Billing System
TAMI. . . . . TPC Administration And Maintenance Interface
TBAC . . . . . Transaction Bus Access Card
TBCT . . . . . Two B-Channel Transfer
TBI . . . . . Toll Break-In
TCAP . . . . . Transaction Capabilities Application Part
TCAPAPPL. . . . . TCAP Application
TCAPTRID. . . . . TCAP Transaction ID Manager
TCM . . . . . Terminating Call Model
TCON . . . . . Terminal Congestion
TDM . . . . . Time Division Multiplex
TDN . . . . . Toll Denied
TDP3. . . . . Trigger Detection Point 3
TEl. . . . . Terminal Endpoint Identifier
TELCO . . . . . Telephone Company
TFC . . . . . Transfer Controlled Message
TFP . . . . . Transfer Prohibited Message
THL. . . . . Trans Hybrid Loss
TICS . . . . . TOPS InterLATA Carrier Service
TID . . . . . Terminal Identifier
TIF. . . . . Terminal Interface
Time T. . . . . The time at which expanded international numbers will begin to be used in the network (defined in ITU recommendation E.165 to be December 31, 1996, at 23:59 Coordinated Universal Time).
TL . . . . . Telecom Layer
TLI . . . . . Terminating Line Identity
TMC . . . . . Timeslot Management Channel
TMS . . . . . TOPS Message Switch

TOE. . . . . Trunk Offer End
TOPS. . . . . Traffic Operator Position System
TOS. . . . . Trunk Offer Start
TPC. . . . . TOPS Position Controller
TPT . . . . . Terminal Processing Task
TRAVER. . . . . Translation and Routing Verification
TRID. . . . . Transaction ID
TVSN . . . . . TOPS Voice Service Node
TTT. . . . . Trunk Transmission Test
TTU. . . . . Trunk Test Unit
TTY. . . . . Teletype Device
TWC . . . . . Three Way Calling

U

U3WC. . . . . Usage-sensitive Three Way Calling
UA. . . . . Universal Access
UART . . . . . Universal Asynchronous Receiver Transmitter
UCD . . . . . Uniform Call Distribution
UCFW. . . . . Universal Access to Call Forward
UDLC . . . . . Universal Digital Loop Carrier
UDT . . . . . Unidata
UDTS . . . . . Unidata Service
UP . . . . . Unified Processor
UP . . . . . User Part
UPU. . . . . User Part Unavailable
US . . . . . Upstream Data Transmission From The Subscriber Toward The DMS

V

VCXO. . . . . Voltage Controlled Oscillator
VFG. . . . . Virtual Facility Group
VI . . . . . Voice Interface
VLL. . . . . Virtual Leased Line
VMS . . . . . Voice Messaging System
VPN. . . . . Virtual Private Network
VQ. . . . . Voicequote TTY
VSC. . . . . Vertical Service Code
VSN. . . . . Voice Service Node

W

WATS . . . . . Wide Area Telecommunications Service
WCM. . . . . Write Call Memory

WLC . . . . . World Line Card
WML. . . . . Warm Line

X

X.25. . . . . CCITT Defined Network Layer protocol that is used in packet switching to establish, maintain, and terminate virtual circuit connections between a terminal and a destination in the network.
X0510 . . . . . AMA Base Structure Used in the UK Market
XBAR . . . . . Crossbar Switch
XPM . . . . . Extended Multiprocessor System Peripheral Module
XPM PLUS . . . . . Extended Peripheral Module Product Life Upgrade Strategy
XPMOVLD. . . . . XPM Overload OM Group
XRATE . . . . . External Rate Tool

Z

ZROM . . . . . Zero Minus

DMS-100 Family

Traffic Synopsis

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